United States Department of Agriculture

NRCS Plant Materials Program
Cover Crop Adaptation Trials - Supporting Data

Plant Materials Centers (PMCs) at 21 locations conducted a 2-year evaluation of 56 commercially available varieties of cereal rye, hairy vetch, crimson clover, red clover, winter/field pea, black oats, black seeded oats, and daikon radish to assess their adaptation and performance as cover crops throughout the continental United States. Information from the study will assist conservation planners and farmers in selecting varieties to better meet the cover crop objectives of their production systems.

Evaluations

Cover crop varieties were evaluated for several factors to determine adaptation of each variety.

Evaluation factor	Explanation
Emergence at 14 and 28 days after planting	0 = poor (<25% germination); 1 = moderate (30-60% germination); 2 = good (65-85% germination); 3 = excellent (90-100% germination). The 14-day emergence data was used to assess how quickly the cover crop covered the plots. The 28-day emergence data was used to determine if the fall stand met an acceptable threshold of 65% emergence or greater.
Percent winter survival	Percentage of seedlings that emerge in the fall and survive over the winter, determined by comparing the 28=day emergence count with a spring count once the cover crops began actively growing.
Days after planting to 50% bloom	The number of days after planting until each cover crop variety was estimated to have reached 50% of peak bloom/anthesis. Each region has its own scale of early, mid, and late roughly defined by dividing all averages for the region into thirds.
Disease and insect ranking	0 = no damage; 1 = slight damage; 3 = moderate damage; 5 = severe damage. Two evaluations taken; 1) at spring regrowth, and 2) at the recorded date for 50% bloom/anthesis.

Links to regional reports and supporting data within this document

NORTHEAST REGION DATA

Includes data for Beltsville, Maryland, Big Flats, New York, and Alderson, West Virginia. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) **and BLACK SEEDED OATS** (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Northeast Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2	1	2	1	33	47	251*	0
Soil Saver	2	1	2	1	6	18	NA	

* Maryland only

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the Northeast Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0		0		0		0	
Soil Saver								

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	3	0	0.3	0.5	2	0	0	0	0	0
Soil Saver	3	0	3	0	0.5	0.6	2.3	0.5	0	0	0	0

Table 3. 28-day emergence of black oats and black seeded oats by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	3	0	0.3	0.5	2	0	0	0	2	0.8
Soil Saver	3	0	3	0	0.5	0.9	2.3	0.5	0	0	2.8	0.5

Table 4. Percent winter survival of black oats and black seeded oats by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cosaque	100	0	95	9.5	0	0	0	0	0	0	0	0
Soil Saver	35	32.6	0	0	0	0	0	0	0	0	0	0

Table 5. Days to 50% bloom of black oats and black seeded oats by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	238	0.5	251	0	NA		NA		NA		NA	
Soil Saver	NA		NA		NA		NA		NA		NA	

Table 6. Disease ranking of black oats and black seeded oats at spring regrowth by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	0	0	WK		WK		WK		WK	
Soil Saver	0	0	WK		WK		WK		WK		WK	

Table 7. Disease ranking of black oats and black seeded oats at 50% bloom by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	0.5	0.6	WK		WK		WK		WK	
Soil Saver	WK		WK		WK		WK		WK		WK	

Table 8. Insect ranking of black oats and black seeded oats by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	0	0	WK		WK		WK		WK	
Soil Saver	WK		WK		WK		WK		WK		WK	

CEREAL RYE (*Secale cereale*)

Table 9. Performance of cereal rye averaged over the Northeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.4	0.7	2.8	0.6	86.3	20	238	10.1
Bates	2.6	0.6	2.8	0.5	78.3	24	239	10.7
Brasetto	1.8	0.9	2.3	0.8	81.3	18	244	5.8
Elbon	2.3	0.8	2.6	0.6	82.5	21	239	10.2
FL 401	2.3	0.8	2.7	0.6	46.5	39	234	7.8
Guardian	2.0	0.9	2.1	0.9	87.5	16	251	14.1
Hazlet	2.2	0.7	2.5	0.7	82.0	21	245	8.3
Maton	2.3	0.9	2.5	0.7	78.5	23	239	9.8
Maton II	2.2	0.8	2.8	0.5	81.9	23	239	10.0
Merced	2.5	0.5	2.6	0.6	58.3	43	234	8.2
Oklon	2.2	1.0	2.8	0.6	80.7	20	240	10.2
Rymin	2.0	1.2	2.6	0.8	77.0	25	243	9.8
Wheeler	2.0	1.1	2.6	0.7	81.8	18	250	13.9
Wintergrazer 70	2.4	0.7	2.9	0.3	85.5	20	240	9.7
Wrens Abruzzi	2.3	0.8	2.6	0.6	77.7	30	238	9.8

Table 9 (cont.). Performance of cereal rye averaged over the Northeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.1	0.4	0.0	0.0	0.04	0.21
Bates	0.0	0.0	0.3	0.5	0.0	0.0	0.04	0.20
Brasetto	0.0	0.0	0.2	0.5	0.0	0.0	0.04	0.20
Elbon	0.0	0.0	0.2	0.5	0.0	0.0	0.04	0.20
FL 401	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
Guardian	0.0	0.0	0.2	0.6	0.0	0.0	0.04	0.21
Hazlet	0.0	0.0	0.5	1.1	0.0	0.0	0.08	0.28
Maton	0.0	0.0	0.3	0.7	0.0	0.0	0.04	0.20
Maton II	0.0	0.0	0.2	0.5	0.0	0.0	0.04	0.20
Merced	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
Oklon	0.0	0.0	0.2	0.7	0.0	0.0	0.04	0.20
Rymin	0.0	0.0	0.5	0.9	0.0	0.0	0.04	0.20
Wheeler	0.0	0.0	0.5	0.8	0.0	0.0	0.04	0.21
Wintergrazer 70	0.0	0.0	0.2	0.6	0.0	0.0	0.04	0.20
Wrens Abruzzi	0.0	0.0	0.2	0.5	0.0	0.0	0.04	0.20

Table 10. 14-day emergence of cereal rye varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3	0	3	0	1.5	0.6	2.3	0.5	2	0	0	0
Bates	3	0	3	0	1.8	0.5	2.5	0.6	3	0	0	0
Brasetto	2.8	0.5	2.3	0.5	0.5	0.6	1.8	0.5	2	0	0	0
Elbon	2.8	0.5	3	0	1.3	0.5	2	0	1	0	0	0
FL 401	3	0	3	0	1.3	0.5	2	0	0	0	0	0
Guardian	2.8	0.5	2.5	0.6	0.8	0.5	1.8	0.5	1	0	0	0
Hazlet	2.8	0.5	2.8	0.5	1.3	0.5	2	0	1	0	0	0
Maton	3	0	3	0	1.3	0.9	2	0	0	0	0	0
Maton II	3	0	2.8	0.5	1.5	0.6	1.3	0.5	0	0	0	0
Merced	2.8	0.5	3	0	2	0	2.3	0.5	0	0	0	0
Oklon	3	0	3	0	0.8	0.9	2	0	2	0	0	0
Rymin	3	0	3	0	0	0	2	0	0	0	0	0
Wheeler	3	0	3	0	0.5	0.6	1.5	0.6	3	0	0	0
Wintergrazer	3	0	3	0	1.5	0.6	2	0	1	0	0	0
Wren Abruzzi	3	0	3	0	1.25	0.5	2	0	1	0	0	0

Table 11. 28-day emergence of cereal rye varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3	0	3	0	1.8	1.0	3	0	3	0	3	0.0
Bates	3	0	3	0	2.0	0.8	3	0	3	0	3	0.6
Brasetto	2.8	0.5	2	0.5	1.3	0.5	3	0	2.3	0.5	2	1.0
Elbon	2.8	0.5	3	0	1.5	0.6	3	0	3	0	3	0.6
FL 401	3	0	3	0	1.5	0.6	3	0	3	0	3	0.6
Guardian	2.8	0.5	3	0.6	1.5	0.6	3	0	2	0	1	1.4
Hazlet	2.8	0.5	3	0.5	1.3	0.5	3	0	2	0	3	0.0
Maton	3	0	3	0	1.8	1.0	3	0	2	0	3	0.6
Maton II	3	0	3	0.5	2.0	0.8	3	0	3	0	3	0.5
Merced	2.75	0.5	3	0	2.3	1.0	3	0	2	0	3	0.5
Oklon	3	0	3	0	1.8	1.0	3	0	3	0	3	0.5
Rymin	3	0	3	0	1.0	0.0	3	0	3	0	3	0.5
Wheeler	3	0	3	0	1.3	0.5	3	0	3	0	3	0.6
Wintergrazer	3	0	3	0	2.5	0.6	3	0	3	0	3	0.0
Wren Abruzzi	3	0	3	0	1.8	1.0	3	0	2	0	3	0.0

Table 12. Percent winter survival of cereal rye varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Aroostook	100	0.0	100	0.0	65	28.4	64	12.2	94	9.4	96	3.9
Bates	100	0.0	100	0.0	46	8.3	48	10.3	94	7.3	81	4.6
Brasetto	100	0.0	100	0.0	60	21.6	67	9.7	83	6.5	7	13.2
Elbon	99	2.5	100	0.0	59	28.5	62	6.5	85	12.2	91	5.9
FL 401	86	7.3	57	15.5	0	0.0	0	0.0	91	12.7	46	24.4
Guardian	100	0.0	100	0.0	73	21.1	67	2.6	91	8.8	95	11.0
Hazlet	100	0.0	100	0.0	56	16.4	58	16.4	86	13.2	92	8.0
Maton	100	0.0	100	0.0	58	20.1	50	16.8	91	11.0	72	8.5
Maton II	100	0.0	100	0.0	54	7.8	50	8.8	89	14.2	100	0.0
Merced	89	5.2	77	8.7	0	0.0	0	0.0	90	12.6	94	5.1
Oklon	100	0.0	100	0.0	64	25.8	61	11.4	88	13.3	72	10.9
Rymin	100	0.0	100	0.0	55	30.9	47	1.9	88	14.6	74	5.8
Wheeler	100	0.0	100	0.0	60	16.3	64	12.0	86	9.4	8	11.7
Wintergrazer	100	0.0	100	0.0	60	17.0	61	15.4	94	7.3	98	3.5
Wren Abruzzi	100	0.0	100	0.0	55	30.4	29	2.1	89	9.0	94	113.0

Table 13. Days to 50% bloom of cereal varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	220	0	239	3	250	0	246	1	234	0	242	0
Bates	221	1	237	0	250	0	251	1	235	0	242	0
Brasetto	234	1	243	0	251	0	248	1	242	0	247	0
Elbon	222	1	239	3	250	0	250	1	235	0	239	0
FL 401	222	0	237	0	NA	NA	NA	NA	234	0	242	0
Guardian	233	1	245	3	271	0	266	1	242	0	247	0
Hazlet	232	1	245	3	257	0	252	1	242	0	242	0
Maton	222	1	237	0	250	0	247	1	234	0	242	0
Maton II	222	1	239	3	250	0	248	1	234	0	242	0
Merced	222	0	239	3	NA	NA	NA	NA	234	0	242	0
Oklon	222	0	239	3	250	0	250	1	234	0	242	0
Rymin	227	1	244	2	257	0	250	1	237	0	245	0
Wheeler	233	1	244	2	271	0	263	1	239	0	251	0
Wintergrazer	222	0	239	3	250	0	247	1	235	0	245	0
Wren Abruzzi	221	1	237	0	250	0	248	1	237	0	237	0

Table 14. Disease ranking at spring regrowth of cereal rye varieties by location												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	0	0	0	0	0	0	0	0	0	0
Bates	0	0	0	0	0	0	0	0	0	0	0	0
Brasetto	0	0	0	0	0	0	0	0	0	0	0	0
Elbon	0	0	0	0	0	0	0	0	0	0	0	0
FL 401	0	0	0	0	NA	NA	NA	NA	0	0	0	0
Guardian	0	0	0	0	0	0	0	0	0	0	0	0
Hazlet	0	0	0	0	0	0	0	0	0	0	0	0
Maton	0	0	0	0	0	0	0	0	0	0	0	0
Maton II	0	0	0	0	0	0	0	0	0	0	0	0
Merced	0	0	0	0	NA	NA	NA	NA	0	0	0	0
Oklon	0	0	0	0	0	0	0	0	0	0	0	0
Rymin	0	0	0	0	0	0	0	0	0	0	0	0
Wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Wintergrazer	0	0	0	0	0	0	0	0	0	0	0	0
Wren Abruzzi	0	0	0	0	0	0	0	0	0	0	0	0

Table 15. Disease ranking at 50% bloom of cereal rye varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.0	0.0	0.0	0.0
Bates	0.5	0.6	0.0	0.0	0.5	0.6	0.5	1.0	0.0	0.0	0.0	0.0
Brasetto	0.0	0.0	0.0	0.0	1.0	0.8	0.3	0.5	0.0	0.0	0.0	0.0
Elbon	0.0	0.0	0.0	0.0	0.8	0.5	0.5	1.0	0.0	0.0	0.0	0.0
FL 401	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0	0.0	0.0	0.0
Guardian	0.0	0.0	0.0	0.0	2.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Hazlet	0.5	0.6	0.0	0.0	2.0	1.4	0.8	1.5	0.0	0.0	0.0	0.0
Maton	0.3	0.5	0.0	0.0	1.0	1.2	0.5	1.0	0.0	0.0	0.0	0.0
Maton II	0.3	0.5	0.0	0.0	0.5	0.6	0.5	1.0	0.0	0.0	0.0	0.0
Merced	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0	0.0	0.0	0.0
Oklon	0.0	0.0	0.0	0.0	0.5	0.6	0.8	1.5	0.0	0.0	0.0	0.0
Rymin	0.5	0.6	0.0	0.0	1.8	0.5	0.8	1.5	0.0	0.0	0.0	0.0
Wheeler	0.8	0.5	0.0	0.0	1.8	0.5	0.5	1.0	0.0	0.0	0.0	0.0
Wintergrazer	0.3	0.5	0.0	0.0	0.0	0.0	0.8	1.5	0.0	0.0	0.0	0.0
Wren Abruzzi	0.0	0.0	0.0	0.0	0.8	0.5	0.5	1.0	0.0	0.0	0.0	0.0

Table 16. Insect ranking at spring regrowth of cereal rye varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	0	0	0	0	0	0	0	0	0	0
Bates	0	0	0	0	0	0	0	0	0	0	0	0
Brasetto	0	0	0	0	0	0	0	0	0	0	0	0
Elbon	0	0	0	0	0	0	0	0	0	0	0	0
FL 401	0	0	0	0	NA	NA	NA	NA	0	0	0	0
Guardian	0	0	0	0	0	0	0	0	0	0	0	0
Hazlet	0	0	0	0	0	0	0	0	0	0	0	0
Maton	0	0	0	0	0	0	0	0	0	0	0	0
Maton II	0	0	0	0	0	0	0	0	0	0	0	0
Merced	0	0	0	0	NA	NA	NA	NA	0	0	0	0
Oklon	0	0	0	0	0	0	0	0	0	0	0	0
Rymin	0	0	0	0	0	0	0	0	0	0	0	0
Wheeler	0	0	0	0	0	0	0	0	0	0	0	0
Wintergrazer	0	0	0	0	0	0	0	0	0	0	0	0
Wren Abruzzi	0	0	0	0	0	0	0	0	0	0	0	0

Table 17. Insect ranking at 50% bloom of cereal rye varieties by location												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Bates	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Brasetto	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Elbon	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
FL 401	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0	0.0	0.0	0.0
Guardian	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Hazlet	0.0	0.0	0.0	0.0	0.3	0.5	0.3	0.5	0.0	0.0	0.0	0.0
Maton	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Maton II	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Merced	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0	0.0	0.0	0.0
Oklon	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Rymin	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Wheeler	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Wintergrazer	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Wren Abruzzi	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 18. Performance of crimson clover averaged over the Northeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.1	1.0	2.1	0.8	59	36	235	10
AU Sunrise	2.0	1.0	2.0	0.8	56	39	235	11
AU Sunup	0.8	0.9	1.0	0.7	49	33	232	11
Contea	0.6	0.7	1.0	0.6	53	37	237	12
Dixie	1.8	1.1	2.0	0.8	58	34	238	13
Kentucky Pride	2.0	1.1	2.1	0.9	54	38	243	12

Table 18 (cont.). Performance of crimson clover averaged over the Northeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
AU Sunrise	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
AU Sunup	0.1	0.2	0.1	0.4	0.3	0.7	0.3	0.6
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
Dixie	0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.5
Kentucky Pride	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5

Table 19. 14-day emergence of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.8	0.5	3	0	0.8	0.5	2	0.8	0	0	0	0
AU Sunrise	2.8	0.5	3	0	0.8	0.5	1.3	0.5	0	0	0	0
AU Sunup	1.0	0.8	2	0	0	0	0.25	0.5	0	0	0	0
Contea	0.3	0.5	1.5	0.6	0.5	0.6	0.25	0.5	0	0	0	0
Dixie	2.8	0.5	3	0	0.5	0.6	1	0	0	0	0	0
Kentucky	3.0	0	3	0	0.5	0.6	1.5	0.6	0	0	0	0

Table 20. 28-day emergence of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.8	0.5	3	0.0	1.5	0.6	2.5	0.6	1	0	1.8	0.5
AU Sunrise	2.8	0.5	3	0.0	1.3	0.5	2	0	2	0	1.3	0.5
AU Sunup	1.0	0.8	2	0.0	1	0	1	0	1	0	0	0
Contea	0.3	0.5	1.5	0.6	1	0	1.3	0.5	1	0	1.3	1.0
Dixie	2.8	0.5	3	0.0	1	0	1.5	0.6	2	0	1.5	0.6
Kentucky	3.0	0.0	3	0.0	1.3	0.5	2.3	0.5	1	0	2	0.8

Table 21. Percent winter hardiness of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
AU Robin	90	7.5	99	3.0	42	13.3	41	5.3	85	8.3	0	0
AU Sunrise	87	9.3	94	8.0	30	3.9	29	5.0	98	4.5	0	0
AU Sunup	88	11.3	81	24.4	34	8.1	34	6.6	60	18.4	0	0
Contea	97	5.5	84	15.5	34	16.6	29	11.5	73	14.1	0	0
Dixie	81	18.4	97	5.5	45	14.1	48	4.6	77	14.5	0	0
Kentucky	100	0.0	100	0.0	54	21.1	49	2.2	11	12.6	11	9

Table 22. Days to 50% bloom of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	221	1	235	1	242	0	250	2	228	0	NA	NA
AU Sunrise	220	1	235	1	242	0	250	1	228	0	NA	NA
AU Sunup	217	1	232	0	238	0	247	2	228	0	NA	NA
Contea	224	1	236	1	242	0	258	3	228	0	NA	NA
Dixie	223	1	236	1	244	0	260	2	228	0	NA	NA
Kentucky	227	0	242	1	248	2	261	2	228	0	NA	NA

Table 23. Disease ranking at spring regrowth of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunrise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunup	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	NA	NA
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Dixie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Kentucky	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 24. Disease ranking at 50% bloom of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunrise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunup	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Dixie	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	NA	NA
Kentucky	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 25. Insect ranking at spring regrowth of crimson clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunrise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
AU Sunup	0.0	0.0	0.0	0.0	1.5	1.0	0.0	0.0	0.0	0.0	NA	NA
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Dixie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
Kentucky	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 26. Insect ranking at 50% bloom of crimson clover varieties by location												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.8	0.5	0.5	0.6	0.0	0.0	0.0	0.0	NA	NA
AU Sunrise	0.0	0.0	0.8	0.5	0.8	0.5	0.0	0.0	0.0	0.0	NA	NA
AU Sunup	0.0	0.0	0.5	0.6	1.0	0.8	0.0	0.0	0.0	0.0	NA	NA
Contea	0.0	0.0	0.8	0.5	0.5	0.6	0.0	0.0	0.0	0.0	NA	NA
Dixie	0.0	0.0	0.8	0.5	0.8	0.5	0.0	0.0	0.0	0.0	NA	NA
Kentucky	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA

DAIKON RADISH (*Raphanus sativus*)

Table 27. Performance of daikon radish averaged over the Northeast Region						
Variety	14-day emergence		28-day emergence		% Winter survival	
	Mean	SD	Mean	SD	Mean	SD
Big Dog	1.9	1.1	2.3	0.8	0.6	1.7
Concorde	1.9	1.1	2.8	0.5	8.2	23.4
Control	1.9	1.2	2.7	0.7	9.2	26.2
Defender	1.3	1.0	2.1	0.9	7.3	20.8
Driller	1.8	1.2	2.3	0.8	0.5	1.3
EcoTill	1.7	1.0	2.4	0.7	1.0	2.8
Graza	0.5	0.6	1.0	0.8	10.6	30.4
Groundhog	1.8	1.1	2.7	0.6	1.0	2.8
Lunch	1.3	0.9	2.0	1.0	0.6	1.7
Nitro	1.9	1.2	2.5	0.7	1.4	3.9
Sodbuster	1.5	1.1	2.0	0.9	2.7	6.5
Tillage	1.6	1.0	2.5	0.7	0.0	0.0

Table 28. 14-day emergence of daikon radish varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.3	0.5	3	0	1.5	0.6	1.8	0.5	3	0	0	0
Concorde	3.0	0	3	0	1	0	2.3	0.5	2	0	0	0
Control	3.0	0	3	0	1	0.8	1.5	0.6	3	0	0	0
Defender	1.3	1.0	2	0	0.5	0.6	2.3	0.5	2	0	0	0
Driller	2.5	0.6	2.8	0.5	0.8	0.5	1.5	0.6	3	0	0	0
Eco-Till	2.5	0.6	3	0	1	0	1.8	0.5	2	0	0	0
Graza	0.5	0.6	1.3	0.5	0	0	0.0	0.0	1	0	0	0
Groundhog	2.8	0.5	3	0	1	0	2.0	0.8	2	0	0	0
Lunch	1.5	0.6	2.3	0.5	0.5	0.6	1.5	0.6	2	0	0	0
Nitro	2.8	0.5	3	0	1	0	1.8	0.5	3	0	0	0
Sodbuster	1.8	0.5	2.3	0.5	0.5	0.6	1.8	0.5	3	0	0	0
Tillage	2.0	0	2.8	0.4	0.75	1.0	1.5	0.6	2	0	0	0

Table 29. 28-day emergence of daikon radish varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.3	0.5	3.0	0	1.0	0	2.8	0.5	2	0	3	0
Concorde	3.0	0.0	3.0	0	1.8	0.5	3.0	0	3	0	3	0
Control	3.0	0.0	3.0	0	1.8	1.0	2.5	1	3	0	3	0
Defender	1.3	1.0	2.0	0	1.0	0.0	3.0	0	3	0	2.5	0.6
Driller	2.5	0.6	2.8	0.5	1.0	0.0	2.5	1	2	0	3	0
Eco-Till	2.5	0.6	3.0	0	1.3	0.5	2.8	0.5	2	0	3	0
Graza	0.5	0.6	1.3	0.5	0.0	0.0	0.5	0.6	2	0	1.75	0.5
Groundhog	2.8	0.5	3.0	0	1.5	0.6	3.0	0	3	0	3	0
Lunch	1.5	0.6	2.3	0.5	0.5	0.6	3.0	0	2	0	3	0
Nitro	2.8	0.5	3.0	0	1.3	0.5	3.0	0	2	0	3	0
Sodbuster	1.8	0.5	2.3	0.5	0.5	0.6	3.0	0	2	0	2.5	0.6
Tillage	2.0	0.0	2.8	0.4	1.3	0.5	3.0	0	3	0	3	0

Table 30. Percent winter survival of daikon radishes varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Big Dog	4	9	0	0	0	0	0	0	0	0	0	0
Concorde	57	39	0	0	0	0	0	0	0	0	0	0
Control	64	25	0	0	0	0	0	0	0	0	0	0
Defender	51	45	0	0	0	0	0	0	0	0	0	0
Driller	3	7	0	0	0	0	0	0	0	0	0	0
Eco-Till	7	8	0	0	0	0	0	0	0	0	0	0
Graza	75	18	0	0	0	0	0	0	0	0	0	0
Groundhog	7	14	0	0	0	0	0	0	0	0	0	0
Lunch	4	9	0	0	0	0	0	0	0	0	0	0
Nitro	10	19	0	0	0	0	0	0	0	0	0	0
Sodbuster	16	24	0	0	0	0	0	0	0	0	0	0
Tillage	0	0	0	0	0	0	0	0	0	0	0	0

Table 31. Performance of hairy vetch averaged over the Northeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.3	1.2	2.0	0.9	83	24	249	12
Lana	1.2	1.5	2.5	0.9	67	33	235	7
Purple Bounty	1.1	1.3	2.0	1.1	77	27	248	12
Purple Prosperity	1.1	1.3	2.2	1.0	82	24	248	13
TNT	1.3	1.4	2.3	0.9	81	18	252	12
Villana	1.1	1.3	2.0	0.7	87	12	253	14

HAIRY VETCH *(Vicia villosa)*

Table 31 (cont.). Performance of hairy vetch averaged over the Northeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Lana	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5
Purple Prosperity	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4

Table 32. 14-day emergence of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	2.8	0.5	3	0	0	0	1.3	0.5	1	0	0	0
Lana	3.0	0.0	3	0	0	0	No data		0	0	0	0
Purple Bounty	2.8	0.5	3	0	0	0	0.8	0.5	0	0	0	0
Purple	2.5	0.6	3	0	0	0	1.3	0.5	0	0	0	0
TNT	2.8	0.5	3	0	0	0	1.5	0.6	0	0	0	0
Villana	2.3	0.5	3	0	0	0	1.5	0.6	0	0	0	0

Table 33. 28-day emergence of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	2.8	0.5	3	0	0.75	0.5	1.3	0.5	2	0	2.8	0.5
Lana	3.0	0	3	0	0.75	0.5	No data		3	0	2.8	0.5
Purple Bounty	2.8	0.5	3	0	0.25	0.5	1	0	2	0	1.8	1.0
Purple	2.5	0.6	3	0	0.5	0.6	1.3	0.5	3	0	2.8	0.5
TNT	2.8	0.5	3	0	0.75	0.5	1.5	0.6	3	0	2.8	0.5
Villana	2.3	0.5	3	0	1	0	1.5	0.6	2	0	2.3	0.5

Table 34. Percent winter hardiness of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
CCS Groff	97	6	100	0	58	44.9	73	20.	95	5.5	81	8.7
Lana	92	9.8	67	20.2	8	16.5	No data		89	7.7	78	6.4
Purple Bounty	100	0	100	0	32	22.1	61	9.5	89	11.4	79	10.6
Purple	98	4.5	100	0	51	43.7	70	11.3	84	7.6	89	6.1
TNT	100	0	97	7.6	50	6.1	71	3.5	83	8.7	84	4.3
Villana	97	6	97	6	77	22.6	84	4.1	90	3.6	79	2.2

Table 35. Days to 50% bloom of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	247	3	248	9	264	0	262	1	232	0	242	0
Lana	225	1	232	0	242	0	NA	N	232	0	242	0
Purple Bounty	245	0	244	1	266	0	262	1	232	0	242	0
Purple	244	2	247	8	264	0	263	0	230	0	242	0
TNT	247	3	255	7	265	0	266	1	235	0	242	0
Villana	245	0	258	0	272	0	269	1	235	0	242	0

Table 36. Disease ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 37. Disease ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 38. Insect ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 39. Insect ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	1.0	0.8	0.0	0.0	NA	N	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 40. Performance of red clover averaged over the Northeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	2.9	0.2	2.9	0.2	98	44	262	7
Cyclone II	2.6	0.2	2.6	0.2	88	40	260	5
Dynamite	3.0	0.0	3.0	0.0	86	41	258	6
Freedom	2.6	0.5	2.6	0.5	85	38	258	4
Kenland	1.8	0.4	1.8	0.2	90	43	258	6
Mammoth	2.3	0.7	2.3	0.7	80	38	273	9
Starfire II	1.4	0.5	1.4	0.4	93	42	259	5
Wildcat	2.6	0.5	2.6	0.5	86	39	261	6

RED CLOVER (*Trifolium repens*)

Table 40 (cont.). Performance of red clover averaged over the Northeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Cyclone II	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5
Dynamite	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Mammoth	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5
Starfire II	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.5
Wildcat	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5

Table 41. 14-day emergence of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	2.8	0.5	3.0	0	0	0	0.8	1	0	0	0	0
Cyclone II	2.5	1.0	2.8	0.5	0	0	1	0	0	0	0	0
Dynamite	3.0	0.0	3.0	0	0	0	1.5	1	0	0	0	0
Freedom	2.3	0.5	3.0	0	0	0	1.3	0.5	0	0	0	0
Kenland	1.5	0.6	2.0	0.8	0	0	1	0	0	0	0	0
Mammoth	1.8	1.0	2.8	0.5	0	0	1.3	0.5	0	0	0	0
Starfire II	1.0	0.8	1.8	0.5	0	0	0.5	0.6	0	0	0	0
Wildcat	2.3	0.5	3.0	0	0	0	1.3	0.5	0	0	0	0

Table 42. 28-day emergence of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	2.8	0.5	3	0	0.8	0.5	1.3	0.5	0	0	2	0.8
Cyclone II	2.5	1	2.8	0.5	0.5	0.6	1.5	0.6	0	0	1	0
Dynamite	3.0	0	3	0	0.8	0.5	2	0.8	0	0	1	0
Freedom	2.3	0.5	3	0	1	0	1.5	0.6	0	0	1.3	0.5
Kenland	1.8	0.5	2	0.8	0.3	0.5	1	0	0	0	0.5	0.6
Mammoth	1.8	1.0	2.8	0.5	1	0	2.3	0.5	0	0	1.8	0.5
Starfire II	1.3	0.5	1.8	0.5	0	0	1	0	0	0	0.5	0.6
Wildcat	2.3	0.5	3	0	0.3	0.5	1.5	1	0	0	1	0

Table 43. Percent winter hardiness of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cinnamon	97	4.1	100	0	14	12.9	66	7.4	0	0	0	0
Cyclone II	75	14.4	100	0	20	19.1	54	7.0	0	0	0	0
Dynamite	72	25.1	99	1.5	8	7.0	53	13.2	0	0	0	0
Freedom	74	16.1	96	6.7	20	3.6	46	12.7	0	0	0	0
Kenland	79	20.3	100	0	5	9.5	53	19.2	0	0	0	0
Mammoth	69	22.8	91	14.8	32	34.4	54	13.8	0	0	0	0
Starfire II	86	13.9	100	0	15	19.4	45	13.5	0	0	0	0
Wildcat	77	17.5	94	6.7	12	13.7	50	10.7	0	0	0	0

Table 44. Days to 50% bloom of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	259	0	256	4	NA	NA	270	2	NA	NA	NA	NA
Cyclone II	259	0	255	4	NA	NA	265	1	NA	NA	NA	NA
Dynamite	257	2	253	4	NA	NA	265	2	NA	NA	NA	NA
Freedom	256	1	254	3	NA	NA	263	2	NA	NA	NA	NA
Kenland	257	1	252	5	NA	NA	265	1	NA	NA	NA	NA
Mammoth	264	2	284	0	NA	NA	268	2	NA	NA	NA	NA
Starfire II	259	1	254	5	NA	NA	264	1	NA	NA	NA	NA
Wildcat	259	0	256	4	NA	NA	267	6	NA	NA	NA	NA

Table 45. Disease ranking at spring regrowth of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Cyclone II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Dynamite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Mammoth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Starfire II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Wildcat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 46. Disease ranking at spring regrowth of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Cyclone II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Dynamite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Mammoth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Starfire II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Wildcat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 47. Disease ranking at 50% bloom of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Cyclone II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Dynamite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Mammoth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Starfire II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Wildcat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 48. Insect ranking at spring regrowth of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Cyclone II	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Dynamite	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Freedom	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Kenland	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Mammoth	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA
Starfire II	0.0	0.0	0.0	0.0	0.3		0.0	0.0	NA	NA	NA	NA
Wildcat	0.0	0.0	0.0	0.0	0.0		0.0	0.0	NA	NA	NA	NA

Table 49. Insect ranking at 50% bloom of red clover varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Cyclone II	0.0	0.0	0.5	0.6	1.0	0.0	0.3	0.5	NA	NA	NA	NA
Dynamite	0.0	0.0	1.0	1.4	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Freedom	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Kenland	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Mammoth	0.0	0.0	0.8	0.5	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Starfire II	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Wildcat	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	NA	NA	NA	NA

Table 50. Performance of winter pea averaged over the Northeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.2	1.4	1.9	1.4	0	0	NA	NA
Dunn	1.5	1.4	2.3	1.1	0	0	NA	NA
Frost Master	1.1	1.3	1.8	1.4	13	25	250	2
Lynx	1.0	1.2	1.5	1.2	25	39	249	9
Maxum	1.1	1.3	1.6	1.3	0	0	NA	NA
Survivor 15	1.4	1.5	2.0	1.4	25	37	257	9
Whistler	1.1	1.3	1.5	1.2	21	36	244	3
Windham	1.1	1.3	1.7	1.3	24	35	251	10

WINTER PEA (*Pisum sativum*)

Table 50 (cont.). Performance of winter pea averaged over the Northeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dunn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Frost Master	0.7	1.3	4.0	1.1	0.0	0.0	0.0	0.0
Lynx	0.6	0.9	3.3	2.1	0.0	0.0	0.0	0.0
Maxum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Survivor 15	0.2	0.4	2.6	2.1	0.0	0.0	0.0	0.0
Whistler	0.3	0.7	3.9	1.0	0.0	0.0	0.0	0.0
Windham	0.4	0.7	3.9	2.2	0.0	0.0	0.0	0.0

Table 51. 14-day emergence of winter pea varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.8	0.5	3.0	0	0	0	1.5	0.6	0	0	0	0
Dunn	2.8	0.5	3.0	0	0	0	1.5	0.6	No Data		0	0
Frost Master	2.8	0.5	3.0	0	0	0	1.0	0	0	0	0	0
Lynx	1.8	0.5	3.0	0	0	0	1.0	0	0	0	0	0
Maxum	2.8	0.5	3.0	0	0	0	1.0	0	0	0	0	0
Survivor 15	3.0	0.0	3.0	0	0	0	2.5	1.0	0	0	0	0
Whistler	2.5	0.6	3.0	0	0	0	1.3	0.5	0	0	0	0
Windham	2.8	0.5	3.0	0	0	0	1.0	0.0	0	0	0	0

Table 52. 28-day emergence of winter pea varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.8	0.5	3	0	0	0	2.8	0.5	0	0	3	0
Dunn	2.8	0.5	3	0	0.3	0.5	2.5	0.6	No Data		3	0
Frost Master	2.8	0.5	3	0	0	0	2.0	0	0	0	3	0
Lynx	1.8	0.5	3	0	0	0	2.0	0	0	0	2.5	0.6
Maxum	2.8	0.5	3	0	0	0	1.3	0.5	0	0	2.5	0.6
Survivor 15	3.0	0	3	0	0	0	3.0	0	0	0	3	0
Whistler	2.5	0.6	3	0	0	0	1.8	0.5	0	0	2	0
Windham	2.8	0.5	3	0	0	0	1.8	0.5	0	0	2.5	0.6

Table 53. Percent winter hardiness of winter pea varieties by location.

Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Arvica 4010	0	0.0	0	0.0	0	0	0	0	0	0	0	0
Dunn	0	0.0	0	0.0	0	0	0	0	No Data		0	0
Frost Master	14	16.5	63	18.8	0	0	0	0	0	0	0	0
Lynx	70	47.6	74	25.1	0	0	9	10	0	0	0	0
Maxum	0	0.0	0	0.0	0	0	0	0	0	0	0	0
Survivor 15	83	21.8	47	50.7	0	0	22	5	0	0	0	0
Whistler	84	13.5	44	39.9	0	0	0	0	0	0	0	0
Windham	59	10.5	81	28.3	0	0	5	6	0	0	0	0

Table 54. Days to 50% bloom of winter pea varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dunn	NA	N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frost Master	NA	N	250	2	NA	NA	NA	NA	NA	NA	NA	NA
Lynx	245	N	243	0	NA	NA	263	1	NA	NA	NA	NA
Maxum	NA	N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survivor 15	245	N	250	2	NA	NA	266	1	NA	NA	NA	NA
Whistler	243	4	244	3	NA	NA	NA	NA	NA	NA	NA	NA
Windham	NA	N	245	4	NA	NA	264	4	NA	NA	NA	NA

Table 55. Disease ranking at spring regrowth of winter pea varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Dunn	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Frost Master	3.0	0	0	0	NA	NA	0	0	NA	NA	NA	NA
Lynx	1.8	0.5	0	0	NA	NA	0	0	NA	NA	NA	NA
Maxum	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Survivor 15	0.5	0.6	0	0	NA	NA	0	0	NA	NA	NA	NA
Whistler	1.0	0.8	0	0	NA	NA	0	0	NA	NA	NA	NA
Windham	1.3	0.6	0	0	NA	NA	0	0	NA	NA	NA	NA

Table 55. Disease ranking at 50% bloom of winter pea varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Dunn	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Frost Master	5.0	0	3.5	1	NA	NA	NA	N	NA	NA	NA	NA
Lynx	4.7	0.6	4	1.2	NA	NA	0	0	NA	NA	NA	NA
Maxum	NA	NA	0	0.0	NA	NA	NA	N	NA	NA	NA	NA
Survivor 15	4.8	0.5	3	0.0	NA	NA	0	0	NA	NA	NA	NA
Whistler	3.5	1	4.3	1.0	NA	NA	NA	N	NA	NA	NA	NA
Windham	5	0	5	0	NA	NA	0	0	NA	NA	NA	NA

Table 56. Insect ranking at spring regrowth of winter pea varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Dunn	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Frost Master	0	0	0	0	NA	NA	0	0	NA	NA	NA	NA
Lynx	0	0	0	0	NA	NA	0	0	NA	NA	NA	NA
Maxum	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Survivor 15	0	0	0	0	NA	NA	0	0	NA	NA	NA	NA
Whistler	0	0	0	0	NA	NA	0	0	NA	NA	NA	NA
Windham	0	0	0	0	NA	NA	0	0	NA	NA	NA	NA

Table 57. Insect ranking at 50% bloom of winter pea varieties by location.												
Variety	Maryland 2016-2017		Maryland 2017-2018		New York 2016-2017		New York 2017-2018		West Virginia 2016-2017		West Virginia 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Dunn	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Frost Master	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Lynx	0	NA	0	0	NA	NA	0	0	NA	NA	NA	NA
Maxum	NA	NA	0	0	NA	NA	NA	N	NA	NA	NA	NA
Survivor 15	0	NA	0	0	NA	NA	0	0	NA	NA	NA	NA
Whistler	0	0	0	0	NA	NA	NA	N	NA	NA	NA	NA
Windham	NA	NA	0	0	NA	NA	0	0	NA	NA	NA	NA

SOUTHEAST REGION DATA

Includes data for Brooksville, Florida, Americus, Georgia, and Coffeeville, Mississippi. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) and BLACK SEEDED OATS (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Southeast Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.6	0.8	2.7	0.5	99	2	170	40
Soil Saver	2.7	0.7	2.8	0.7	75	36	166	36

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the Southeast Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.3	0.5	1.8	1.7	0.0	0.0	0.0	0.0
Soil Saver	0.6	0.7	1.1	0.9	0.0	0.0	0.0	0.0

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3	0	2.8	0.5	1.5	1.3	3	0	3	0	2.5	0.6
Soil Saver	2.8	0.5	3	0	1.8	1.3	3	0	3	0	3	0

Table 3. 28-day emergence of black oats and black seeded oats by location.

Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3	0	3	0	2	0.8	2.3	0.6	3	0	3	0
Soil Saver	3	0	3	0	1.8	1.3	3	0	3	0	3	0

Table 4. Percent winter survival of black oats and black seeded oats by location.

Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cosaque	100	0	100	0	100	0	100	0	97	4.3	100	0
Soil Saver	100	0	100	0	100	0	98	2.9	17	14.2	38	13.6

Table 5. Days to 50% bloom of black oats and black seeded oats by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA	NA	121	0	195	1	175	0	170	0	206	4
Soil Saver	NA	NA	106	0	189	1	160	0	170	0	206	4

Table 6. Disease rating at spring regrowth of black oats and black seeded oats by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA	NA	NA	NA	0	0	0	0	1.0	0	0	0
Soil Saver	NA	NA	NA	NA	0	0	0	0	1.5	0.6	0.8	0.5

Table 7. Disease rating at 50% bloom of black oats and black seeded oats by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA	NA	0.8	1.5	4.0	0.0	3.0	0.0	1.0	0.0	0.0	0.0
Soil Saver	NA	NA	0.8	1.5	1.8	0.5	1.0	0.0	1.5	0.6	0.0	0.0

Table 8. Insect rating at spring regrowth of black oats and black seeded oats by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA	NA	NA	NA	0	0	0	0	0	0	0	0
Soil Saver	NA	NA	NA	NA	0	0	0	0	0	0	0	0

Table 9. Insect rating at 50% bloom of black oats and black seeded oats by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Soil Saver	NA	NA	0	0	0	0	0	0	0	0	NA	NA

CEREAL RYE (*Secale cereale*)

Table 10. Performance of cereal rye averaged over the Southeast Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.7	0.4	2.8	0.4	96	9	153	33
Bates	2.5	0.6	2.6	0.5	98	4	148	30
Brasetto	2.0	0.8	2.3	0.9	98	5	186	10
Elbon	2.6	0.7	2.7	0.4	99	2	151	35
FL 401	2.7	0.6	2.9	0.3	92	15	132	41
Guardian	1.6	1.3	1.6	1.3	98	8	191	11
Hazlet	2.2	1.1	2.2	1.1	99	4	181	36
Maton	2.6	0.6	2.7	0.6	95	9	148	34
Maton II	2.1	0.8	2.3	0.8	99	3	153	26
Merced	2.7	0.4	2.9	0.3	91	17	134	38
Oklon	2.3	0.8	2.5	0.7	96	8	155	26
Prima	2.4	0.7	2.4	0.8	100	0	190	12
Rymin	2.1	1.1	2.1	1.0	99	2	187	16
Wheeler	1.8	1.3	1.9	1.3	100	0	177	32
Wintergrazer 70	2.5	0.8	2.7	0.4	99	5	145	37
Wrens Abruzzi	2.4	0.8	2.7	0.7	97	10	145	33

Table 10 (cont.). Performance of cereal rye averaged over the Southeast Region

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.7	0.9	0.9	0.7	0.3	0.5	0.0	0.0
Bates	0.7	0.9	0.6	0.5	0.1	0.4	0.0	0.0
Brasetto	0.8	0.9	1.6	1.5	0.1	0.4	0.0	0.0
Elbon	0.5	0.5	0.9	0.8	0.1	0.4	0.0	0.0
FL 401	0.7	0.7	0.8	0.6	0.1	0.4	0.0	0.0
Guardian	0.5	0.5	1.8	1.3	0.3	0.5	0.0	0.0
Hazlet	0.6	0.6	1.7	1.4	0.2	0.4	0.0	0.0
Maton	0.6	0.6	1.1	0.8	0.1	0.4	0.0	0.0
Maton II	0.5	0.5	0.9	0.8	0.2	0.4	0.0	0.0
Merced	0.9	1.1	0.9	0.7	0.3	0.5	0.1	0.3
Oklon	0.9	1.1	1.0	0.7	0.3	0.6	0.0	0.0
Prima	0.0	0.0	3.1	1.1	0.0	0.0	0.0	0.0
Rymin	0.7	0.8	1.6	1.5	0.1	0.4	0.0	0.0
Wheeler	0.5	0.7	1.4	1.2	0.1	0.3	0.0	0.0
Wintergrazer 70	0.5	0.6	0.7	0.6	0.1	0.3	0.1	0.3
Wrens Abruzzi	0.5	0.5	0.7	0.5	0.2	0.4	0.0	0.0

Table 11. 14-day emergence of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3.0	0	2.5	0.6	2.5	0.6	2.7	0.6	3	0	2.8	0.5
Bates	No data		2.3	0.5	2.0	0.8	2.7	0.6	3	0	2.8	0.5
Brasetto	2.3	0.5	1	0.0	1.8	0.5	2.0	0.0	2.8	0.5	2.5	1.0
Elbon	3.0	0	1.8	0.5	2.3	1.0	3.0	0.0	3	0	2.5	0.6
FL 401	2.8	0.5	2.3	0.5	2.3	1.0	3.0	0.0	3	0	2.8	0.5
Guardian	3.0	0	0	0.0	2.3	0.5	1.0	0.0	3	0	0.0	0.0
Hazlet	2.8	0.5	0.5	0.6	1.8	1.3	3.0	0.0	3	0	2.3	1.0
Maton	3.0	0	2	0.0	2.0	0.8	3.0	0.0	3	0	2.8	0.5
Maton II	3.0	0	1	0.0	2.3	0.5	2.3	0.6	2.8	0.5	1.3	0.5
Merced	2.8	0.5	2.5	0.6	2.5	0.6	2.7	0.6	3	0	3.0	0.0
Oklon	3.0	0	1.3	0.5	2.0	0.8	2.7	0.6	3	0	2.3	0.5
Prima	3	0	NA	NA	2	0.8	2	0	NA	NA	NA	NA
Rymin	No data		0.25	0.5	2.3	0.5	2.7	0.6	3	0	2.3	1.0
Wheeler	3.0	0	0.5	0.6	1.5	1.3	3.0	0.0	3	0	0.3	0.5
Wintergrazer 70	3.0	0	1.3	0.5	2	0.8	3.0	0.0	3	0	2.8	0.5
Wren Abruzzi	2.3	1.5	1.8	0.5	2.3	0.5	2.7	0.6	3	0	2.8	0.5

Table 12. 28-day emergence of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3	0	2.5	0.6	2.8	0.5	2.3	0.6	3	0	3	0
Bates	No data		2.5	0.6	2.3	0.5	2.3	0.6	3	0	3	0
Brasetto	3	0	0.8	0.5	2.3	1.0	2.0	0.0	2.5	0.6	3	0
Elbon	3	0	2	0.0	2.8	0.5	2.7	0.6	3	0	3	0
FL 401	3	0	2.8	0.5	2.8	0.5	3.0	0.0	3	0	3	0
Guardian	3	0	0	0.0	2.0	0.8	1.0	0.0	3	0	0.5	0.6
Hazlet	3	0	0.5	0.6	1.8	1.3	2.3	0.6	2.8	0.5	2.8	0.5
Maton	3	0	2.5	0.6	2.0	0.8	2.7	0.6	3	0	3	0
Maton II	3	0	1	0.0	2.8	0.5	2.3	0.6	2.8	0.5	2	0.8
Merced	3	0	3	0.0	2.8	0.5	2.3	0.6	3	0	3	0
Oklon	3	0	1.5	0.6	2.5	0.6	2.3	0.6	3	0	2.8	0.5
Prima	3	0	NA	NA	2.5	0.6	1.3	0.6	NA	NA	NA	NA
Rymin	No data		0.5	0.6	2.3	0.5	2.0	0.0	3	0	2.8	0.5
Wheeler	3	0	0.8	1.0	1.8	1.3	2.7	0.6	3	0	0.3	0.5
Wintergrazer 70	3	0	2	0.0	2.5	0.6	3.0	0.0	3	0	3	0
Wren Abruzzi	2.3	1.5	2.8	0.5	2.5	0.6	2.7	0.6	3	0	3	0

Table 13. Percent winter survival of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
----------%----------												
Aroostook	100	0	100	0	100	0	100	0.0	89	11.8	90	13.7
Bates	NA	No	100	0	100	0	95	9.2	95	4.6	100	0.0
Brasetto	100	0	100	0	100	0	100	0.0	96	8.5	94	9.6
Elbon	100	0	100	0	100	0	100	0.0	97	2.2	97	3.8
FL 401	100	0	100	0	100	0	95	5.7	73	17.8	86	21.3
Guardian	100	0	100	0	100	0	88	21.4	100	0.0	97	6.0
Hazlet	100	0	100	0	100	0	94	9.8	100	0.0	100	0.0
Maton	100	0	100	0	100	0	86	12.4	91	13.2	91	10.5
Maton II	100	0	100	0	100	0	100	0.0	95	6.0	100	0.0
Merced	100	0	100	0	100	0	80	9.5	72	28.4	91	15.9
Oklon	100	0	100	0	100	0	98	3.5	94	12.5	87	12.3
Prima	100	0	Not planted		100	0	100	0.0	Not planted		Not planted	
Rymin	No data		100	0	100	0	100	0.0	98	5.0	100	0.0
Wheeler	100	0	100	0	100	0	100	0.0	100	0.0	100	0.0
Wintergrazer 70	100	0	100	0	100	0	99	1.7	95	11.0	100	0.0
Wrens Abruzzi	100	0	100	0	100	0	100	0 .0	82	17.0	100	0.0

Table 14. Disease ratings at spring regrowth of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	No data		NA		No data		0	0.0	1.0	0.0	1.8	1.0
Bates	No data		NA		No data		0	0.0	1.0	0.0	1.8	1.0
Brasetto	No data		NA		No data		0	0.0	1.0	0.0	2.0	0.8
Elbon	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
FL 401	No data		NA		No data		0	0.0	1.0	0.0	1.5	0.6
Guardian	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
Hazlet	No data		NA		No data		0	0.0	1.0	0.0	1.3	0.5
Maton	No data		NA		No data		0	0.0	1.0	0.0	1.3	0.5
Maton II	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
Merced	No data		NA		No data		0	0.0	1.0	0.0	2.5	0.6
Oklon	No data		NA		No data		0	0.0	1.0	0.0	2.3	1.0
Prima	No data		Not planted				0	0.0	No data			
Rymin	No data		NA		No data		0	0.0	1.0	0.0	1.5	1.0
Wheeler	No data		NA		No data		0	0.0	1.0	0.0	1.5	0.7
Wintergrazer 70	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.8
Wren Abruzzi	No data		NA		No data		0	0.0	1.0	0.0	0.8	0.5

Table 15. Disease ratings at 50% bloom of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	No data		0	0.0	1.3	0.5	2.0	0.0	1.0	0.0	0.5	0.6
Bates	No data		0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.3	0.5
Brasetto	No data		0	0.0	3.8	0.5	2.3	0.6	1.0	0.0	0.5	0.6
Elbon	No data		0	0.0	1.0	0.0	2.3	0.6	1.0	0.0	0.5	0.6
FL 401	No data		0	0.0	1.0	0.0	1.7	0.6	1.0	0.0	0.5	0.6
Guardian	No data		0	NA	3.8	0.5	2.0	0.0	1.0	0.0	0.8	0.5
Hazlet	No data		0	0.0	4.0	0.0	2.0	0.0	1.0	0.0	0.8	0.5
Maton	No data		0	0.5	1.0	0.0	2.7	0.6	1.0	0.0	0.8	0.5
Maton II	No data		0	0.0	1.0	0.0	2.3	0.6	1.0	0.0	0.8	0.5
Merced	No data		0	0.0	1.3	0.5	2.0	0.0	1.0	0.0	0.5	0.6
Oklon	No data		0	0.5	1.0	0.0	2.3	0.6	1.0	0.0	0.8	0.5
Prima	No data		No data		4.0	0.0	2.0	0.0	Not planted			
Rymin	No data		0	0.0	4.0	0.0	2.0	0.0	1.0	0.0	0.5	0.6
Wheeler	No data		0	0.0	3.3	0.5	2.0	0.0	1.0	0.0	0.7	0.6
Wintergrazer 70	No data		0	0.0	1.0	0.0	1.3	0.6	1.0	0.0	0.3	0.5
Wren Abruzzi	No data		0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.5	0.6

Table 16. Insect ratings at spring regrowth of cereal rye varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
Bates	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
Brasetto	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
Elbon	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
FL 401	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
Guardian	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
Hazlet	No data		NA		No data		0	0.0	1.0	0.0	0.8	0.5
Maton	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
Maton II	No data		NA		No data		0	0.0	1.0	0.0	0.8	0.5
Merced	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.0
Oklon	No data		NA		No data		0	0.0	1.0	0.0	1.0	0.8
Prima	No data		Not planted				0	0.0	No data			
Rymin	No data		NA		No data		0	0.0	1.0	0.0	0.5	0.6
Wheeler	No data		NA		No data		0	0.0	1.0	0.0	0.3	0.6
Wintergrazer 70	No data		NA		No data		0	0.0	1.0	0.0	0.3	0.5
Wren Abruzzi	No data		NA		No data		0	0.0	1.0	0.0	0.8	0.5

Table 17. Insect ratings at 50% bloom of cereal rye varieties by location												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Bates	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Brasetto	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Elbon	No data		0	0.0	No data		0	0.0	0	0.0	NA	
FL 401	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Guardian	No data		0	NA	No data		0	0.0	0	0.0	NA	
Hazlet	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Maton	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Maton II	No data		0	0.0	No data		0	0.0	0	0.0	NA	
Merced	No data		0	0.0	No data		0.3	0.6	0	0.0	NA	
Oklon	No data		0	0.0	No data		0.0	0.0	0	0.0	NA	
Prima	No data		Not planted						No data			
Rymin	No data		0	0.0	No data		0.0	0.0	0	0.0	NA	
Wheeler	No data		0	0.0	No data		0.0	0.0	0	0.0	NA	
Wintergrazer 70	No data		0	0.0	No data		0.3	0.6	0	0.0	NA	
Wren Abruzzi	No data		0	0.0	No data		0	0.0	0	0.0	NA	

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 18. Performance of crimson clover averaged over the Southeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.0	1.0	1.3	1.2	99	2	166	24
AU Sunrise	2.0	0.8	2.3	1.0	98	5	144	22
AU Sunup	0.6	0.8	0.8	0.9	99	5	138	39
Contea	1.0	0.9	0.9	0.8	99	3	173	26
Dixie	1.5	1.0	1.7	1.2	99	4	169	24
Kentucky Pride	2.0	0.7	2.2	0.8	98	5	176	17

Table 18 (cont.). Performance of crimson clover averaged over the Southeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.1	0.3	0.0	0.0	0.3	0.5
AU Sunrise	0.4	0.7	0.2	0.4	0.2	0.4	0.3	0.5
AU Sunup	0.6	0.5	0.4	0.5	0.3	0.5	0.4	0.5
Contea	0.7	1.0	0.7	0.9	0.1	0.3	0.3	0.5
Dixie	0.0	0.0	0.2	0.8	0.0	0.0	0.3	0.5
Kentucky Pride	0.0	0.0	0.4	1.3	0.0	0.0	0.2	0.4

Table 19. 14-day emergence of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.3	0.5	0.8	0.96	0.5	0.6	1.7	0.6	2.5	0.6	0.8	0.5
AU Sunrise	1.8	1.3	1.8	0.50	1.8	0.5	2.3	0.6	3.0	0.0	1.8	0.5
AU Sunup	0.5	1.0	0.0	0.00	0.0	0.0	1.0	0.0	1.8	0.5	0.3	0.5
Contea	1.5	1.3	0.3	0.50	1.8	0.5	1.3	0.6	1.3	0.5	0.0	0.0
Dixie	0.5	0.6	0.8	0.50	1.0	0.8	2.7	0.6	2.5	0.6	1.8	0.5
Kentucky Pride	1.8	1.0	2.3	0.50	1.5	0.6	2.0	0.0	2.8	0.5	1.5	0.6

Table 20. 28-day emergence of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.3	0.5	0.8	1.5	0.5	0.6	1.3	0.6	3.0	0	1.8	0.5
AU Sunrise	2.0	1.4	2.0	0.8	1.3	1.0	2.3	0.6	3.0	0	3.0	0
AU Sunup	0.5	1.0	0.0	0.0	0.0	0.0	1.0	0.0	2.0	0	1.3	0.5
Contea	1.5	1.3	0.3	0.5	1.0	0.8	1.3	0.6	1.3	0.5	0.3	0.5
Dixie	0.5	0.6	1.5	0.6	0.3	0.5	2.3	0.6	3.0	0	3.0	0
Kentucky Pride	1.5	1.0	2.3	0.5	1.5	0.6	1.7	0.6	3.0	0	3.0	0

Table 21. Percent winter hardiness of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
AU Robin	100	0	100	0	No data		99	1.7	98	5.0	100	0
AU Sunrise	100	0	100	0	No data		100	0	92	10.1	100	0
AU Sunup	100	0	100	0	No data		100	0	95	11.0	100	0
Contea	100	0	100	0	No data		100	0	97	5.5	100	0
Dixie	100	0	100	0	No data		100	0	96	8.5	100	0
Kentucky Pride	100	0	100	0	No data		100	0	91	7.0	100	0

Table 22. Days to 50% bloom of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA	NA	113		No date		151	0	167	0	189	17
AU Sunrise	156	NA	110	4	No date		144	0	154	0	165	8
AU Sunup	53	0	NA	NA	No date		140	0	154	0	163	6
Contea	NA	NA	113	NA	No date		154	0	181	0	194	18
Dixie	NA	NA	121	NA	No date		154	0	166	0	196	14
Kentucky Pride	NA	NA	NA	NA	No date		167	0	166	0	194	18

Table 23. Disease ranking at spring regrowth of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	No data		NA	NA	No data		0	0	0	0	0.0	0.0
AU Sunrise	No data		NA	NA	No data		0	0	0	0	1.0	0.8
AU Sunup	No data		NA	NA	No data		0	0	1	0	0.8	0.5
Contea	No data		NA	NA	No data		0	0	2	0	0.0	0.0
Dixie	No data		NA	NA	No data		0	0	0	0	0.0	0.0
Kentucky Pride	No data		NA	NA	No data		0	0	0	0	0.0	0.0

Table 24. Disease ranking at 50% bloom of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	No data		0	0	No data		0.3	0.6	0.0	0.0	0.0	0.0
AU Sunrise	No data		0	0	No data		0.7	0.6	0.0	0.0	0.3	0.5
AU Sunup	No data		NA	NA	No data		0.0	0.0	1.0	0.0	0.0	0.0
Contea	No data		0	0	No data		0.0	0.0	2.0	0.0	0.3	0.5
Dixie	No data		0.8	1.5	No data		0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	No data		1.3	2.5	No data		0.3	0.6	0.0	0.0	0.0	0.0

Table 25. Insect ranking at spring regrowth of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	No data		NA	NA	No data		0	0	0	0	0	0
AU Sunrise	No data		NA	NA	No data		0	0	0	0	0.5	0.6
AU Sunup	No data		NA	NA	No data		0	0	0	0	0.8	0.5
Contea	No data		NA	NA	No data		0	0	0	0	0.3	0.5
Dixie	No data		NA	NA	No data		0	0	0	0	0	0
Kentucky Pride	No data		NA	NA	No data		0	0	0	0	0	0

Table 26. Insect ranking at 50% bloom of crimson clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	No data		0	0	No data		1	0	0	0	NA	NA
AU Sunrise	No data		0	0	No data		1	0	0	0	NA	NA
AU Sunup	No data		NA	NA	No data		1	0	0	0	NA	NA
Contea	No data		0	0	No data		1	0	0	0	NA	NA
Dixie	No data		0	0	No data		1	0	0	0	NA	NA
Kentucky Pride	No data		0	0	No data		0.7	0.6	0	0	NA	NA

DAIKON RADISH (*Raphanus sativus*)

Table 27. Performance of daikon radish averaged over the Southeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	1.8	0.6	2.1	0.8	44	46	113	33
Concorde	2.2	0.5	2.2	0.9	83	26	133	38
Control	2.4	0.5	2.3	0.8	81	26	135	38
Defender	1.5	0.8	1.8	0.8	66	42	131	40
Driller	1.7	0.8	1.8	0.9	51	47	116	36
Eco-Till	1.9	0.6	2.0	0.8	58	49	125	42
Graza	0.5	0.7	0.5	0.7	84	32	158	14
Groundhog	2.0	0.7	2.2	1.0	58	48	112	34
Lunch	1.3	0.6	1.6	0.9	58	47	113	33
Nitro	1.9	0.8	2.0	0.7	56	50	119	43
Sodbuster	1.3	0.5	1.6	0.7	59	48	116	35
Tillage	1.8	0.6	2.1	0.8	56	50	113	33

Table 27 (cont.). Performance of daikon radish averaged over the Southeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	0.5	0.5	0.6	0.9	0.3	0.5	0.5	0.9
Concorde	1.0	0.5	1.2	1.0	0.5	0.5	0.4	0.7
Control	0.8	0.4	1.1	0.8	0.5	0.5	0.4	0.7
Defender	0.9	0.4	1.5	1.5	0.5	0.5	0.4	0.7
Driller	0.7	0.5	0.7	0.9	0.4	0.5	0.5	0.9
Eco-Till	0.7	0.5	0.7	0.9	0.3	0.5	0.5	0.9
Graza	0.7	0.5	0.9	0.8	0.3	0.5	0.3	0.5
Groundhog	0.9	0.4	0.8	0.9	0.4	0.5	0.5	0.9
Lunch	0.9	0.7	0.7	0.9	0.4	0.5	0.5	0.8
Nitro	0.7	0.8	0.7	1.0	0.4	0.5	0.5	0.8
Sodbuster	0.7	0.8	0.7	1.0	0.4	0.5	0.5	0.9
Tillage	0.9	0.7	0.8	1.0	0.3	0.5	0.5	0.9

Table 28. 14-day emergence of daikon radish varieties by location.

Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		1.5	0.58	1.0	0.0	2	0.6	2	0.0	2.3	0.5
Concorde	No data		2.3	0.50	1.8	0.5	2	0.6	2	0.5	2.5	0.6
Control	No data		2.0	0.00	2.0	0.0	3	0.0	3	0.5	2.5	0.6
Defender	1.5	0.6	0.8	0.50	1.5	0.6	2	0.0	3	0.6	0.8	0.5
Driller	1.0	0.8	1.8	0.50	1.3	0.5	3	0.6	2	0.0	2.0	0.8
Eco-Till	1.3	0.5	2.0	0.00	1.5	0.6	2	0.6	3	0.6	2.0	0.0
Graza	No data		0.0	0.00	0.3	0.5	1	0.6	1	0.8	0.3	0.5
Groundhog	1.8	1.0	2.0	0.00	1.3	0.5	3	0.6	3	0.6	2.0	0.0
Lunch	1.5	0.6	1.0	0.00	1.0	0.0	2	0.0	2	0.5	0.8	1.0
Nitro	1.0	0.0	2.0	0.82	1.3	0.5	3	0.0	2	0.0	2.5	0.6
Sodbuster	1.3	0.5	1.0	0.00	1.3	0.5	2	0.0	1	1.0	1.0	0.0
Tillage	1.8	0.5	1.5	0.58	1.3	0.5	3	0.6	2	0.5	2.0	0.0

Table 29. 28-day emergence of daikon radish varieties by location.

Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		2.0	0.0	0.8	0.5	2.3	0.6	2.5	0.6	2.8	0.5
Concorde	No data		2.5	0.6	0.8	0.5	2.0	0.0	2.8	0.5	2.8	0.5
Control	No data		2.3	0.5	1.0	0.0	2.3	0.6	2.8	0.5	3.0	0
Defender	2.5	0.6	1.0	0.0	1.0	0.0	2.0	0.0	2.8	0.5	1.8	0.5
Driller	1.5	1.3	1.8	0.5	0.8	0.5	2.0	0.0	2.3	0.5	2.8	0.5
Eco-Till	1.8	1.0	2.0	0.0	1.0	0.0	2.0	0.0	2.8	0.5	2.8	0.5
Graza	No data		0.0	0.0	0.3	0.5	1.0	0.0	1.3	1.0	0.3	0.5
Groundhog	2.3	1.0	2.8	0.5	0.5	0.6	2.0	0.0	2.8	0.5	3.0	0
Lunch	2.0	1.2	1.3	0.5	0.3	0.5	2.0	0.0	2.3	0.5	1.8	0.5
Nitro	1.5	0.6	2.3	0.5	1.0	0.0	2.0	0.0	2.3	0.5	2.8	0.5
Sodbuster	1.8	1.0	1.5	0.6	0.8	0.5	2.0	0.0	1.8	0.5	2.0	0
Tillage	2.5	0.6	2.3	0.5	0.8	0.5	2.0	0.0	2.3	0.5	2.8	0.5

Table 30. Percent winter survival of daikon radishes varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Big Dog	No data		100	0	No data		76	6.6	6	12.5	0	0.0
Concorde	No data		100	0	No data		100	0.0	92	16.5	44	7.1
Control	No data		100	0	No data		97	5.8	68	33.4	62	24.9
Defender	100	0	100	0	No data		100	0.0	33	15.0	8	16.5
Driller	100	0	100	0	No data		53	31.7	4	8.5	0	0.0
Eco-Till	100	0	100	0	No data		90	16.7	6	12.5	0	0.0
Graza	No data		100	0	No data		89	19.1	56	51.5	92	16.5
Groundhog	100	0	100	0	No data		83	28.9	13	25.0	0	0.0
Lunch	100	0	100	0	No data		88	10.8	12	14.2	0	0.0
Nitro	100	0	100	0	No data		86	24.8	0	0.0	0	0.0
Sodbuster	100	0	100	0	No data		87	23.1	17	33.5	0	0.0
Tillage	100	0	100	0	No data		89	19.1	0	0.0	0	0.0

Table 31. Days to 50% bloom of daikon radish varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		75	3	No data		119	0	147	0	NA	NA
Concorde	No data		76	3	No data		140	0	147	0	173	8
Control	No data		79	3	No data		140	0	147	0	177	4
Defender	No data		75	3	No data		140	0	147	0	177	4
Driller	No data		75	3	No data		119	0	154	0	NA	NA
Eco-Till	No data		75	3	No data		119	0	167	0	172	NA
Graza	No data		NA	NA	No data		151	0	147	0	176	4
Groundhog	No data		73	3	No data		119	0	147	0	NA	NA
Lunch	No data		75	3	No data		119	0	147	0	NA	NA
Nitro	No data		71	2	No data		119	0	167	0	NA	NA
Sodbuster	No data		76	2	No data		119	0	154	0	NA	NA
Tillage	No data		75	3	No data		119	0	147	0	NA	NA

Table 32. Disease ranking at spring regrowth of daikon radish varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		NA	NA	No data		1	0.0	0.3	0.5	0.0	NA
Concorde	No data		NA	NA	No data		1	0.0	1.0	0.8	1.0	NA
Control	No data		NA	NA	No data		1	0.0	1.0	0.0	0.3	0.6
Defender	No data		NA	NA	No data		1	0.0	1.0	0.0	0.0	NA
Driller	No data		NA	NA	No data		1	0.0	0.5	0.6	NA	NA
Eco-Till	No data		NA	NA	No data		1	0.0	0.5	0.6	NA	NA
Graza	No data		NA	NA	No data		1	0.0	0.5	0.6	NA	NA
Groundhog	No data		NA	NA	No data		1	0.0	0.8	0.5	NA	NA
Lunch	No data		NA	NA	No data		1	0.0	0.8	1.0	NA	NA
Nitro	No data		NA	NA	No data		1	0.0	0.5	1.0	NA	NA
Sodbuster	No data		NA	NA	No data		1	0.0	0.5	1.0	NA	NA
Tillage	No data		NA	NA	No data		1	0.0	0.8	1.0	NA	NA

Table 33. Disease ranking at 50% bloom of daikon radish varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		NA	NA	No data		2.0	0.0	0.3	0.5	NA	NA
Concorde	No data		NA	NA	No data		2.0	0.0	1.0	0.8	2.0	0.8
Control	No data		NA	NA	No data		2.0	0.0	1.0	0.0	1.8	0.5
Defender	No data		NA	NA	No data		2.0	0.0	1.0	0.0	3.3	1.5
Driller	No data		NA	NA	No data		2.0	0.0	0.5	0.6	NA	NA
Eco-Till	No data		NA	NA	No data		2.0	0.0	0.5	0.6	NA	NA
Graza	No data		NA	NA	No data		2.0	0.0	0.5	0.6	1.3	0.5
Groundhog	No data		NA	NA	No data		2.0	0.0	0.8	0.5	NA	NA
Lunch	No data		NA	NA	No data		1.7	0.6	0.8	1.0	NA	NA
Nitro	No data		NA	NA	No data		2.0	0.0	0.5	1.0	NA	NA
Sodbuster	No data		NA	NA	No data		2.0	0.0	0.5	1.0	NA	NA
Tillage	No data		NA	NA	No data		2.0	0.0	0.8	1.0	NA	NA

Table 34. Insect ranking at spring regrowth of daikon radish varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		NA	NA	No data		0.7	0.6	0.0	0.0	NA	NA
Concorde	No data		NA	NA	No data		1.0	0.0	0.0	0.0	1.0	NA
Control	No data		NA	NA	No data		0.7	0.6	0.0	0.0	1.0	0.0
Defender	No data		NA	NA	No data		1.0	0.0	0.0	0.0	1.0	NA
Driller	No data		NA	NA	No data		1.0	0.0	0.0	0.0	NA	NA
Eco-Till	No data		NA	NA	No data		0.7	0.6	0.0	0.0	NA	NA
Graza	No data		NA	NA	No data		0.7	0.6	0.0	0.0	NA	NA
Groundhog	No data		NA	NA	No data		1.0	0.0	0.0	0.0	NA	NA
Lunch	No data		NA	NA	No data		1.0	0.0	0.0	0.0	NA	NA
Nitro	No data		NA	NA	No data		1.0	0.0	0.0	0.0	NA	NA
Sodbuster	No data		NA	NA	No data		1.0	0.0	0.0	0.0	NA	NA
Tillage	No data		NA	NA	No data		0.7	0.6	0.0	0.0	NA	NA

Table 35. Insect ranking at 50% bloom of daikon radish varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA
Concorde	No data		0	0	No data		1.3	0.6	0.0	0.0	NA	NA
Control	No data		0	0	No data		1.3	0.6	0.0	0.0	NA	NA
Defender	No data		0	0	No data		1.3	0.6	0.0	0.0	NA	NA
Driller	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA
Eco-Till	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA
Graza	No data		0	0	No data		1.0	0.0	0.0	0.0	NA	NA
Groundhog	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA
Lunch	No data		0	0	No data		1.7	0.6	0.0	0.0	NA	NA
Nitro	No data		0	0	No data		1.7	0.6	0.0	0.0	NA	NA
Sodbuster	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA
Tillage	No data		0	0	No data		2.0	0.0	0.0	0.0	NA	NA

HAIRY VETCH (*Vicia villosa*)

Table 36. Performance of hairy vetch averaged over the Southeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.3	1.0	1.7	0.9	92	16	167	34
Lana	1.4	0.9	2.0	0.9	95	11	157	37
Purple Bounty	0.9	0.9	1.3	1.0	93	12	172	34
Purple Prosperity	1.3	0.9	1.9	0.9	97	8	171	31
TNT	1.5	0.8	2.1	0.9	96	10	187	39
Villana	1.4	0.7	1.9	0.9	95	10	180	31

Table 36 (cont.). Performance of hairy vetch averaged over the Southeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.5	0.7	0.0	0.0	0.1	0.3
Lana	0.0	0.0	0.8	1.1	0.0	0.0	0.1	0.3
Purple Bounty	0.0	0.0	0.7	0.9	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	1.0	1.0	0.1	0.3	0.3	0.8
TNT	0.0	0.0	0.9	1.3	0.1	0.3	0.0	0.0
Villana	0.0	0.0	0.6	0.9	0.0	0.0	0.2	0.4

Table 37. 14-day emergence of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.8	0.5	0.8	0.5	0	0	2.3	0.6	2.3	0.5	0.8	0.5
Lana	2.0	0	1.0	0	0	0	2.7	0.6	2.0	0.0	1.0	0.0
Purple Bounty	0.0	0	0.8	0.5	0	0	2.3	0.6	1.3	0.5	1.5	0.6
Purple	2.0	0	1.0	0	0	0	2.7	0.6	1.5	0.6	1.3	0.5
TNT	2.0	0	1.3	0.5	0	0	2.3	0.6	2.0	0.0	1.8	0.5
Villana	2.0	0	0.8	0.5	0.75	0.5	2.0	0.0	2.0	0.0	1.0	0.0

Table 38. 28-day emergence of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	2.8	0.5	1.3	0.5	0.8	0.96	2.0	0.0	2.3	0.5	1.5	0.6
Lana	3.0	0	1.8	0.5	0.8	0.96	23	0.6	2.8	0.5	1.8	0.5
Purple Bounty	0.0	0	1.5	0.6	0.5	0.58	2.0	0.0	1.8	0.5	2.0	1.2
Purple	3.0	0	1.5	0.6	0.8	0.50	2.3	0.6	2.5	0.6	1.5	0.6
TNT	3.0	0	1.8	0.5	0.8	0.96	2.0	0.0	2.5	0.6	2.8	0.5
Villana	2.8	0.5	1.0	0.0	1.3	0.96	2.0	0.0	2.8	0.5	1.5	0.6

Table 39. Percent winter hardiness of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
CCS Groff	100	0	100	0	100	0	74	9.8	85	31	90	11.5
Lana	100	0	100	0	100	0	83	16.5	97	7	87	18.9
Purple Bounty	100	0	100	0	100	0	69	12.2	97	7	87	12.0
Purple	100	0	100	0	100	0	97	5.8	95	10	92	16.5
TNT	100	0	100	0	100	0	77	12.1	100	0	94	12.5
Villana	100	0	100	0	100	0	82	13.9	95	10	90	12.6

Table 40. Days to 50% bloom of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA	NA	108	9	188	0	167	0	181	0	196	15
Lana	NA	NA	97	11	166	0	151	0	167	0	204	10
Purple Bounty	NA	NA	104	11	188	0	167	0	181	0	203	12
Purple	NA	NA	111	4	188	0	167	0	181	0	200	16
TNT	NA	NA	NA	NA	215	0	185	0	193	0	188	16
Villana	NA	NA	106	0	188	0	174	0	192	0	207	0

Table 41. Disease ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		NA		0	0	0	0	0	0	0	NA
Lana	NA		NA		0	0	0	0	0	0	0	0
Purple Bounty	NA		NA		0	0	0	0	0	0	0	0
Purple	NA		NA		0	0	0	0	0	0	0	0
TNT	NA		NA		0	0	0	0	0	0	0	NA
Villana	NA		NA		0	0	0	0	0	0	0	NA

Table 42. Disease ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA	NA	0.0	0.0	1.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0
Lana	NA	NA	0.0	0.0	2.0	0.0	2.3	0.6	0.0	0.0	0.0	0.0
Purple Bounty	NA	NA	1.0	1.7	1.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0
Purple	NA	NA	2.0	1.7	1.5	0.6	1.3	0.6	0.0	0.0	0.5	0.6
TNT	NA	NA	1.7	2.9	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Villana	NA	NA	0.0	0.0	1.5	0.6	1.3	1.2	0.0	0.0	0.0	0.0

Table 43. Insect ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA	NA	NA	NA	0	0	0	0	0	0	0.0	0.0
Lana	NA	NA	NA	NA	0	0	0	0	0	0	0.0	0.0
Purple Bounty	NA	NA	NA	NA	0	0	0	0	0	0	0.0	0.0
Purple	NA	NA	NA	NA	0	0	0	0	0	0	0.3	0.6
TNT	NA	NA	NA	NA	0	0	0	0	0	0	0.5	0.7
Villana	NA	NA	NA	NA	0	0	0	0	0	0	0.0	0.0

Table 44. Insect ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA	NA	0	0	0	0	0.3	0.6	0	0	NA	NA
Lana	NA	NA	0	0	0	0	0.3	0.6	0	0	NA	NA
Purple Bounty	NA	NA	0	0	0	0	0.0	0.0	0	0	NA	NA
Purple	NA	NA	1	1.7	0	0	0.3	0.6	0	0	NA	NA
TNT	NA	NA	0	0	0	0	0.0	0.0	0	0	NA	NA
Villana	NA	NA	0	0	0	0	1.0	0.0	0	0	NA	NA

RED CLOVER (*Trifolium repens*)

Table 45. Performance of red clover averaged over the Southeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.3	1.1	1.4	1.1	95	18	196	7
Cyclone II	1.2	1.0	1.6	1.3	98	4	193	5
Dynamite	1.2	1.2	1.3	1.3	98	8	195	6
Freedom	1.5	1.2	1.7	1.1	98	7	195	5
Kenland	0.9	0.9	1.1	1.1	97	12	182	43
Mammoth	1.3	1.1	1.4	1.2	97	9	205	20
Starfire II	0.6	0.9	0.7	1.0	98	7	176	55
Wildcat	1.5	1.1	1.7	1.1	96	9	198	8

Table 45 (cont.). Performance of red clover averaged over the Southeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4
Cyclone II	0.3	0.5	0.6	0.5	0.0	0.0	0.3	0.5
Dynamite	0.0	0.0	0.5	1.1	0.0	0.0	0.1	0.3
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Mammoth	0.4	0.5	0.6	0.7	0.0	0.0	0.3	0.5
Starfire II	0.6	0.5	0.5	0.5	0.0	0.0	0.1	0.4
Wildcat	0.1	0.4	0.2	0.4	0.0	0.0	0.2	0.4

Table 46. 14-day emergence of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.3	0.5	1.5	0.6	0.3	0.5	2	0	3	0	1	0
Cyclone II	0.8	1.0	1.0	1.2	0.3	0.5	2	0	2.5	0.6	1	0
Dynamite	0.8	1.0	0.8	1.5	0.0	0	1.7	0.6	3	0	1.3	1.0
Freedom	0.8	0.5	2.5	1.0	0.0	0	2	0	3	0	1	0.0
Kenland	0.5	0.6	0.3	0.5	0.0	0	2	0	2	0	0.8	1.0
Mammoth	No data		0.5	0.6	0.0	0	2	0	2.8	0.5	1.3	0.5
Starfire II	0.0	0.0	0.3	0.5	0.0	0	1.7	0.6	2.3	0.5	0.3	0.5
Wildcat	1.3	1.5	1.3	0.5	0.3	0.5	2	0	3	0	1.5	0.6

Table 47. 28-day emergence of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.3	0.5	1.5	0.6	0	0	1.7	0.6	3	0.0	2.0	0.0
Cyclone II	0.8	1.0	1.3	1.5	0.3	0.5	2.3	0.6	3	0.0	2.3	1.0
Dynamite	0.8	1.0	0.8	1.5	0	0	1.7	0.6	3	0.0	2.0	0.8
Freedom	0.8	0.5	2.3	1.0	0	0	2.0	0.0	3	0.0	2.3	0.5
Kenland	0.5	0.6	0.3	0.5	0	0	1.7	0.6	2.5	0.6	1.8	1.0
Mammoth	No data		0.3	0.5	0	0	2.0	0.0	3	0.0	2.0	0.0
Starfire II	0.0	0.0	0.3	0.5	0	0	1.3	0.6	2.5	0.6	1.3	0.5
Wildcat	1.3	1.5	1.3	0.5	0.5	0.6	2.0	0.0	3	0.0	2.3	0.5

Table 48. Percent winter hardiness of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cinnamon Plus	100	0	100	0	No data		72	45.1	98	4.0	100	0
Cyclone II	100	0	100	0	No data		98	4.0	93	5.4	100	0
Dynamite	100	0	100	0	No data		89	19.1	99	1.5	100	0
Freedom	100	0	100	0	No data		85	13.1	100	0.0	100	0
Kenland	100	0	100	0	No data		83	28.9	97	5.5	100	0
Mammoth	No data		100	0	No data		88	18.2	96	4.8	100	0
Starfire II	100	0	100	0	No data		87	16.3	97	6.0	100	0
Wildcat	100	0	100	0	No data		86	16.3	91	11.1	100	0

Table 49. Days to 50% bloom of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		No data		No data		199	0	189	0	200	8
Cyclone II	No data		No data		No data		192	0	189	0	197	7
Dynamite	No data		No data		No data		199	0	189	0	198	7
Freedom	No data		No data		No data		199	0	189	0	197	4
Kenland	No data		No data		No data		199	0	189	0	199	3
Mammoth	No data		No data		No data		227	0	189	0	NA	NA
Starfire II	No data		No data		No data		202	0	189	0	204	10
Wildcat	No data		No data		No data		199	0	189	0	205	5

Table 50. Disease ranking at spring regrowth of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		No data		No data		0	0.0	0	0	NA	NA
Cyclone II	No data		No data		No data		0	0.0	0.5	0.6	NA	NA
Dynamite	No data		No data		No data		0	0.0	0.0	0.0	NA	NA
Freedom	No data		No data		No data		0	0.0	0.0	0.0	NA	NA
Kenland	No data		No data		No data		0	0.0	0.0	0.0	NA	NA
Mammoth	No data		No data		No data		0	0.0	0.8	0.5	NA	NA
Starfire II	No data		No data		No data		0	0.0	1.0	0.0	NA	NA
Wildcat	No data		No data		No data		0	0.0	0.3	0.5	NA	NA

Table 51. Disease ranking at 50% bloom of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		0.0	0.0	No data		0.0	0.0	0.0	0.0	NA	NA
Cyclone II	No data		0.0	0.0	No data		1.0	0.0	0.5	0.6	NA	NA
Dynamite	No data		1.0	1.7	No data		0.7	1.2	0.0	0.0	NA	NA
Freedom	No data		0.0	0.0	No data		0.0	0.0	0.0	0.0	NA	NA
Kenland	No data		0.0	0.0	No data		0.0	0.0	0.0	0.0	NA	NA
Mammoth	No data		0.0	0.0	No data		0.7	1.2	0.8	0.5	NA	NA
Starfire II	No data		0.0	NA	No data		0.0	0.0	1.0	0.0	NA	NA
Wildcat	No data		0.0	0.0	No data		0.3	0.6	0.3	0.5	NA	NA

Table 52. Insect ranking at spring regrowth of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		No data		No data		0	0	0	0	NA	NA
Cyclone II	No data		No data		No data		0	0	0	0	NA	NA
Dynamite	No data		No data		No data		0	0	0	0	NA	NA
Freedom	No data		No data		No data		0	0	0	0	NA	NA
Kenland	No data		No data		No data		0	0	0	0	NA	NA
Mammoth	No data		No data		No data		0	0	0	0	NA	NA
Starfire II	No data		No data		No data		0	0	0	0	NA	NA
Wildcat	No data		No data		No data		0	0	0	0	NA	NA

Table 53. Insect ranking at 50% bloom of red clover varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		0	0	No data		0.7	0.6	0	0	NA	NA
Cyclone II	No data		0	0	No data		1.0	0.0	0	0	NA	NA
Dynamite	No data		0	0	No data		0.3	0.6	0	0	NA	NA
Freedom	No data		0	0	No data		0.7	0.6	0	0	NA	NA
Kenland	No data		0	0	No data		0.3	0.6	0	0	NA	NA
Mammoth	No data		0	0	No data		1.0	0.0	0	0	NA	NA
Starfire II	No data		0	0	No data		0.3	0.6	0	0	NA	NA
Wildcat	No data		0	0	No data		0.7	0.6	0	0	NA	NA

WINTER PEA (*Pisum sativum*)

Table 54. Performance of winter pea averaged over the Southeast Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.0	0.9	2.4	0.6	70	42	117	35
Dunn	2.0	0.5	2.3	0.5	61	47	116	36
Frost Master	1.7	0.7	2.3	0.6	95	9	153	58
Lynx	1.7	0.8	1.9	0.7	85	28	155	53
Maxum	1.7	0.7	2.2	0.8	69	39	116	36
Survivor 15	2.2	0.8	2.5	0.5	89	22	192	13
Whistler	1.8	0.6	2.3	0.6	92	18	153	52
Windham	1.9	0.7	2.2	0.7	93	20	147	51

Table 54 (cont.). Performance of winter pea averaged over the Southeast Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.7	1.0	1.0	1.0	0.0	0.0	0.2	0.4
Dunn	0.4	0.8	0.8	1.0	0.0	0.0	0.2	0.4
Frost Master	0.1	0.3	0.8	1.3	0.0	0.0	0.3	0.5
Lynx	0.4	0.5	0.7	0.9	0.0	0.0	0.2	0.4
Maxum	0.4	0.8	1.1	1.1	0.0	0.0	0.2	0.4
Survivor 15	0.0	0.0	0.9	1.5	0.0	0.0	0.4	0.5
Whistler	0.4	0.5	0.8	0.9	0.0	0.0	0.2	0.4
Windham	0.3	0.5	0.7	0.9	0.0	0.0	0.2	0.4

Table 55. 14-day emergence of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.3	0.5	2.3	0.5	2.5	0.6	2.3	0.6	2.5	0.6	0.5	0.6
Dunn	2.3	0.5	2.0	0.0	2.0	0.0	2.7	0.6	2.0	0.0	1.3	0.5
Frost Master	2.0	0.0	1.3	0.5	2.0	0.0	2.3	0.6	2.0	0.0	0.8	1.0
Lynx	2.0	0.0	1.0	0.0	2.3	0.5	2.3	0.6	2.0	0.0	0.8	1.0
Maxum	2.0	0.0	2.0	0.0	1.5	1.3	2.0	0.0	2.0	0.0	1.0	0.8
Survivor 15	2.3	0.5	No data		2.3	1.0	2.7	0.6	2.8	0.5	1.3	0.5
Whistler	2.0	0.0	1.5	0.6	1.8	0.5	2.0	0.0	2.3	0.5	1.3	1.0
Windham	1.8	0.5	2.3	1.0	1.8	0.5	2.7	0.6	2.0	0.0	1.0	0.0

Table 56. 28-day emergence of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	3.0	0.0	2.3	0.5	2.0	0.0	2.0	0.0	3.0	0.0	2.0	0.8
Dunn	3.0	0.0	2.0	0.0	1.8	0.5	2.0	0.0	2.8	0.5	2.0	0.0
Frost Master	3.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	3.0	0.0	1.5	0.6
Lynx	2.8	0.5	1.3	0.5	2.0	0.0	2.3	0.6	2.0	0.0	1.3	0.5
Maxum	3.0	0.0	2.0	0.8	1.3	1.0	2.0	0.0	3.0	0.0	1.8	0.5
Survivor 15	3.0	0.0	No data		2.0	0.0	2.0	0.0	3.0	0.0	2.5	0.6
Whistler	3.0	0.0	2.3	0.5	1.8	0.5	2.0	0.0	3.0	0.0	2.0	0.8
Windham	3.0	0.0	2.3	0.5	1.8	0.5	2.0	0.0	2.8	0.5	1.3	0.5

Table 57. Percent winter hardiness of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Arvica 4010	100	0.0	100	0.0	No data		93	14.4	38	28.6	25	50.0
Dunn	100	0.0	100	0.0	No data		5	27.2	25	50.0	25	50.0
Frost Master	100	0.0	100	0.0	No data		90	10.0	96	8.5	89	14.2
Lynx	100	0.0	100	0.0	No data		96	6.4	87	16.2	47	41.4
Maxum	100	0.0	100	0.0	No data		77	11.0	45	18.2	25	50.0
Survivor 15	100	0.0	No data		No data		90	17.3	95	10.0	70	36.7
Whistler	100	0.0	100	0.0	No data		94	9.8	100	0.0	69	30.8
Windham	100	0.0	100	0.0	No data		100	0.0	100	0.0	69	37.5

Table 58. Days to 50% bloom of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		76	3	No data		122	0	154	0	NA	NA
Dunn	NA		73	3	No data		122	0	154	0	NA	NA
Frost Master	53		92	0	No data		185	0	181	0	210	7
Lynx	53		92	0	No data		167	0	181	0	210	12
Maxum	NA		75	3	No data		122	0	154	0	NA	NA
Survivor 15	NA		NA				No	189	0	181	0	211
Whistler	53		92	0	No data		167	0	167	0	213	7
Windham	53		92	0	No data		167	0	147	0	210	12

Table 59. Disease ranking at spring regrowth of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		No data		No data		0	0	1.3	1.0	NA	NA
Cyclone II	No data		No data		No data		0	0	0.8	1.0	NA	NA
Dynamite	No data		No data		No data		0	0	0.3	0.5	0	0
Freedom	No data		No data		No data		0	0	1.0	0.0	0	0
Kenland	No data		No data		No data		0	0	0.8	1.0	NA	NA
Mammoth	No data		No data		No data		0	0	0.0	0.0	0	0
Starfire II	No data		No data		No data		0	0	1.0	0.0	0	0
Wildcat	No data		No data		No data		0	0	0.8	0.5	0	0

Table 60. Disease ranking at 50% bloom of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		0.8	1.5	No data		1.0	0.0	1.3	1.0	NA	NA
Cyclone II	No data		0.8	1.5	No data		1.0	0.0	0.8	1.0	NA	NA
Dynamite	No data		0.8	1.5	No data		2.7	0.6	0.3	0.5	0	0
Freedom	No data		0.8	1.5	No data		1.0	1.0	1.0	0.0	0	0
Kenland	No data		1.5	1.7	No data		1.0	0.0	0.8	1.0	NA	NA
Mammoth	No data		NA	NA	No data		3.0	1.0	0.0	0.0	0	0
Starfire II	No data		0.8	1.5	No data		1.7	0.6	1.0	0.0	0	0
Wildcat	No data		0.8	1.5	No data		1.3	0.6	0.8	0.5	0	0

Table 61. Insect ranking at spring regrowth of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		No data		No data		0	0	0	0	NA	NA
Cyclone II	No data		No data		No data		0	0	0	0	NA	NA
Dynamite	No data		No data		No data		0	0	0	0	0	0
Freedom	No data		No data		No data		0	0	0	0	0	0
Kenland	No data		No data		No data		0	0	0	0	0	NA
Mammoth	No data		No data		No data		0	0	0	0	0	0
Starfire II	No data		No data		No data		0	0	0	0	0	0
Wildcat	No data		No data		No data		0	0	0	0	0	0

Table 62. Insect ranking at 50% bloom of winter pea varieties by location.												
Variety	Florida 2016-2017		Florida 2017-2018		Georgia 2016-2017		Georgia 2017-2018		Mississippi 2016-2017		Mississippi 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	No data		0	0	No Data		0.7	0.6	0	0	NA	NA
Cyclone II	No data		0	0	No Data		0.7	0.6	0	0	NA	NA
Dynamite	No data		0	0	No Data		1.0	0.0	0	0	NA	NA
Freedom	No data		0	0	No Data		0.7	0.6	0	0	NA	NA
Kenland	No data		0	0	No Data		0.7	0.6	0	0	NA	NA
Mammoth	No data		NA	NA	No Data		1.0	0.0	0	0	NA	NA
Starfire II	No data		0	0	No Data		0.7	0.6	0	0	NA	NA
Wildcat	No data		0	0	No Data		0.7	0.6	0	0	NA	NA

NORTH CENTRAL REGION DATA

Includes data for Manhattan, Kansas, East Lansing, Michigan, and Elsberry, Missouri. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) **and BLACK SEEDED OATS** (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Northcentral Region

Variety	14-day emergence		28-day emergence		% Winter survival	
	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.31	0.79	2.55	0.69	37.40	34.11
Soil Saver	2.44	0.63	2.45	0.76	4.20	8.90

Table 1 (cont.). 14-day emergence of black oats and black seeded oats by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	1.3	0.5	3	0.0	2.3	0.5	NA	
Soil Saver	3	0.0	1.8	0.5	3	0.0	2	0	NA	

Table 2. 28-day emergence of black oats and black seeded oats by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3	0.0	2	0.0	3	0.0	1.8	1.0	3	0.0
Soil Saver	3	0.0	2	0.0	3	0.0	2	0.5	NA	

Table 3. Percent winter hardiness of black oats and black seeded oats by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
Cosaque	67	8	0	0.0	62	8	52	36	3	3
Soil Saver	21	6	0	0.0	0	0.0	0	0.0	0	0.0

Table 4. Days to 50% bloom of black oats and black seeded oats by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	250	0.0	NA		269	0.0	260	0.0	253	5.2
Soil Saver	NA	NA	NA		NA	NA	NA	NA	NA	NA

Table 5. Disease ranking at spring regrowth of black oats and black seeded oats by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3.5	1	NA		0		0	0	NA	
Soil Saver	5	0	NA		NA		0	0	NA	

Table 6. Disease ranking at 50% bloom of black oats and black seeded oats by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	5	0	NA		NA		NA		1	0
Soil Saver	5	0	NA		NA		NA		NA	NA

Table 7. Insect ranking at spring regrowth of black oats and black seeded oats by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	NA		0		1		NA	
Soil Saver	0	0	NA		NA		NA		NA	

Table 8. Insect ranking at 50% bloom of black oats and black seeded oats by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	NA		0	0	0	0	0	0
Soil Saver	0	0	NA		NA		NA		NA	

CEREAL RYE (*Secale cereale*)

Table 9. Performance of cereal rye averaged over the Northcentral Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.4	0.7	2.8	0.6	86	20	238	10
Bates	2.6	0.6	2.8	0.5	78	24	239	11
Brasetto	1.8	0.9	2.3	0.8	81	18	244	6
Elbon	2.3	0.8	2.6	0.6	83	21	239	10
FL 401	2.3	0.8	2.7	0.6	47	39	234	8
Guardian	2.0	0.9	2.1	0.9	88	16	251	14
Hazlet	2.2	0.7	2.5	0.7	82	21	245	8
Maton	2.3	0.9	2.5	0.7	78	23	239	10
Maton II	2.2	0.8	2.8	0.5	82	23	239	10
Merced	2.5	0.5	2.6	0.6	58	43	234	8
Oklon	2.2	1.0	2.8	0.6	81	20	240	10
Rymin	2.0	1.2	2.6	0.8	77	25	243	10
Wheeler	2.0	1.1	2.6	0.7	82	18	250	14
Wintergrazer 70	2.4	0.7	2.9	0.3	86	20	240	10
Wrens Abruzzi	2.3	0.8	2.6	0.6	78	30	238	10

Table 9(cont.). Performance of cereal rye averaged over the Northcentral Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.1	0.4	0.0	0.0	0.0	0.2
Bates	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.2
Brasetto	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.2
Elbon	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.2
FL 401	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guardian	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.2
Hazlet	0.0	0.0	0.5	1.1	0.0	0.0	0.1	0.3
Maton	0.0	0.0	0.3	0.7	0.0	0.0	0.0	0.2
Maton II	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.2
Merced	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oklon	0.0	0.0	0.2	0.7	0.0	0.0	0.0	0.2
Rymin	0.0	0.0	0.5	0.9	0.0	0.0	0.0	0.2
Wheeler	0.0	0.0	0.5	0.8	0.0	0.0	0.0	0.2
Wintergrazer 70	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.2
Wrens Abruzzi	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.2

Table 10. 14-day emergence of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.5	0.6	3	0.0	3	0.0	3.0	0.0	ND	
Bates	2.3	1.0	3	0.0	3	0.0	3.0	0.0	ND	
Brasetto	1.5	1.0	3	0.0	3	0.0	2.8	0.5	ND	
Elbon	2.5	0.6	3	0.0	3	0.0	2.8	0.5	ND	
FL 401	2.3	0.5	3	0.0	3	0.0	3.0	0.0	ND	
Guardian	0.0	0.0	0	0.0	3	0.0	0.8	0.5	ND	
Hazlet	2.3	0.5	3	0.0	3	0.0	2.3	0.5	ND	
Maton	2.5	1.0	3	0.0	3	0.0	3.0	0.0	ND	
Maton II	2.0	0.8	3	0.0	3	0.0	3.0	0.0	ND	
Merced	2.5	0.6	3	0.0	3	0.0	3.0	0.0	ND	
Oklon	2.3	1.5	3	0.0	3	0.0	2.8	0.5	ND	
Prima	Not planted						2.8	0.5	Not planted	
Rymin	2.8	0.5	3	0.0	2	0.0	0.5	0.6	ND	
Wheeler	2.5	1.0	3	0.0	2.8	0.5	3.0	0.0	ND	
Wintergrazer 70	2.3	1.0	3	0.0	3	0.0	2.8	0.5	ND	
Wrens Abruzzi	2.5	0.6	3	0.0	3	0.0	3.0	0.0	ND	

Table 11. 28-day emergence of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.8	0.5	3	0.0	3	0.0	2.3	0.0	3.0	0.0
Bates	2.8	0.5	3	0.0	3	0.0	2.5	0.0	3.0	0.0
Brasetto	2.0	0.0	3	0.0	3	0.0	2.3	0.5	3.0	0.0
Elbon	2.8	0.5	3	0.0	3	0.0	2.3	0.5	2.5	0.6
FL 401	2.8	0.5	3	0.0	3	0.0	2.3	0.0	3.0	0.0
Guardian	0.3	0.5	0	0.0	3	0.0	0.5	0.5	2.5	1.0
Hazlet	2.5	0.6	3	0.0	3	0.0	2.0	0.5	2.3	1.0
Maton	2.8	0.5	3	0.0	3	0.0	2.3	0.0	3.0	0.0
Maton II	3.0	0.0	3	0.0	3	0.0	2.5	0.0	2.3	1.0
Merced	3.0	0.0	3	0.0	3	0.0	2.3	0.0	2.8	0.5
Oklon	2.8	0.5	3	0.0	3	0.0	2.8	0.5	2.5	0.6
Prima	Not planted						2.3	0.5	Not planted	
Rymin	3.0	0.0	3	0.0	3	0.0	NA	0.6	3.0	0.0
Wheeler	2.8	0.5	3	0.0	3	0.0	2.5	0.0	3.0	0.0
Wintergrazer 70	2.8	0.5	3	0.0	3	0.0	2.8	0.5	2.5	1.0
Wrens Abruzzi	3.0	0.0	3	0.0	3	0.0	2.5	0.0	3.0	0.6

Table 12. Percent winter hardiness of cereal rye varieties by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
Aroostook	99	2.5	99	1.5	88	15.5	91	14.3	67	20.0
Bates	99	1.5	100	0.0	80	22.9	91	17.5	70	28.2
Brasetto	100	0.0	100	0.0	78	22.1	73	23.0	78	14.6
Elbon	94	5.4	100	0.0	89	8.8	85	20.4	81	29.3
FL 401	6	2.2	6	11.5	38	8.1	48	29.3	15	19.4
Guardian	0	0.0	0	0.0	65	22.4	81	32.1	87	13.6
Hazlet	100	0.0	99	1.5	85	4.2	83	19.8	91	13.7
Maton	92	9.6	100	0.0	84	18.4	82	13.6	69	19.4
Maton II	100	0.0	100	0.0	85	11.2	68	12.5	60	15.9
Merced	2	1.7	4	7.0	32	4.7	30	23.7	6	7.5
Oklon	96	5.4	100	0.0	71	6.2	86	8.6	84	24.3
Prima	Not planted						82	21.9	Not planted	
Rymin	99	1.5	100	1.5	75	9.9	95	6.0	75	24.0
Wheeler	98	3.3	99	0.0	69	17.3	76	16.5	78	26.0
Wintergrazer 70	95	6.2	100	0.0	74	9.6	98	4.0	71	15.2
Wrens Abruzzi	97	4.8	100	0.0	76	12.5	89	9.8	60	14.9

Table 13. Days to 50% bloom of cereal rye varieties by location.

Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	213	0.0	238	0.0	244	0.0	234	3.5	246	0.5
Bates	213	0.0	238	0.0	244	0.0	232	0.0	246	1.9
Brasetto	210	0.0	230	0.0	244	0.0	237	3.5	241	0.0
Elbon	213	0.0	242	0.0	244	0.0	232	0.0	247	0.5
FL 401	NA	NA	230	NA	244	0.0	64	0.0	241	0.0
Guardian	NA	NA	NA	NA	244	0.0	235	2.0	241	0.0
Hazlet	226	0.0	238	0.0	244	0.0	239	0.0	241	0.0
Maton	213	0.0	242	0.0	244	0.0	232	0.0	247	0.8
Maton II	213	0.0	242	0.0	244	0.0	232	0.0	247	0.5
Merced	NA	NA	230	NA	244	0.0	64	0.0	241	0.5
Oklon	213	0.0	238	0.0	244	0.0	232	0.0	247	1.0
Prima	Not planted						237	1.5	Not planted	
Rymin	204	0.0	238	0.0	234	0.0	222	0.0	241	0.0
Wheeler	218	0.0	238	0.0	244	0.0	232	0.0	243	1.9
Wintergrazer 70	213	0.0	242	0.0	244	0.0	232	0.0	246	1.9
Wrens Abruzzi	213	0.0	238	0.0	244	0,0	232	0.0	247	0.6

Table 14. Disease ranking at spring regrowth of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	NA		0	0	0	0	NA	
Bates	0	0	NA		0	0	0	0	NA	
Brasetto	0	0	NA		0	0	0	0	NA	
Elbon	0	0	NA		0	0	0	0	NA	
FL 401	0	0	NA		0	0	0	0	NA	
Guardian	0	0	NA		0	0	0	0	NA	
Hazlet	0	0	NA		0	0	0	0	NA	
Maton	0	0	NA		0	0	0	0	NA	
Maton II	0	0	NA		0	0	0	0	NA	
Merced	NA	0	NA		0	0	0	0	NA	
Oklon	0	0	NA		0	0	0	0	NA	
Prima	Not planted						0	0	Not planted	
Rymin	0	0	NA		0	0	0	0	NA	
Wheeler	0	0	NA		0	0	0	0	NA	
Wintergrazer 70	0	0	NA		0	0	0	0	NA	
Wrens Abruzzi	0	0	NA		0	0	0	0	NA	

Table 15. Disease ranking at 50% bloom of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	NA		0	0	0	0	1.0	0.0
Bates	0	0	NA		0	0	0	0	1.0	0.0
Brasetto	0	0	NA		0	0	0	0	1.5	1.0
Elbon	0	0	NA		0	0	0	0	1.0	0.0
FL 401	0	0	NA		0	0	0	0	1.0	0.0
Guardian	NA	0	NA		0	0	0	0	2.0	1.2
Hazlet	0	0	NA		0	0	0	0	2.5	1.0
Maton	0	0	NA		0	0	0	0	1.0	0.0
Maton II	0	0	NA		0	0	0	0	1.0	0.0
Merced	NA	0	NA		0	0	0	0	1.5	1.0
Oklon	0	0	NA		0	0	0	0	1.0	0.0
Prima	Not planted						0	0	Not planted	
Rymin	0	0	NA		0	0	0	0	1.5	1.0
Wheeler	0	0	NA		0	0	0	0	0.8	0.5
Wintergrazer 70	0	0	NA		0	0	0	0	1.0	0.0
Wrens Abruzzi	0	0	NA		0	0	0	0	1.0	0.0

Table 16. Insect ranking at spring regrowth of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	NA		0	0	0	0	NA	
Bates	0	0	NA		0	0	0	0	NA	
Brasetto	0	0	NA		0	0	0	0	NA	
Elbon	0	0	NA		0	0	0	0	NA	
FL 401	0	0	NA		0	0	0	0	NA	
Guardian	0	0	NA		0	0	0	0	NA	
Hazlet	0	0	NA		0	0	0	0	NA	
Maton	0	0	NA		0	0	0	0	NA	
Maton II	0	0	NA		0	0	0	0	NA	
Merced	NA	0	NA		0	0	0	0	NA	
Oklon	0	0	NA		0	0	0	0	NA	
Prima	Not planted						0	0	Not planted	
Rymin	0	0	NA		0	0	0	0	NA	
Wheeler	0	0	NA		0	0	0	0	NA	
Wintergrazer 70	0	0	NA		0	0	0	0	NA	
Wrens Abruzzi	0	0	NA		0	0	0	0	NA	

Table 17. Insect ranking at 50% bloom of cereal rye varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0	NA		0	0	0	0	0.3	0.5
Bates	0	0	NA		0	0	0	0	0.0	0.0
Brasetto	0	0	NA		0	0	0	0	0.0	0.0
Elbon	0	0	NA		0	0	0	0	0.3	0.5
FL 401	0	0	NA		0	0	0	0	0.5	0.6
Guardian	0	0	NA		0	0	0	0	0.5	0.6
Hazlet	0	0	NA		0	0	0	0	0.3	0.5
Maton	0	0	NA		0	0	0	0	0.0	0.0
Maton II	0	0	NA		0	0	0	0	0.3	0.5
Merced	NA	0	NA		0	0	0	0	0.3	0.5
Oklon	0	0	NA		0	0	0	0	0.0	0.0
Prima	Not planted						0	0	Not planted	
Rymin	0	0	NA		0	0	0	0	0.3	0.5
Wheeler	0	0	NA		0	0	0	0	0.0	0.5
Wintergrazer 70	0	0	NA		0	0	0	0	0.0	0.0
Wrens Abruzzi	0	0	NA		0	0	0	0	0.0	0.0

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 18. Performance of crimson clover averaged over the Northcentral Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.8	0.9	1.7	0.9	56	44	227	14
AU Sunrise	1.9	1.0	1.9	0.8	59	42	228	14
AU Sunup	1.4	1.2	1.6	0.9	51	47	227	14
Contea	1.6	1.1	1.6	0.9	67	40	228	15
Dixie	1.7	0.9	1.7	0.8	64	45	228	15
Kentucky Pride	2.1	1.0	2.0	1.0	71	41	232	15

Table 18 (cont.). Performance of crimson clover averaged over the Northcentral Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.1	0.4	0.0	0.0	0.1	0.4
AU Sunrise	0.0	0.0	0.1	0.4	0.0	0.0	0.1	0.3
AU Sunup	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Contea	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.3
Dixie	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.3
Kentucky Pride	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.3

Table 19. 14-day emergence of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.0	0.0	1.0	0.0	3.0	0.0	2.3	0.5	NA	
AU Sunrise	1.5	0.6	0.8	0.5	3.0	0.0	2.3	0.5	NA	
AU Sunup	0.0	0.0	0.8	0.5	3.0	0.0	2.0	0.0	NA	
Contea	1.0	0.0	0.3	0.5	3.0	0.0	2.3	0.5	NA	
Dixie	1.0	0.0	0.8	0.5	3.0	0.0	2.0	0.0	NA	
Kentucky Pride	1.5	0.6	1.0	0.0	3.0	0.0	3.0	0.0	NA	

Table 20. 28-day emergence of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.3	0.5	1.0	0.0	3.0	0.0	2.3	0.5	0.8	0.5
AU Sunrise	2.0	0.8	1.0	0.0	3.0	0.0	2.0	0.0	1.3	0.5
AU Sunup	0.5	0.6	1.0	0.0	3.0	0.0	2.0	0.0	1.3	0.5
Contea	1.3	0.5	0.5	0.6	3.0	0.0	2.0	0.0	1.0	0.0
Dixie	1.3	0.5	1.0	0.0	3.0	0.0	2.0	0.0	1.3	0.5
Kentucky Pride	1.8	1.0	1.0	0.0	3.0	0.0	3.0	0.0	1.3	0.5

Table 21. Percent winter hardiness of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
AU Robin	99	3	0	0	100	0	45	28	34	40
AU Sunrise	93	11	0	0	96	8	46	32	58	44
AU Sunup	100	0	0	0	92	16	36	31	25	50
Contea	99	3	0	0	98	4	54	23	85	24
Dixie	98	5	0	0	100	0	38	40	85	30
Kentucky Pride	95	8	0	0	100	0	77	20	83	34

Table 22. Days to 50% bloom of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	209	0.0	NA		244	0.0	221	0.0	235	1.2
AU Sunrise	209	0.0	NA		244	0.0	221	0.0	237	2.5
AU Sunup	209	0.0	NA		244	0.0	221	0.0	235	1.0
Contea	209	0.0	NA		244	0.0	221	0.0	240	1.7
Dixie	209	0.0	NA		244	0.0	221	0.0	239	1.7
Kentucky Pride	209	0.0	NA		244	0.0	232	0.0	244	2.5

Table 23. Disease ranking at spring regrowth of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
AU Sunrise	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
AU Sunup	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Contea	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Dixie	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Kentucky Pride	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	

Table 24. Disease ranking at 50% bloom of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	NA		0.0	0.0	0.0	0.0	1.0	0.0
AU Sunrise	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.6	0.6
AU Sunup	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	NA
Contea	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.6	0.6
Dixie	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.6	0.6
Kentucky Pride	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 25. Insect ranking at spring regrowth of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
AU Sunrise	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
AU Sunup	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Contea	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Dixie	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Kentucky Pride	0.0	0.0	NA		0.0	0.0	0.0	0.6	NA	

Table 26. Insect ranking at 50% bloom of crimson clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	NA		0.0	0.0	0.0	0.0	1.0	0.0
AU Sunrise	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.3	0.6
AU Sunup	0.0	0.0	NA		0.0	0.0	0.0	0.0	1.0	NA
Contea	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.3	0.5
Dixie	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.5	0.6
Kentucky Pride	0.0	0.0	NA		0.0	0.0	0.0	0.6	0.0	0.0

DAIKON RADISH (*Raphanus sativus*)

Table 27. Performance of daikon radish averaged over the Northcentral Region.						
Variety	14-day emergence		28-day emergence		% Winter survival	
	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.6	0.5	2.9	0.4	0.0	0.0
Concorde	2.4	0.6	2.8	0.4	0.0	0.0
Control	2.4	0.7	2.9	0.3	0.0	0.0
Defender	2.3	0.6	2.8	0.4	0.0	0.0
Driller	2.4	0.6	2.7	0.5	0.0	0.0
EcoTill	2.5	0.5	2.9	0.3	0.0	0.0
Graza	1.3	1.3	1.4	1.3	0.0	0.0
Groundhog	2.4	0.7	2.7	0.5	0.0	0.0
Lunch	2.1	0.7	2.7	0.6	0.0	0.0
Nitro	2.4	0.7	2.8	0.4	0.0	0.0
Sodbuster	2.3	0.6	2.8	0.4	0.0	0.0
Tillage	2.3	0.8	2.8	0.4	0.0	0.0

Table 28. 14-day emergence of daikon radish varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.3	0.5	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Concorde	1.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Control	1.8	0.5	1.8	0.5	3.0	0.0	3.0	0.0	NA	
Defender	1.8	0.5	2.0	0.0	3.0	0.0	2.5	0.6	NA	
Driller	1.8	0.5	2.0	0.0	3.0	0.0	2.8	0.5	NA	
EcoTill	2.0	0.0	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Graza	0.0	0.0	0.0	0.0	3.0	0.0	2.0	0.0	NA	
Groundhog	1.8	0.5	1.8	0.5	3.0	0.0	3.0	0.0	NA	
Lunch	1.3	0.5	2.0	0.0	3.0	0.0	2.3	0.5	NA	
Nitro	1.5	0.6	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Sodbuster	1.8	0.5	2.0	0.0	3.0	0.0	2.3	0.5	NA	
Tillage	1.3	0.5	2.0	0.0	3.0	0.0	3.0	0.0	NA	

Table 29. 28-day emergence of daikon radish varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0	2.5	0.6
Concorde	2.3	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Control	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Defender	2.8	0.5	2.5	0.6	3.0	0.0	2.8	0.5	3.0	0.0
Driller	2.5	0.6	2.5	0.6	3.0	0.0	2.8	0.5	2.8	0.5
EcoTill	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Graza	0.0	0.0	0.8	1.5	3.0	0.0	1.3	0.5	2.0	0.8
Groundhog	2.3	0.5	2.5	0.6	3.0	0.0	2.8	0.5	3.0	0.0
Lunch	2.5	1.0	3.0	0.0	3.0	0.0	2.3	0.5	2.8	0.5
Nitro	2.5	0.6	2.8	0.5	3.0	0.0	2.8	0.5	3.0	0.0
Sodbuster	3.0	0.0	2.8	0.5	3.0	0.0	2.5	0.6	2.8	0.5
Tillage	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	2.5	0.6

Table 30. Percent winter hardiness of daikon radish varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
Big Dog	NA		NA		NA		NA		NA	
Concorde	NA		NA		NA		NA		NA	
Control	NA		NA		NA		NA		NA	
Defender	NA		NA		NA		NA		NA	
Driller	NA		NA		NA		NA		NA	
EcoTill	NA		NA		NA		NA		NA	
Graza	NA		NA		NA		NA		NA	
Groundhog	NA		NA		NA		NA		NA	
Lunch	NA		NA		NA		NA		NA	
Nitro	NA		NA		NA		NA		NA	
Sodbuster	NA		NA		NA		NA		NA	
Tillage	NA		NA		NA		NA		NA	

HAIRY VETCH *(Vicia villosa)*

Table 31. Performance of hairy vetch averaged over the Northcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.6	1.0	2.1	0.3	89	16	241	23
Lana	1.8	0.9	1.9	0.4	72	31	232	22
Purple Bounty	1.3	0.4	2.1	0.3	90	14	240	22
Purple Prosperity	1.8	0.9	2.1	0.2	87	24	239	22
TNT	1.3	0.4	2.1	0.4	88	16	241	23
Villana	1.9	0.8	2.1	0.3	84	26	243	24

Table 31 (cont.) Performance of hairy vetch averaged over the Northcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 32. 14-day emergence of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.0	0.8	0.5	3.0	0.0	1.8	0.5	NA	
Lana	1.0	0.0	1.0	0.0	3.0	0.0	2.0	0.0	NA	
Purple Bounty	1.0	0.0	1.0	0.0	1.0	0.0	2.0	0.0	NA	
Purple Prosperity	1.0	0.0	1.0	0.0	3.0	0.0	2.0	0.0	NA	
TNT	1.0	0.0	1.0	0.0	1.0	0.0	2.0	0.0	NA	
Villana	1.5	0.6	1.0	0.0	3.0	0.0	2.0	0.0	NA	

Table 33. 28-day emergence of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	2.5	0.6	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Lana	1.3	0.5	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Purple Bounty	2.5	0.6	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Purple Prosperity	2.3	0.5	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
TNT	2.3	1.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Villana	2.5	0.6	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0

Table 34. Percent winter hardiness of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
CCS Groff	100	0	97	6	73	19	97	6	80	21
Lana	100	0	90	14	53	24	51	45	66	23
Purple Bounty	95	10	100	0	86	12	79	25	88	9
Purple Prosperity	100	0	94	8	75	31	100	0	68	37
TNT	96	8	95	10	84	16	83	14	80	25
Villana	100	0	97	7	53	30	83	34	87	20

Table 35. Disease ranking at spring regrowth of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0	0.0	NA		0	0.0	0	0.0	NA	
Lana	0	0.0	NA		0	0.0	0	0.0	NA	
Purple Bounty	0	0.0	NA		0	0.0	0	0.0	NA	
Purple Prosperity	0	0.0	NA		0	0.0	0	0.0	NA	
TNT	0	0.0	NA		0	0.0	0	0.0	NA	
Villana	0	0.0	NA		0	0.0	0	0.0	NA	

Table 36. Disease ranking at 50% bloom of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0	0.0	NA		0	0.0	0	0.0	0	0.0
Lana	0	0.0	NA		0	0.0	0	0.0	0	0.0
Purple Bounty	0	0.0	NA		0	0.0	0	0.0	0	0.0
Purple Prosperity	0	0.0	NA		0	0.0	0	0.0	0	0.0
TNT	0	0.0	NA		0	0.0	0	0.0	0	0.0
Villana	0	0.0	NA		0	0.0	0	0.0	0	0.0

Table 37. Days to 50% bloom of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	208	0.0	223	0.0	269	0.0	250	0.0	256	0.0
Lana	208	0.0	223	0.0	269	0.0	221	0.0	241	0.0
Purple Bounty	208	0.0	223	0.0	269	0.0	247	0.0	252	4.6
Purple Prosperity	208	0.0	223	0.0	269	0.0	247	0.0	249	4.6
TNT	208	0.0	223	0.0	269	0.0	250	0.0	257	1.4
Villana	208	0.0	223	0.0	269	0.0	252	0.0	262	0.0

Table 38. Insect ranking at spring regrowth of hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0	0.0	NA		0	0.0	0	0.0	NA	
Lana	0	0.0	NA		0	0.0	0	0.0	NA	
Purple Bounty	0	0.0	NA		0	0.0	0	0.0	NA	
Purple Prosperity	0	0.0	NA		0	0.0	0	0.0	NA	
TNT	0	0.0	NA		0	0.0	0	0.0	NA	
Villana	0	0.0	NA		0	0.0	0	0.0	NA	

Table 39. Insect ranking at 50% hairy vetch varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0	0.0	NA		0	0.0	0	0.0	0	0.0
Lana	0	0.0	NA		0	0.0	0.3	0.5	0	0.0
Purple Bounty	0	0.0	NA		0	0.0	0	0.0	0	0.0
Purple Prosperity	0	0.0	NA		0	0.0	0	0.0	0	0.0
TNT	0	0.0	NA		0	0.0	0	0.0	0	0.0
Villana	0	0.0	NA		0	0.0	0	0.0	0	0.0

RED CLOVER (*Trifolium repens*)

Table 40. Performance of red clover averaged over the Northcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.9	0.9	1.3	1.1	60	42	255	14
Cyclone II	0.9	0.9	1.1	1.1	68	41	255	14
Dynamite	0.9	0.8	1.0	1.1	62	42	254	15
Freedom	0.9	0.8	1.3	1.0	70	40	254	15
Kenland	0.7	0.9	1.0	1.1	67	39	254	15
Mammoth	0.9	0.8	1.0	1.1	65	43	261	12
Starfire II	0.9	0.9	1.0	1.1	63	46	254	15
Wildcat	0.6	0.5	1.2	1.1	65	43	255	14

Table 40 (cont.) Performance of red clover averaged over the Northcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
Cyclone II	0.0	0.0	0.1	0.3	0.0	0.0	0.4	0.5
Dynamite	0.0	0.0	0.1	0.3	0.0	0.0	0.3	0.5
Freedom	0.0	0.0	0.1	0.3	0.0	0.0	0.2	0.4
Kenland	0.0	0.0	0.1	0.3	0.0	0.0	0.3	0.4
Mammoth	0.0	0.0	0.0	0.0	0.3	0.5	0.3	0.4
Starfire II	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
Wildcat	0.0	0.0	0.1	0.3	0.0	0.0	0.3	0.4

Table 41. 14-day emergence of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.3	0.5	2.0	0.0	1.3	0.5	NA	
Cyclone II	0.3	0.5	0.0	0.0	2.0	0.0	1.3	0.5	NA	
Dynamite	0.0	0.0	0.5	0.6	2.0	0.0	1.0	0.0	NA	
Freedom	0.3	0.5	0.5	0.6	2.0	0.0	1.0	0.0	NA	
Kenland	0.0	0.0	0.0	0.0	2.0	0.0	0.8	0.5	NA	
Mammoth	0.0	0.0	0.5	0.6	2.0	0.0	1.0	0.0	NA	
Starfire II	0.0	0.0	0.8	0.5	2.0	0.0	0.8	1.0	NA	
Wildcat	0.3	0.5	0.3	0.5	1.0	0.0	1.0	0.0	NA	

Table 42. 28-day emergence of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.5	0.6	0.5	0.6	3.0	0.0	1.3	0.5	0.0	0.0
Cyclone II	0.8	0.5	0.8	0.5	3.0	0.0	1.0	0.8	0.0	0.0
Dynamite	0.5	0.6	1.0	0.0	3.0	0.0	0.5	0.6	0.0	0.0
Freedom	1.5	0.6	1.0	0.0	3.0	0.0	0.8	0.5	0.3	0.5
Kenland	0.3	0.5	1.0	0.0	3.0	0.0	0.8	0.5	0.0	0.0
Mammoth	0.5	0.6	0.8	0.5	3.0	0.0	0.8	0.5	0.0	0.0
Starfire II	0.5	0.6	0.8	0.5	3.0	0.0	0.5	0.6	0.0	0.0
Wildcat	1.3	0.5	0.5	0.6	3.0	0.0	1.3	0.5	0.0	0.0

Table 43. Percent winter hardiness of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
Cinnamon Plus	95	10	0	0	91	19	41	1	71	48
Cyclone II	94	7	0	0	90	15	58	31	100	0
Dynamite	100	0	0	0	80	27	86	17	46	36
Freedom	91	14	0	0	94	8	63	23	100	0
Kenland	100	0	0	0	83	20	75	24	80	21
Mammoth	100	0	0	0	98	3	53	10	75	50
Starfire II	100	0	0	0	99	2	65	34	50	58
Wildcat	89	13	0	0	100	0	68	37	67	47

Table 44. Days to 50% bloom of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Cyclone II	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Dynamite	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Freedom	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Kenland	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Mammoth	247	0.0	NA	0.0	276	0.0	260	0.0	256	0.0
Starfire II	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0
Wildcat	247	0.0	NA	0.0	276	0.0	239	0.0	256	0.0

Table 45. Disease ranking at spring regrowth of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Cyclone II	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Dynamite	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Freedom	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Kenland	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Mammoth	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Starfire II	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Wildcat	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	

Table 46. Disease ranking at 50% bloom of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Cyclone II	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.5	0.6
Dynamite	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.3	0.5
Freedom	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.5	0.6
Kenland	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.5	0.6
Mammoth	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Starfire II	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Wildcat	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.3	0.5

Table 47. Insect ranking at spring regrowth of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Cyclone II	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Dynamite	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Freedom	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Kenland	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Mammoth	0.0	0.0	NA		0.0	0.0	0.8	0.5	NA	
Starfire II	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	
Wildcat	0.0	0.0	NA		0.0	0.0	0.0	0.0	NA	

Table 48. Insect ranking at 50% bloom of red clover varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	NA		0.0	0.0	0.3	0.5	0.8	0.5
Cyclone II	0.0	0.0	NA		0.0	0.0	0.5	0.6	1.0	0.0
Dynamite	0.0	0.0	NA		0.0	0.0	0.5	0.6	0.8	0.5
Freedom	0.0	0.0	NA		0.0	0.0	0.3	0.5	0.5	0.6
Kenland	0.0	0.0	NA		0.0	0.0	0.3	0.5	0.8	0.5
Mammoth	0.0	0.0	NA		0.0	0.0	0.3	0.5	0.8	0.5
Starfire II	0.0	0.0	NA		0.0	0.0	0.0	0.0	0.3	0.5
Wildcat	0.0	0.0	NA		0.0	0.0	0.5	0.6	0.5	0.6

WINTER PEA (*Pisum sativum*)

Table 49. Performance of winter pea averaged over the Northcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.5	0.5	2.2	0.4	11	23	220	0
Dunn	2.6	0.5	2.3	0.4	11	22	222	3
Frost Master	1.6	1.0	2.1	0.4	22	26	236	16
Lynx	1.8	1.0	2.1	0.5	46	39	229	21
Maxum	2.4	0.5	2.1	0.3	6	13	222	3
Survivor 15	2.7	0.5	2.3	0.4	32	36	241	18
Whistler	1.9	0.4	2.0	0.3	29	38	236	10
Windham	1.9	1.0	1.8	0.4	41	39	235	10

Table 49 (cont.) Performance of winter pea averaged over the Northcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.0	0.0	2.0	2.3	0.0	0.0	0.0	0.0
Dunn	0.0	0.0	1.5	1.6	0.0	0.0	0.0	0.0
Frost Master	0.0	0.0	1.2	1.8	0.2	0.4	0.1	0.3
Lynx	0.0	0.0	1.5	2.3	0.3	0.5	0.0	0.0
Maxum	0.0	0.0	2.0	2.3	0.0	0.0	0.0	0.0
Survivor 15	0.0	0.0	1.8	2.4	0.3	0.5	0.0	0.0
Whistler	0.0	0.0	1.3	2.1	0.0	0.0	0.0	0.0
Windham	0.0	0.0	1.3	2.1	0.3	0.5	0.0	0.0

Table 50. 14-day emergence of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.3	0.5	2.0	0.0	3.0	0.0	2.8	0.5	NA	
Dunn	2.5	0.6	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Frost Master	1.3	0.5	0.5	1.0	2.0	0.0	2.8	0.5	NA	
Lynx	1.3	0.5	0.8	1.0	3.0	0.0	2.3	0.5	NA	
Maxum	2.0	0.0	2.0	0.0	3.0	0.0	2.8	0.5	NA	
Survivor 15	2.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0	NA	
Whistler	2.0	0.0	1.5	0.6	2.0	0.0	2.3	0.5	NA	
Windham	1.5	0.6	0.8	0.5	3.0	0.0	2.3	0.5	NA	

Table 51. 28-day emergence of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.8	0.5	2.0	0.0	2.0	0.0	2.0	0.0	2.3	0.5
Dunn	3.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.3	0.5
Frost Master	2.8	0.5	1.8	0.5	2.0	0.0	2.0	0.0	2.0	0.0
Lynx	2.0	0.8	2.5	0.6	2.0	0.0	2.0	0.0	1.8	0.5
Maxum	2.5	0.6	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Survivor 15	3.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.3	0.5
Whistler	2.3	0.5	2.0	0.0	2.0	0.0	2.0	0.0	1.8	0.5
Windham	1.8	0.5	1.3	0.5	2.0	0.0	2.0	0.0	2.0	0.0

Table 52. Percent winter hardiness of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------									
Arvica 4010	55	15	0	0.0	0	0.0	0	0.0	0	0.0
Dunn	53	13	0	0.0	0	0.0	0	0.0	0	0.0
Frost Master	44	20	0	0.0	0	0.0	47	32	18	14
Lynx	34	27	74	13	0	0.0	66	45	57	46
Maxum	31	11	0	0.0	0	0.0	0	0.0	0	0.0
Survivor 15	69	9	0	0.0	0	0.0	64	33	30	32
Whistler	45	25	0	0.0	0	0.0	65	47	34	44
Windham	48	12	0	0.0	0	0.0	83	24	72	29

Table 53. Days to 50% bloom of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	220	0.0	NA		NA		NA		NA	
Dunn	222	3.0	NA		NA		NA		NA	
Frost Master	220	0.0	NA		NA		260		246	2.2
Lynx	220	0.0	238	0.0	NA		234	3.5	225	44
Maxum	222	3.0	NA		NA		NA		NA	
Survivor 15	220	3.5	NA		NA		260	0.0	252	3
Whistler	223	0.0	NA		NA		239	0.0	246	2
Windham	223	0.0	NA		NA		236	4.0	247	2

Table 54. Disease ranking at spring regrowth of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0	0.0	NA		NA		0	0.0	NA	
Dunn	0	0.0	NA		NA		0	0.0	NA	
Frost Master	0	0.0	NA		NA		0	0.0	NA	
Lynx	0	0.0	NA		NA		0	0.0	NA	
Maxum	0	0.0	NA		NA		0	0.0	NA	
Survivor 15	0	0.0	NA		NA		0	0.0	NA	
Whistler	0	0.0	NA		NA		0	0.0	NA	
Windham	0	0.0	NA		NA		0	0.0	NA	

Table 55. Disease ranking at 50% bloom of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	4	1.2	NA		NA		0	0.0	NA	NA
Dunn	3	0.0	NA		NA		0	0.0	NA	NA
Frost Master	3.5	1.0	NA		NA		0	0.0	0	0.0
Lynx	4.5	1.0	NA		NA		0	0.0	0	0.0
Maxum	4	1.2	NA		NA		0	0.0	NA	NA
Survivor 15	5	0.0	NA		NA		0	0.0	0.3	0.5
Whistler	4	1.2	NA		NA		0	0.0	0	0.0
Windham	4	1.2	NA		NA		0	0.0	0	0.0

Table 56. Insect ranking at spring regrowth of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0	0.0	NA		NA		NA	NA	NA	
Dunn	0	0.0	NA		NA		NA	NA	NA	
Frost Master	0	0.0	NA		NA		1	0.0	NA	
Lynx	0	0.0	NA		NA		0.5	0.6	NA	
Maxum	0	0.0	NA		NA		NA	NA	NA	
Survivor 15	0	0.0	NA		NA		1	0.0	NA	
Whistler	0	0.0	NA		NA		0	0.0	NA	
Windham	0	0.0	NA		NA		0.5	0.6	NA	

Table 57. Insect ranking at 50% bloom of winter pea varieties by location.										
Variety	Kansas 2016-2017		Kansas 2017-2018		Michigan 2016-2017		Missouri 2016-2017		Missouri 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0	0.0	NA		NA		NA	NA	NA	NA
Dunn	0	0.0	NA		NA		NA	NA	NA	NA
Frost Master	0	0.0	NA		NA		1	NA	0	0.0
Lynx	0	0.0	NA		NA		0	0.0	0	0.0
Maxum	0	0.0	NA		NA		NA	NA	NA	NA
Survivor 15	0	0.0	NA		NA		0	0.0	0	0.0
Whistler	0	0.0	NA		NA		0	0.0	0	0.0
Windham	0	0.0	NA		NA		0	0.0	0	0.0

SOUTH CENTRAL REGION DATA

Includes data for Booneville, Arkansas, Knox City, Texas, and Nacogdoches, Texas. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) **and BLACK SEEDED OATS** (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Southcentral Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.4	0.7	2.7	0.7	80	23	198	16
Soil Saver	2.1	1.0	2.5	0.8	9	19	172	8

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the Southcentral Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.5	1.0	2.7	2.4	0.0	0.0	0.2	0.4
Soil Saver	0.7	0.5	1.0	0.0	0.0	0.0	0.0	0.0

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3	0	3	0	1.8	0.5	2	0	3	0	1.5	0.6
Soil Saver	3	0	3	0	1	0	1.3	0.5	3	0	1.3	1.0

Table 3. 28-day emergence of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	3	0	NA	NA	3	0	3	0	3	0	1.5	0.6
Soil Saver	3	0	NA	NA	2	0	3	0	3	0	1.5	1.3

Table 4. Percent winter survival of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cosaque	61	18	99	2	88	4	100	0	87	21	46	6
Soil Saver	NA		NA		NA		NA		9	8	48	17

Table 5. Days to 50% bloom of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	196	0	225	2	202	0	205	0	183	3	178	4
Soil Saver	NA	NA	NA	NA	NA	NA	NA	NA	182	0	168	3

Table 6. Disease rating at spring regrowth of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.5	1.3	1.3
Soil Saver	NA	NA	NA	NA	NA	NA	NA	NA	1.0	0.0	0.5	0.6

Table 7. Disease rating at 50% bloom of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	5	0.0	NA	NA	0.0	0.0	0.0	0.0	4.0	1.2	4.5	1.0
Soil Saver	NA	NA	NA	NA	NA	NA	NA	NA	1.0	0.0	1.0	0.0

Table 8. Insect rating at spring regrowth of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soil Saver	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0

Table 9. Insect rating at 50% bloom of black oats and black seeded oats by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Soil Saver	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0

CEREAL RYE (*Secale cereale*)

Table 10. Performance of cereal rye averaged over the Southcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.4	0.9	3.0	0.0	86	25	176	17
Bates	2.4	0.8	2.9	0.4	91	18	167	21
Brasetto	1.9	1.2	1.9	1.2	92	13	193	17
Elbon	2.3	0.9	2.7	0.5	87	23	178	15
FL 401	2.2	1.0	2.5	0.7	73	27	153	38
Guardian	1.8	1.3	1.9	1.3	87	18	196	12
Hazlet	2.6	0.5	2.9	0.3	88	19	194	17
Maton	2.5	0.7	3.0	0.0	87	23	169	18
Maton II	2.0	1.3	2.2	1.1	88	22	172	21
Merced	2.3	1.0	2.4	0.9	68	30	157	47
Oklon	2.5	0.8	2.9	0.3	89	19	174	15
Rymin	2.5	0.8	2.8	0.4	76	27	192	16
Wheeler	2.3	1.2	2.5	0.9	87	22	192	13
Wintergrazer 70	2.6	0.7	3.0	0.2	87	24	170	23
Wrens Abruzzi	2.5	0.6	3.0	0.2	91	16	168	17

Table 10 (cont.). Performance of cereal rye averaged over the Southcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.7	0.9	1.7	1.5	0.1	0.3	0.1	0.3
Bates	0.5	0.5	1.5	1.2	0.1	0.3	0.1	0.2
Brasetto	1.0	1.3	2.2	2.1	0.0	0.0	0.3	0.7
Elbon	0.5	0.5	1.1	1.2	0.0	0.2	0.0	0.0
FL 401	0.4	0.5	1.2	1.1	0.1	0.3	0.1	0.2
Guardian	0.9	1.1	2.0	2.1	0.0	0.0	0.2	0.4
Hazlet	0.9	1.3	2.1	2.1	0.0	0.0	0.2	0.4
Maton	0.6	0.7	1.3	1.4	0.0	0.0	0.1	0.2
Maton II	0.6	0.6	1.3	1.3	0.1	0.3	0.1	0.3
Merced	1.0	1.2	2.0	1.5	0.1	0.3	0.2	0.4
Oklon	0.3	0.5	1.4	1.3	0.0	0.2	0.0	0.0
Rymin	1.2	1.3	2.4	2.0	0.0	0.2	0.2	0.4
Wheeler	0.6	0.8	1.9	1.7	0.0	0.2	0.4	0.7
Wintergrazer 70	0.6	0.7	1.6	1.3	0.0	0.2	0.1	0.2
Wrens Abruzzi	0.4	0.7	0.9	1.0	0.0	0.2	0.1	0.2

Table 11. 14-day emergence of cereal rye by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3	0	3	0	1.0	0	1.3	0.5	3	0	3.0	0.0
Bates	3	0	3	0	1.8	0.5	1.3	0.5	3	0	2.3	1.0
Brasetto	2.8	0.5	3	0	1.0	0	0.0	0	3	0	1.5	1.0
Elbon	3	0	3	0	1.3	0.5	1.0	0	3	0	2.5	0.6
FL 401	3	0	3	0	0.8	0.5	1.0	0	3	0	2.5	0.6
Guardian	2.3	0.5	3	0	1.0	0	0.0	0	3	0	1.3	1.5
Hazlet	3	0	3	0	2.0	0	2.0	0	3	0	2.8	0.5
Maton	3	0	3	0	1.3	0.5	2.0	0	3	0	2.8	0.5
Maton II	3	0	3	0	1.0	0	0.0	0	3	0	2.0	1.4
Merced	3	0	3	0	1.0	0	1.0	0	3	0	2.8	0.5
Oklon	3	0	3	0	1.3	0.5	1.8	0.5	3	0	2.8	0.5
Rymin	3	0	3	0	2.0	0	1.0	0	3	0	3.0	0.0
Wheeler	3	0	3	0	1.8	0.5	0.0	0	3	0	2.8	0.5
Wintergrazer 70	3	0	3	0	1.8	0.5	1.8	0.5	3	0	3.0	0.0
Wren Abruzzi	2.8	0.5	3	0	1.8	0.5	2.0	0	3	0	2.3	0.5

Table 12. 28-day emergence of cereal rye varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3	0	3	0	3	0	3	0	3	0	3	0
Bates	3	0	3	0	3	0	2.5	0.6	3	0	2.8	0.5
Brasetto	2.8	0.5	2.8	0.5	2.3	0.5	0	0	3	0	1.5	1
Elbon	3	0	3	0	3	0	2	0	3	0	2.5	0.6
FL 401	3	0	3	0	1.5	0.6	2.5	0.6	3	0	2.3	0.5
Guardian	3	0	3	0	1.8	0.5	0	0	3	0	1.5	1.3
Hazlet	3	0	3	0	3	0	3	0	3	0	2.5	0.6
Maton	3	0	3	0	3	0	3	0	3	0	3	0
Maton II	3	0	3	0	2	0	0.3	0.5	3	0	2.5	1
Merced	3	0	3	0	2	0.8	1	0	3	0	2.8	0.5
Oklon	3	0	3	0	3	0	2.8	0.5	3	0	2.8	0.5
Rymin	3	0	3	0	3	0	2	0	3	0	3	0
Wheeler	3	0	3	0	2.8	0.5	0.8	0.5	3	0	3	0
Wintergrazer 70	2.8	0.5	2.8	0.5	3	0	3	0	3	0	3	0
Wren Abruzzi	2.8	0.5	2.8	0.5	3	0	3	0	3	0	3	0

Table 13. Percent winter survival of cereal rye varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Aroostook	97	3.8	100	0	96	4.6	100	0	94	7.7	32	4.2
Bates	97	5.5	100	0	97	3.1	100	0	98	2.6	55	15.6
Brasetto	100	0.0	100	0	89	7.5	100	0	95	10.0	68	7.9
Elbon	100	0.0	100	0	89	6.4	98	4	98	4.5	39	10.2
FL 401	35	3.5	100	0	76	20.1	98	4	77	22.3	50	11.0
Guardian	75	11.8	100	0	91	7.1	94	12.5	94	7.7	68	31.1
Hazlet	99	3.0	100	0	94	6.7	100	0	80	14.7	53	12.5
Maton	97	5.5	100	0	90	8.8	100	0	96	7.5	37	7.4
Maton II	100	0.0	100	0	85	6.9	100	0	99	2.5	44	13.0
Merced	32	4.7	100	0	80	3.3	100	0	60	24.2	38	13.3
Oklon	98	4.0	100	0	87	1.0	100	0	98	5.0	49	11.7
Rymin	38	8.5	100	0	95	3.8	100	0	80	19.1	45	9.0
Wheeler	99	1.5	100	0	90	2.1	100	0	93	4.9	40	5.9
Wintergrazer 70	91	4.7	100	0	95	3.8	100	0	100	0.0	35	7.2
Wren Abruzzi	100	0.0	100	0	90	8.3	100	0	97	4.7	60	15.0

Table 14. Days to 50% bloom of cereal varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	196	0.0	191	4	159	17	157	3	167	0.5	189	2
Bates	169	0.0	183	3	136	11	157	11	164	2.9	195	17
Brasetto	196	0.0	216	1	172	21	177	6	194	2.5	204	0
Elbon	196	0.0	190	3	169	11	158	2	168	0.6	190	0
FL 401	169	0.0	180	0	77	0	139	1	166	1.5	190	0
Guardian	196	0.0	215	0	183	2	181	3	195	0.0	204	0
Hazlet	196	0.0	215	0	172	21	175	3	195	0.0	201	7
Maton	169	0.0	188	1	146	18	154	8	166	1.5	190	0
Maton II	196	0.0	187	0	138	12	159	10	166	1.5	189	2
Merced	196	0.0	180	0	64	9	139	2	173	15.1	190	0
Oklon	181	0.0	192	3	157	14	158	3	168	1.0	187	0
Rymin	196	0.0	215	0	172	21	178	3	195	0.0	190	0
Wheeler	196	0.0	213	2	184	2	173	3	190	0.0	197	8
Wintergrazer 70	181	0.0	188	1	134	16	156	3	167	0.0	197	8
Wren Abruzzi	169	0.0	183	3	146	11	153	3	164	0.0	194	7

Table 15. Disease ratings at spring regrowth of cereal rye varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	1.8	0.5	0.0	0.0	1.0	0.0	1.5	1.0
Bates	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.8	0.5
Brasetto	0.0	0.0	0.0	0.0	1.8	0.5	0.0	0.0	3.0	1.6	1.0	0.0
Elbon	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
FL 401	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	1.0	0.0	1.0	0.0
Guardian	0.0	0.0	0.0	0.0	1.8	0.5	0.0	0.0	2.5	1.0	1.0	0.0
Hazlet	0.0	0.0	0.0	0.0	1.5	0.6	0.0	0.0	3.0	1.6	1.0	0.0
Maton	0.0	0.0	0.0	0.0	1.8	0.5	0.0	0.0	1.0	0.0	0.8	0.5
Maton II	0.3	0.5	0.3	0.5	1.5	0.6	0.0	0.0	1.0	0.0	1.0	0.0
Merced	0.0	0.0	0.0	0.0	2.3	0.5	0.0	0.0	1.5	1.0	2.0	1.2
Oklon	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	1.0	0.0	0.5	0.6
Rymin	0.0	0.0	0.0	0.0	2.5	0.6	0.0	0.0	3.0	0.0	1.5	1.0
Wheeler	0.0	0.0	0.0	0.0	1.3	0.5	0.0	0.0	1.5	1.0	1.0	0.0
Wintergrazer 70	0.8	0.5	0.8	0.5	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.4
Wren Abruzzi	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.5	0.6	1.5	1.0

Table 16. Disease ratings at 50% bloom of cereal rye varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.8	0.5	No data		3.8	0.5	0.0	0.0	1.5	1.0	2.5	1.0
Bates	0.8	0.5	No data		3.0	0.0	0.0	0.0	1.0	0.0	2.5	1.0
Brasetto	0.3	0.5	No data		3.8	0.5	0.0	0.0	2.0	1.2	5.0	0.0
Elbon	0.0	0.0	No data		3.0	0.0	0.0	0.0	0.8	0.5	1.5	1.0
FL 401	0.5	0.6	No data		2.8	0.5	0.0	0.0	1.0	0.0	1.5	1.0
Guardian	0.0	0.0	No data		3.8	0.5	0.0	0.0	1.0	0.0	5.0	0.0
Hazlet	0.3	0.5	No data		3.8	0.5	0.0	0.0	1.5	1.0	5.0	0.0
Maton	0.3	0.5	No data		3.5	0.6	0.0	0.0	1.0	0.0	1.5	1.0
Maton II	1.0	1.4	No data		3.3	0.5	0.0	0.0	0.8	0.5	1.5	1.0
Merced	1.0	0.0	No data		3.8	0.5	0.0	0.0	2.0	1.2	3.0	0.0
Oklon	0.3	0.5	No data		2.8	0.5	0.0	0.0	2.0	1.2	2.0	1.2
Rymin	0.8	0.5	No data		4.0	0.0	0.0	0.0	2.0	1.2	5.0	0.0
Wheeler	0.5	0.6	No data		3.3	0.5	0.0	0.0	1.5	1.0	4.0	1.2
Wintergrazer 70	2.5	1.0	No data		2.8	0.5	0.0	0.0	0.8	0.5	2.0	1.2
Wren Abruzzi	0.5	0.6	No data		2.5	0.6	0.0	0.0	0.5	0.6	1.0	0.0

Table 17. Insect ratings at spring regrowth of cereal rye varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Bates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Brasetto	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elbon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
FL 401	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Guardian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hazlet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maton II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Merced	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Oklon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Rymin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Wheeler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Wintergrazer 70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Wren Abruzzi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5

Table 18. Insect ratings at 50% bloom of cereal rye varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Bates	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brasetto	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
Elbon	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL 401	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Guardian	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Hazlet	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Maton	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maton II	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Merced	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Oklon	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rymin	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Wheeler	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0
Wintergrazer 70	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wren Abruzzi	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 19. Performance of crimson clover averaged over the Southcentral Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.9	1.0	2.3	0.8	92	11	176	21
AU Sunrise	2.0	0.9	2.8	0.6	97	4	170	23
AU Sunup	0.8	1.1	1.3	1.0	80	27	163	21
Contea	1.6	1.2	1.9	1.1	97	6	178	21
Dixie	2.3	0.9	2.8	0.4	98	5	180	21
Kentucky Pride	2.1	0.9	2.6	0.7	95	9	186	20

Table 19 (cont.). Performance of crimson clover averaged over the Southcentral Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.3	0.7	0.6	0.9	0.1	0.3	0.3	0.4
AU Sunrise	0.1	0.3	0.5	0.8	0.0	0.0	0.6	1.1
AU Sunup	0.1	0.3	0.3	0.4	0.2	0.4	0.3	0.4
Contea	0.2	0.4	0.5	0.8	0.1	0.3	0.2	0.4
Dixie	0.1	0.3	0.4	0.7	0.0	0.0	0.5	0.9
Kentucky Pride	0.0	0.2	0.3	0.5	0.0	0.0	0.2	0.4

Table 20. 14-day emergence of crimson clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	3	0	3	0.0	1.0	0.0	1.0	0	2.3	0.5	1.3	1.3
AU Sunrise	3	0	3	0.0	1.3	0.5	1.0	0	2.5	0.6	1.5	0.6
AU Sunup	2	0	2.5	0.6	0.0	0.0	0.0	0	0.5	1.0	0.0	0.0
Contea	3	0	3	0.0	1.0	0.0	0.3	0.5	2.3	0.5	0.3	0.5
Dixie	3	0	3	0.0	1.5	0.6	1.0	0	3.0	0.0	2.0	0.8
Kentucky Pride	3	0	3	0.0	1.3	0.5	1.0	0	2.5	0.6	2.0	0.8

Table 21. 28-day emergence of crimson clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	3	0	3	0	2	0	1.8	0.5	3	0	1.5	1
AU Sunrise	3	0	3	0	3	0	3	0	3	0	2	1.2
AU Sunup	3	0	2.5	0.6	1	0	1	0	1.5	0.6	0	0
Contea	3	0	3	0	2	0	1	0	3	0	0.3	0.5
Dixie	3	0	3	0	3	0	2.5	0.6	3	0	2.5	0.6
Kentucky Pride	3	0	3	0	2.5	0.6	2.3	1.0	3	0	2.3	1.0

Table 22. Percent winter hardiness of crimson clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
AU Robin	78	12.8	89	7.6	96	4.1	100	0.0	87	15.2	100	0.0
AU Sunrise	97	5.5	96	5.1	93	2.6	100	0.0	95	5.5	100	0.0
AU Sunup	97	3.8	66	37.8	61	35.7	100	0.0	59	6.2	95	10.0
Contea	99	3.0	90	9.7	93	6.1	100	0.0	99	2.5	100	0.0
Dixie	100	0.0	92	7.1	95	8.1	100	0.0	99	2.5	100	0.0
Kentucky Pride	100	0.0	95	10.0	86	9.5	100	0.0	88	15.0	100	0.0

Table 23. Days to 50% bloom of crimson clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	196	0.0	205	0.0	170	1	181	1	157	7	146	3
AU Sunrise	180	0.0	205	0.0	169	2	181	1	144	6	139	1
AU Sunup	169	0.0	198	4.0	165	1	169	4	140	2	135	3
Contea	190	0.0	209	1.5	178	2	187	0.0	155	6	150	4
Dixie	196	0.0	210	1.0	176	3	187	0.0	162	7	150	1
Kentucky Pride	196	0.0	217	0.0	176	3	190	0.0	182	0.0	153	3

Table 24. Disease ranking at spring regrowth of crimson clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0
AU Sunrise	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
AU Sunup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.5	0.6
Dixie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.3	0.5
Kentucky Pride	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5

Table 25. Disease ranking at 50% bloom of crimson clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.0	1.2	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
AU Sunrise	0.5	0.6	No data		0.0	0.0	0.0	0.0	0.3	0.5	1.5	1.0
AU Sunup	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Contea	1.0	1.4	No data		0.0	0.0	0.0	0.0	0.5	0.6	0.8	0.5
Dixie	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.0
Kentucky Pride	0.8	0.5	No data		0.0	0.0	0.0	0.0	0.3	0.5	0.5	0.6

Table 26. Insect ranking at spring regrowth of crimson clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
AU Sunrise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Contea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Dixie	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 27. Insect ranking at 50% bloom of crimson clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
AU Sunrise	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.0
AU Sunup	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Contea	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Dixie	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.2
Kentucky Pride	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0

DAIKON RADISH (*Raphanus sativus*)

Table 28. Performance of daikon radish averaged over the Southcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.1	0.9	2.8	0.6	13	30	126	1
Concorde	2.0	1.1	2.5	0.6	21	37	160	30
Control	2.0	1.0	2.5	0.7	19	36	161	29
Defender	1.7	1.2	2.3	1.0	20	33	160	30
Driller	2.0	1.0	2.6	0.7	15	34	125	1
Eco-Till	1.9	1.1	2.4	0.8	16	33	125	3
Graza	0.5	0.8	1.5	0.9	39	47	163	19
Groundhog	2.3	0.8	2.7	0.7	17	38	126	1
Lunch	2.0	1.0	2.5	0.8	16	37	126	1
Nitro	2.0	1.0	2.6	0.7	15	34	126	1
Sodbuster	2.0	1.0	2.5	0.9	15	35	126	1
Tillage	1.9	1.1	2.5	0.8	15	34	126	2

Table 28 (cont.). Performance of daikon radish averaged over the Southcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	0.4	0.9	0.8	0.5	0.5	0.9	1.0	0.0
Concorde	0.6	1.0	0.1	0.4	0.9	1.6	0.6	0.5
Control	0.8	1.2	0.8	1.0	0.8	1.2	1.1	1.2
Defender	0.7	1.2	1.1	1.2	0.7	1.0	1.0	0.9
Driller	0.3	0.5	1.3	1.3	0.3	0.5	1.0	0.0
Eco-Till	0.3	0.5	0.8	0.5	0.3	0.5	1.5	1.0
Graza	0.6	1.0	0.3	0.5	0.4	0.5	0.4	0.5
Groundhog	0.3	0.5	1.0	0.0	0.3	0.5	1.5	1.0
Lunch	0.1	0.3	0.8	0.5	0.3	0.5	1.0	0.0
Nitro	0.3	0.5	0.3	0.5	0.3	0.5	1.0	0.0
Sodbuster	0.3	0.5	0.5	0.6	0.7	1.2	1.5	1.0
Tillage	0.3	0.5	0.8	0.5	0.5	0.9	1.0	0.0

Table 29. 14-day emergence of daikon radish varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	3	0.0	3	0.0	1.3	0.5	2	0.0	2.8	0.5	0.8	0.5
Concorde	3	0.0	3	0.0	1.0	0.0	1.3	0.5	3.0	0.0	0.8	0.5
Control	3	0.0	3	0.0	1.0	0.0	1.3	0.5	2.8	0.5	1.0	0.0
Defender	3	0.0	3	0.0	1.0	0.0	1	0.0	2.3	0.5	0	0.0
Driller	2.5	0.6	3	0.0	1.5	0.6	1.8	0.5	2.8	0.5	0.5	0.6
Eco-Till	3	0.0	3	0.0	1.0	0.0	1.3	0.5	2.8	0.5	0.5	0.6
Graza	2	0.0	0.3	0.5	0.3	0.5	0.0	0.0	0.8	0.5	0	0.0
Groundhog	3	0.0	3	0.0	2.0	0.0	1.8	0.5	3.0	0.0	1.3	0.5
Lunch	3	0.0	3	0.0	1.3	0.5	2	0.0	2.3	1.0	0.5	0.6
Nitro	3	0.0	3	0.0	1.3	0.5	1.8	0.5	2.0	1.4	1.0	0.0
Sodbuster	3	0.0	3	0.0	1.8	0.5	1.8	0.5	2.3	1.0	0.5	0.6
Tillage	2.8	0.5	3	0.0	1.0	0.0	1.5	0.6	2.3	1.5	0.8	0.5

Table 30. 28-day emergence of daikon radish varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	3	0.0	3	0.0	2.8	0.5	3.0	0.0	3.0	0.0	2.0	0.8
Concorde	3	0.0	3	0.0	2.5	0.6	2.3	0.5	3.0	0.0	1.8	0.5
Control	3	0.0	3	0.0	2.8	0.5	2.3	0.5	3.0	0.0	1.5	0.6
Defender	3	0.0	3	0.0	2.8	0.5	2.5	0.6	2.8	0.5	0.5	0.6
Driller	3	0.0	3	0.0	3.0	0.0	2.5	0.6	2.8	0.5	1.5	0.6
Eco-Till	3	0.0	3	0.0	2.5	0.6	2.5	0.6	2.8	0.5	1.3	1.0
Graza	2.3	0.5	2.3	0.5	2.0	0.0	1.0	0.0	1.8	1.0	0.3	0.5
Groundhog	3	0.0	3	0.0	3.0	0.0	2.5	0.6	3.0	0.0	1.8	1.0
Lunch	3	0.0	3	0.0	2.8	0.5	3.0	0.0	2.5	0.6	1.3	1.0
Nitro	3	0.0	3	0.0	3.0	0.0	2.5	0.6	2.8	0.5	1.8	1.0
Sodbuster	3	0.0	3	0.0	2.8	0.5	2.5	0.6	3.0	0.0	1.0	0.8
Tillage	3	0.0	3	0.0	2.8	0.5	2.5	0.6	2.5	1.0	1.8	1.0

Table 31. Percent winter survival of daikon radishes varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Big Dog	0	0.0	0	0.0	0	0	0	0	0	0.00	77	10.1
Concorde	27	8.9	2	4.0	0	0	0	0	0	0.00	98	4.0
Control	18	7.9	0	0.0	0	0	0	0	0	0.00	96	8.5
Defender	26	10.7	8	10.	0	0	0	0	0	0.00	85	22.2
Driller	0	0.0	0	0.0	0	0	0	0	0	0.00	88	8.6
Eco-Till	8	9.7	0	0.0	0	0	0	0	0	0.00	87	15.9
Graza	75	50.0	58	29.	0	0	0	0	0.3	0.50	100	0.0
Groundhog	0	0.0	0	0.0	0	0	0	0	0	0.00	100	0.0
Lunch	0	0.0	0	0.0	0	0	0	0	0	0.00	96	8.5
Nitro	0	0.0	0	0.0	0	0	0	0	0	0.00	90	7.6
Sodbuster	0	0.0	0	0.0	0	0	0	0	0	0.00	91	11.9
Tillage	0	0.0	0	0.0	0	0	0	0	0	0.00	89	15.6

Table 32. Days to 50% bloom of daikon radish varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	1
Concorde	188	0	NA	NA	NA	NA	NA	NA	NA	NA	132	2
Control	188	0	NA	NA	NA	NA	NA	NA	NA	NA	135	3
Defender	188	0	NA	NA	NA	NA	NA	NA	NA	NA	132	2
Driller	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	125	1
Eco-Till	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	125	3
Graza	181	0	NA	NA	NA	NA	NA	NA	NA	NA	146	7
Groundhog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	1
Lunch	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	1
Nitro	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	1
Sodbuster	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	1
Tillage	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	126	2

Table 33. Disease ranking at spring regrowth of daikon radish varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	0	0	NA	NA	0	0	NA	NA	1.3	1.3
Concorde	0.0	0.0	0.8	1.5	NA	NA	0.0	0.0	NA	NA	1.5	1.0
Control	0.0	0.0	1.0	1.4	NA	NA	0.0	0.0	NA	NA	2.0	1.2
Defender	0.0	0.0	0.8	1.5	NA	NA	0.0	0.0	NA	NA	2.0	1.2
Driller	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	0.8	0.5
Eco-Till	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	0.8	0.5
Graza	0.0	0.0	2.0	1.2	NA	NA	0.0	0.0	NA	NA	0.5	0.6
Groundhog	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	1.0	0.0
Lunch	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	0.3	0.5
Nitro	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	1.0	0.0
Sodbuster	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	1.0	0.0
Tillage	NA	NA	0.0	0.0	NA	NA	0.0	0.0	NA	NA	0.8	0.5

Table 34. Disease ranking at 50% bloom of daikon radish varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.5
Concorde	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.5
Control	0	0	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1.0
Defender	0.5	0.6	NA	NA	NA	NA	NA	NA	NA	NA	1.8	1.5
Driller	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.3
Eco-Till	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.5
Graza	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.5	0.6
Groundhog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0	0.0
Lunch	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.5
Nitro	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.5
Sodbuster	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	0.6
Tillage	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.5

Table 35. Insect ranking at spring regrowth of daikon radish varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	0	0	NA	NA	0	0	NA	NA	1.5	1
Concorde	0	0	1.3	2.5	NA	NA	0	0	NA	NA	2.5	1
Control	0	0	1	1.4	NA	NA	0	0	NA	NA	2	1.2
Defender	0.5	0.6	0.8	1.5	NA	NA	0	0	NA	NA	1.5	1
Driller	NA	NA	0	0	NA	NA	0	0	NA	NA	1	0
Eco-Till	NA	NA	0	0	NA	NA	0	0	NA	NA	0.8	0.5
Graza	0	0	0.8	0.5	NA	NA	0	0	NA	NA	1	0
Groundhog	NA	NA	0	0	NA	NA	0	0	NA	NA	1	0
Lunch	NA	NA	0	0	NA	NA	0	0	NA	NA	1	0
Nitro	NA	NA	0	0	NA	NA	0	0	NA	NA	1	0
Sodbuster	NA	NA	0	0	NA	NA	0	0	NA	NA	2	1.2
Tillage	NA	NA	0	0	NA	NA	0	0	NA	NA	1.5	1

Table 36. Insect ranking at 50% bloom of daikon radish varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0
Concorde	0.3	0.5	NA	NA	NA	NA	NA	NA	NA	NA	1	0
Control	0.3	0.5	NA	NA	NA	NA	NA	NA	NA	NA	2	1.2
Defender	0.5	0.6	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1
Driller	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0
Eco-Till	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1
Graza	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.5
Groundhog	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1
Lunch	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0
Nitro	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0
Sodbuster	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1
Tillage	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	0

HAIRY VETCH (*Vicia villosa*)

Table 37. Performance of hairy vetch averaged over the Southcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.6	1.1	2.0	0.9	89	17	193	17
Lana	1.6	1.0	2.5	0.9	92	14	166	16
Purple Bounty	1.4	1.2	2.0	0.9	86	19	190	18
Purple Prosperity	1.3	1.1	2.2	0.8	90	16	188	19
TNT	1.7	1.1	2.5	0.6	90	16	200	15
Villana	1.8	1.2	2.2	1.0	86	26	201	15

Table 37 (cont.). Performance of hairy vetch averaged over the Southcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.2	0.4	0.8	1.2	0.0	0.0	0.0	0.0
Lana	0.0	0.2	0.3	0.7	0.0	0.0	0.1	0.2
Purple Bounty	0.1	0.3	0.6	1.1	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.3	0.7	0.0	0.0	0.1	0.2
Villana	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0

Table 38. 14-day emergence of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	3.0	0	3	0	1	0	0.5	0.6	1.8	0.5	0.5	0.6
Lana	2.0	0	2.3	0.5	1.8	0.5	1.3	1.0	2	1.4	0.3	0.5
Purple Bounty	2.3	0.5	3	0	1	0	0.3	0.5	1.8	1.0	0	0
Purple	2.0	0	3	0	1	0	0	0	1	0.8	0.5	0.6
TNT	2.0	0	3	0	2	0	0.5	0.6	2	1.4	0.5	0.6
Villana	3.0	0	3	0	1	0	1.8	0.5	1.8	1.0	0	0

Table 39. 28-day emergence of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	3	0	3	0	1.3	0.5	1.5	0.6	3	0	1	0
Lana	3	0	3	0	3.0	0.0	2.5	0.6	3	0	1	0.8
Purple Bounty	3	0	3	0	1.3	0.5	1.8	0.5	3	0	1	0
Purple	3	0	3	0	2.0	0.0	2.0	0.0	3	0	1	0
TNT	3	0	3	0	2.5	0.6	2.0	0.0	3	0	1.8	0.5
Villana	3	0	3	0	2.0	0.0	2.5	0.6	2.8	0.5	0.8	1.0

Table 40. Percent winter hardiness of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
CCS Groff	97	3.8	100	0	96	2.7	100	0	80	7.8	63	26.2
Lana	100	0.0	97	6	100	0.0	100	0	83	13.0	71	17.7
Purple Bounty	95	10.5	100	0	89	3.0	100	0	66	28.5	67	4.8
Purple	98	3.3	100	0	97	2.1	100	0	80	23.1	66	1.5
TNT	100	0.0	100	0	93	2.7	100	0	92	11.3	57	9.5
Villana	100	0.0	100	0	97	3.8	100	0	42	33.6	75	22.7

Table 41. Days to 50% bloom of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	196	0	226	0	191	4	194	0	182	0	171	2
Lana	174	0	194	0	164	0	168	4	153	3	145	1
Purple Bounty	196	0	222	0	182	12	194	0	180	2	169	2
Purple	195	0	222	0	176	5	193	2	175	12	168	1
TNT	196	0	226	0	202	0	206	0	187	4	181	2
Villana	196	0	227	2	208	7	206	0	183	3	187	8

Table 42. Disease ranking at spring regrowth of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 43. Disease ranking at 50% bloom of hairy vetch varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	3.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Lana	0.8	1.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Purple Bounty	2.3	1.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Purple	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
TNT	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3
Villana	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6

Table 44. Insect ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 45. Insect ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lana	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Purple Bounty	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Villana	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RED CLOVER (*Trifolium repens*)

Table 46. Performance of red clover averaged over the Southcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.2	1.3	1.5	1.1	76	29	207	16
Cyclone II	1.0	1.2	1.4	1.2	79	27	207	16
Dynamite	1.4	1.3	1.5	1.1	83	25	206	17
Freedom	1.4	1.1	1.7	1.1	84	23	207	16
Kenland	0.9	1.3	0.9	1.2	79	28	206	15
Mammoth	1.1	1.3	1.2	1.0	77	30	220	23
Starfire II	1.2	1.4	0.9	1.3	79	27	207	16
Wildcat	1.5	1.2	1.6	1.1	82	26	206	18

Table 46 (cont.). Performance of red clover averaged over the Southcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.1	0.3	0.1	0.3	0.2	0.4
Cyclone II	0.0	0.0	0.2	0.4	0.2	0.4	0.3	0.4
Dynamite	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5
Freedom	0.0	0.0	0.1	0.2	0.1	0.3	0.4	0.5
Kenland	0.1	0.3	0.1	0.3	0.1	0.3	0.3	0.5
Mammoth	0.0	0.0	0.2	0.4	0.1	0.3	0.2	0.4
Starfire II	0.0	0.0	0.1	0.2	0.1	0.3	0.2	0.4
Wildcat	0.0	0.0	0.2	0.4	0.1	0.3	0.4	0.5

Table 47. 14-day emergence of red clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	2.8	0.5	3	0	0	0	0	0	1.0	0.8	0.5	0.6
Cyclone II	1.8	0.5	3	0	0	0	0	0	1.3	1.3	0.3	0.5
Dynamite	2.5	0.6	3	0	0	0	0.5	0.6	1.8	1.0	0.5	1.0
Freedom	1.5	0.6	3	0	0	0	1	0	2.0	0.8	0.8	1.0
Kenland	2.3	0.5	3	0	0	0	0	0	0.3	0.5	0.0	0.0
Mammoth	2.5	0.6	3	0	0.3	0.5	0	0	0.8	1.0	0.0	0.0
Starfire II	2.8	0.5	3	0	0	0	0	0	1.5	1.3	0.0	0.0
Wildcat	2.5	0.6	3	0	0	0	0.8	0.5	2.0	0.0	0.5	0.6

Table 48. 28-day emergence of red clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	3	0	3	0	0.8	0.5	1	0	1.8	1.3	1	0.8
Cyclone II	3	0	3	0	0.3	0.5	1	0	1.8	1.3	0.8	1.0
Dynamite	3	0	3	0	0.5	0.6	1	0	2.0	1.4	1	0.8
Freedom	2.8	0.5	2.8	0.5	0.5	0.6	1	0	3.0	0.0	1	0.8
Kenland	3	0	3	0	0.3	0.5	0.5	0.6	0.8	1.0	0	0.0
Mammoth	2.8	0.5	2.8	0.5	1	0	1	0	1.0	0.8	0.3	0.5
Starfire II	3	0	3	0	0	0	0	0	1.5	1.3	0	0.0
Wildcat	3	0	3	0	1	0	1	0	2.5	1.0	0.5	0.6

Table 49. Percent winter hardiness of red clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cinnamon Plus	100	0.0	76	15.2	41	19.9	100	0.0	43	17.1	98	2.1
Cyclone II	100	0.0	81	14.6	47	19.5	98	4.0	48	20.6	100	0
Dynamite	100	0.0	86	11.9	52	37.5	97	6.0	6 3	21.5	100	0
Freedom	100	0.0	87	4.3	54	11.8	100	0.0	61	29.9	100	0
Kenland	100	0.0	79	27.3	64	24.9	97	6.0	36	18.0	98	4.5
Mammoth	100	0.0	80	30.7	46	23.5	100	0.0	38	12.2	100	0
Starfire II	100	0.0	88	9.6	45	22.3	80	40.0	60	9.1	100	0
Wildcat	100	0.0	86	10.7	66	35.0	100	0.0	44	14.5	94	11.5

Table 50. Days to 50% bloom of red clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	194	0	229	0	209	0	217	1	214	1	183	5
Cyclone II	196	0	229	0	208	3	216	1	215	1	179	4
Dynamite	194	0	229	1	208	3	216	1	211	0	178	2
Freedom	196	0	230	1	209	0	217	1	211	0	179	4
Kenland	196	0	230	2	203	0	217	1	206	12	184	3
Mammoth	194	0	254	3	209	0	225	1	NA	NA	NA	NA
Starfire II	188	0	230	2	208	3	220	2	213	2	186	3
Wildcat	181	0	230	2	205	3	219	2	216	4	186	4

Table 51. Disease ranking at spring regrowth of red clover varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cyclone II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freedom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Mammoth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starfire II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wildcat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 52. Disease ranking at 50% bloom of red clover varieties by location

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Cyclone II	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.3	0.5	0.3	0.5
Dynamite	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freedom	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Kenland	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Mammoth	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Starfire II	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Wildcat	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5

Table 53. Insect ranking at spring regrowth of red clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Cyclone II	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Dynamite	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5
Freedom	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Kenland	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Mammoth	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
Starfire II	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Wildcat	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6

Table 54. Insect ranking at 50% bloom of red clover varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	No data		0.3	0.5	0.0	0.0	0.0	0.0	0.5	0.6
Cyclone II	0.0	0.0	No data		0.3	0.5	0.0	0.0	0.0	0.0	1.0	0.0
Dynamite	0.0	0.0	No data		0.7	0.6	0.0	0.0	0.0	0.0	1.0	0.0
Freedom	0.3	0.5	No data		0.8	0.5	0.0	0.0	0.0	0.0	0.8	0.5
Kenland	0.3	0.5	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Mammoth	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Starfire II	0.0	0.0	No data		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Wildcat	0.3	0.5	No data		0.5	0.6	0.0	0.0	0.0	0.0	1.0	0.0

WINTER PEA (*Pisum sativum*)

Table 55. Performance of winter pea averaged over the Southcentral Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.0	1.2	2.6	0.8	11	24	104	35
Dunn	2.0	1.1	2.6	0.8	10	21	108	45
Frost Master	1.8	1.1	2.2	1.1	66	30	175	18
Lynx	1.6	1.1	2.0	1.1	65	36	182	26
Maxum	1.9	1.1	2.5	0.8	16	29	105	39
Survivor 15	1.8	1.1	2.6	0.7	72	35	195	15
Whistler	1.8	1.0	2.3	1.0	69	36	180	28
Windham	1.8	1.1	2.3	0.8	79	27	172	19

Table 55 (cont.). Performance of winter pea averaged over the Southcentral Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.7	0.9	0.8	0.4	0.0	0.0	0.0	0.0
Dunn	0.9	1.1	1.4	1.4	0.0	0.0	0.0	0.0
Frost Master	0.7	1.0	2.0	1.4	0.1	0.2	0.0	0.0
Lynx	0.7	0.9	1.6	2.0	0.0	0.0	0.0	0.0
Maxum	0.8	1.1	2.1	2.2	0.0	0.0	0.0	0.0
Survivor 15	0.4	0.6	1.0	1.2	0.0	0.0	0.1	0.3
Whistler	0.8	1.1	1.3	1.4	0.0	0.0	0.0	0.0
Windham	0.6	1.0	1.7	1.7	0.1	0.2	0.0	0.0

Table 56. 14-day emergence of winter pea varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	3	0	3	0	1	0	2	0	2.8	0.5	0	0
Dunn	2.8	0.5	3	0	1.3	0.5	2	0	2.8	0.5	0	0
Frost Master	2.3	0.5	3	0	1	0	1.5	0.6	2.8	0.5	0	0
Lynx	2.5	0.6	3	0	1	0	1	0	2.3	0.5	0	0
Maxum	2.5	0.6	3	0	1	0	2	0	2.8	0.5	0.3	0.5
Survivor 15	3.0	0.0	0.8	1.5	1.3	0.5	2	0	2.8	0.5	0.8	0.5
Whistler	2.3	0.5	3	0	1	0	1.8	0.5	2.8	0.5	0.3	0.5
Windham	2.5	0.6	3	0	1	0	1.5	0.6	2.5	0.6	0.3	0.5

Table 57. 28-day emergence of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	3	0	3	0	2.8	0.5	3	0	3	0	1.3	0.5
Dunn	3	0	3	0	2.5	0.6	3	0	3	0	1.3	0.5
Frost Master	3	0	3	0	2.5	0.6	2.5	0.6	2.8	0.5	0.25	0.5
Lynx	3	0	3	0	2.3	0.5	2	0	2.5	0.6	0	0
Maxum	3	0	3	0	2.3	1.0	3	0	3	0	1.3	0.5
Survivor 15	3	0	0.8	2.3	2.3	0.5	3	0	3	0	1.5	0.6
Whistler	3	0	3	0	2.3	1.0	2.5	0.6	3	0	0.8	0.5
Windham	3	0	3	0	2.5	0.6	2	0	3	0	1	0

Table 58. Percent winter hardiness of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Arvica 4010	0	0.0	0	0.0	0.0	0.0	0.0	0.0	5	5.5	60	25
Dunn	0	0.0	0	0.0	0.0	0.0	0.0	0.0	8	5.1	55	15
Frost Master	41	19.2	24	19.7	92	3.1	97	5.5	67	17.4	72	19
Lynx	0	0.0	54	20.5	95	6.6	100	0.0	55	7.5	88	14
Maxum	0	0.0	2	3.0	0	0.0	25	22	4	4.3	69	32
Survivor 15	86	3.7	0	0.0	89	7.0	100	0.0	90	0.5	65	8
Whistler	0	0.0	62	19.2	96	6.6	100	0.0	78	20.6	77	22
Windham	92	5.4	34	27.6	92	6.4	100	0.0	81	23.0	74	25

Table 59. Days to 50% bloom of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	No Data		NA	NA	NA	NA	59	0	126	1
Dunn	NA	NA	No Data		NA	NA	NA	NA	90	62	127	4
Frost Master	197	0	No Data		NA	NA	NA	NA	163	13	166	7
Lynx	NA	NA	No Data		NA	NA	213	2.9	163	1	161	6
Maxum	NA	NA	No Data		NA	NA	NA	NA	82	45	128	2
Survivor 15	189	0	No Data		207	9	215	0.0	182	0	178	5
Whistler	NA	NA	No Data		198	9	211	2.5	148	19	164	6
Windham	197	0	No Data		NA	NA	NA	NA	157	0	161	6

Table 60. Disease ranking at spring regrowth of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	NA	NA	NA	NA	0	0	2	1.4	0.8	0.5
Dunn	NA	NA	NA	NA	NA	NA	0	0	2	1.2	0.8	0.5
Frost Master	0	0	0.5	0.6	2	0.8	0	0	1.5	1.0	0.0	0.0
Lynx	NA	NA	0.8	0.5	2	0.8	0	0	1	0.0	0.0	0.0
Maxum	NA	NA	NA	NA	NA	NA	0	0	2	1.2	0.5	0.6
Survivor 15	0	0	NA	NA	0.8	1.0	0	0	1	0.0	0.3	0.5
Whistler	NA	NA	0.5	0.6	0.8	0.5	0	0	2.5	1.0	0.0	0.0
Windham	0	0	0.5	0.6	1	1.2	0	0	2	1.2	0.3	0.5

Table 61. Disease ranking at 50% bloom of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	No Data		NA	NA	NA	NA	1.0	0.0	0.8	0.5
Dunn	NA	NA	No Data		NA	NA	NA	NA	2.0	1.2	0.8	1.5
Frost Master	2	1.2	No Data		3.8	0.5	NA	NA	1.5	1.0	0.8	0.5
Lynx	NA	NA	No Data		3.8	0.5	0	0	4.0	1.4	0.0	0.0
Maxum	NA	NA	No Data		NA	NA	NA	NA	4.3	1.2	0.5	0.6
Survivor 15	0	0	No Data		2.5	0.6	0	0	0.7	0.6	1.8	1.5
Whistler	NA	NA	No Data		2.0	0.8	0	0	3.0	0.0	0.3	0.5
Windham	0	0	No Data		3.5	0.6	NA	NA	3.0	0.0	0.3	0.5

Table 62. Insect ranking at spring regrowth of winter pea varieties by location.

Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	NA	NA	NA	NA	0	0.0	0	0.0	0.0	0.0
Dunn	NA	NA	NA	NA	NA	NA	0	0.0	0	0.0	0.0	0.0
Frost Master	0	0.0	NA	NA	0	0	0	0.0	0	0.0	0.3	0.5
Lynx	NA	NA	NA	NA	0	0	0	0.0	0	0.0	0.0	0.0
Maxum	NA	NA	NA	NA	NA	NA	0	0.0	0	0.0	0.0	0.0
Survivor 15	0	0.0	NA	NA	0	0	0	0.0	0	0.0	0.0	0.0
Whistler	NA	NA	NA	NA	0	0	0	0.0	0	0.0	0.0	0.0
Windham	0	0	NA	NA	0	0	0	0.0	0	0.0	0.3	0.5

Table 63. Insect ranking at 50% bloom of winter pea varieties by location.												
Variety	Arkansas 2016-2017		Arkansas 2017-2018		Knox City, TX 2016-2017		Knox City, TX 2017-2018		Nacogdoches, TX 2016-2017		Nacogdoches, TX 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	No Data		NA	NA	NA	NA	0	0	0	0.0
Dunn	NA	NA	No Data		NA	NA	NA	NA	0	0	0	0.0
Frost Master	0	0	No Data		0	0	NA	NA	0	0	0	0.0
Lynx	NA	NA	No Data		0	0	0	0	0	0	0	0.0
Maxum	NA	NA	No Data		NA	NA	NA	NA	0	0	0	0.0
Survivor 15	0	0	No Data		0	0	0	0	0	0	0.5	0.6
Whistler	NA	NA	No Data		0	0	0	0	0	0	0	0.0
Windham	0	0	No Data		0	0	NA	NA	0	0	0	0.0

NORTHWEST REGION DATA

Includes data for Aberdeen, Idaho, Corvallis, Oregon, and Pullman, Washington. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) **and BLACK SEEDED OATS** (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Northwest Region

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	1.6	1.3	2.1	1.2	76	34	259	23
Soil Saver	1.4	1.1	2.1	1.1	46	47	242	14

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the Northwest Region

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.5	0.9	0.5	0.5	0.0	0.2	0.5	0.7
Soil Saver	1.1	1.3	0.9	1.0	0.4	0.5	0.5	0.5

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	2.5	0.6	3.0	0.0	1.5	0.6	0.0	0.0	0.0	0.0
Soil Saver	1.5	0.6	2.0	0.0	3.0	0.0	1.8	0.5	0.0	0.0	0.0	0.0

Table 3. 28-day emergence of black oats and black seeded oats by location.

Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0	1.0	0.0	0.0	0.0
Soil Saver	2.0	1.2	3.0	0.0	3.0	0.0	2.5	1.0	1.5	0.6	0.5	0.6

Table 4. Percent winter survival of black oats and black seeded oats by location.

Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cosaque	50.0	45.0	75.3	34.1	100.0	0.0	99.3	1.5	33.3	16.5	98.3	3.5
Soil Saver	WK		WK		85.8	18.0	100.0	0.0	WK		87.5	12.1

Table 5. Days to 50% bloom of black oats and black seeded oats by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	291	0	284	0	250	0	254	0	253	0	223	0
Soil Saver	NA	NA	NA	NA	250	0	254	0	NA	NA	223	0

Table 6. Disease ranking at spring regrowth of black oats and black seeded oats by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.0	0.0	0.0	0.0	2.3	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Soil Saver	NA	NA	NA	NA	2.8	0.5	1.8	0.5	0.0	0.0	0.0	0.0

Table 7. Disease ranking of black oats and black seeded oats at 50% bloom by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	1	0	0	0	1	0	1	0	0	0	0	0
Soil Saver	NA	NA	NA	NA	2.25	0.5	1.25	0.5	0	0	0	0

Table 8. Insect rating at spring regrowth of black oats and black seeded oats by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Soil Saver	NA	NA	NA	NA	0.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0

Table 9. Insect rating at 50% bloom of black oats and black seeded oats by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0	0	0	0	1.3	0.5	1.5	0.6	0	0	0	0
Soil Saver	NA	NA	NA	NA	1	0	1	0	0	0	0	0

CEREAL RYE (*Secale cereale*)

Table 10. Performance of cereal rye averaged over the Northwest Region (Idaho and Oregon)								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.5	0.5	2.8	0.4	84	22	256	26
Bates	2.5	0.5	3.0	0.0	75	34	257	26
Brasetto	2.1	0.9	2.6	0.5	94	7	260	23
Elbon	2.3	0.6	2.5	0.5	91	18	258	26
FL 401	2.1	0.7	2.4	0.5	45	47	217	7
Guardian	1.4	1.2	2.0	1.1	91	13	262	20
Hazlet	2.6	0.5	3.0	0.0	94	9	263	24
Maton	2.4	0.5	3.0	0.0	87	16	257	25
Maton II	2.1	0.7	2.5	0.5	86	21	257	25
Merced	2.6	0.5	2.8	0.4	46	48	217	7
Oklon	2.4	0.5	2.9	0.3	92	12	258	26
Prima	1.9	0.4	2.4	0.5	97	4	284	2
Rymin	2.6	0.5	2.9	0.4	99	2	269	22
Wheeler	2.6	0.5	2.8	0.4	93	10	263	21
Wintergrazer 70	2.4	0.5	2.8	0.4	79	29	258	26
Wrens Abruzzi	2.4	0.6	3.0	0.0	71	41	256	26

Table 10 (cont.). Performance of cereal rye averaged over the Northwest Region (Idaho and Oregon)								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.9	1.0	1.4	1.0	0.4	0.6	0.3	0.4
Bates	1.3	1.4	1.4	1.0	0.6	0.8	0.3	0.5
Brasetto	0.6	0.7	0.9	0.7	0.1	0.3	0.4	0.6
Elbon	1.0	1.0	1.2	0.8	0.3	0.6	0.4	0.6
FL 401	3.0	0.0	3.3	0.5	1.3	1.2	1.4	1.3
Guardian	0.7	0.8	1.3	1.0	0.1	0.3	0.3	0.5
Hazlet	0.8	0.9	1.3	0.9	0.3	0.5	0.4	0.6
Maton	0.9	1.0	1.2	0.8	0.3	0.4	0.3	0.4
Maton II	1.1	1.1	1.3	1.0	0.5	0.7	0.4	0.5
Merced	3.0	0.0	3.4	0.5	1.5	1.1	1.3	1.4
Oklon	0.9	1.0	1.2	0.9	0.3	0.4	0.3	0.5
Prima	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
Rymin	0.6	0.9	1.0	0.9	0.3	0.5	0.3	0.5
Wheeler	0.8	0.9	1.3	1.0	0.3	0.5	0.3	0.5
Wintergrazer 70	1.1	1.1	1.4	1.0	0.3	0.4	0.4	0.5
Wrens Abruzzi	1.1	1.2	1.5	1.2	0.5	0.8	0.3	0.5

Table 11. 14-day emergence of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.8	0.5	2.3	0.5	3.0	0.0	2.0	0.0
Bates	2.8	0.5	2.5	0.6	2.8	0.5	2.0	0.0
Brasetto	1.8	1.0	2.5	0.6	2.8	0.5	1.3	0.5
Elbon	2.5	0.6	2.0	0.0	3.0	0.0	1.8	0.5
FL 401	1.8	0.5	1.8	0.5	3.0	0.0	1.8	0.5
Guardian	0.8	0.5	0.0	0.0	3.0	0.0	2.0	0.0
Hazlet	2.5	0.6	3.0	0.0	3.0	0.0	2.0	0.0
Maton	2.3	0.5	2.5	0.6	3.0	0.0	2.0	0.0
Maton II	1.8	0.5	1.8	0.5	3.0	0.0	1.8	0.5
Merced	2.8	0.5	2.8	0.5	2.8	0.5	2.0	0.0
Oklon	2.5	0.6	2.3	0.5	2.8	0.5	2.0	0.0
Prima	1.8	0.5	2.0	0.0	Not planted		Not planted	
Rymin	No Data		2.8	0.5	No data		2.5	0.6
Wheeler	2.5	0.6	3.0	0.0	3.0	0.0	2.0	0.0
Wintergrazer 70	2.5	0.6	2.3	0.5	2.8	0.5	2.0	0.0
Wrens Abruzzi	2.5	0.6	2.3	0.5	2.8	0.5	2.3	1.0

Table 12. 28-day emergence of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3.0	0.0	2.5	0.6	3.0	0.0	2.5	0.0
Bates	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Brasetto	2.3	0.5	3.0	0.0	3.0	0.0	2.0	0.0
Elbon	3.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0
FL 401	2.3	0.5	2.0	0.0	3.0	0.0	2.5	0.0
Guardian	1.0	0.0	1.0	0.8	3.0	0.0	3.0	0.0
Hazlet	No data		3.0	0.0	3.0	0.0	3.0	0.0
Maton	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Maton II	2.3	0.5	2.3	0.5	3.0	0.0	2.5	0.0
Merced	2.8	0.5	3.0	0.0	3.0	0.0	2.5	0.0
Oklon	3.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0
Prima	2.5	0.6	2.3	0.5	No data		No data	
Rymin	No data		2.8	0.5	No data		3.0	0.0
Wheeler	2.3	0.5	3.0	0.0	3.0	0.0	2.8	0.0
Wintergrazer 70	3.0	0.0	2.3	0.5	3.0	0.0	2.8	0.0
Wrens Abruzzi	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0

Table 13. Percent winter survival of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------							
Aroostook	52	7.9	100	0.0	86	21.5	98	4.5
Bates	20	8.1	99	3.0	80	15.4	100	0.0
Brasetto	92	6.6	97	4.2	87	7.0	100	0.0
Elbon	72	29.8	99	3.0	93	8.5	100	0.0
FL 401	0	0.0	0	0.0	84	17.6	95	5.5
Guardian	81	9.0	100	0.0	84	18.6	99	2.0
Hazlet	90	11.4	99	1.5	90	11.3	96	5.7
Maton	70	7.6	99	3.0	87	20.9	95	10.0
Maton II	52	11.3	99	1.5	92	9.3	100	0.0
Merced	0	0.0	0	0.0	90	13.2	94	10.5
Oklon	74	11.9	99	2.0	96	5.7	100	0.0
Prima	95	5.0	99	3.0	No data		No data	
Rymin	No data		100	0.0	No data		99	2.5
Wheeler	81	14.4	96	5.7	96	5.7	99	2.0
Wintergrazer 70	37	16.1	100	0.0	81	18.4	100	0.0
Wrens Abruzzi	5	2.1	91	17.5	93	4.7	97	3.9

Table 14. Days to 50% bloom of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	284	0	278	0	230	0	233	2.3
Bates	284	0	280	0	230	0	234	2
Brasetto	284	0	281	0	236	0	239	0
Elbon	284	0	281	0	230	0	235	0
FL 401	NA	NA	NA	NA	224	0	210	0
Guardian	282	0	282	0	243	0	242	0
Hazlet	286	0	286	0	236	0	242	0
Maton	284	0	279	0	230	0	235	0
Maton II	282	0	279	0	230	0	235	0
Merced	NA	NA	NA	NA	224	0	210	0
Oklon	282	0	283	0	230	0	235	0
Prima	282	0	286	0	NA	NA	NA	NA
Rymin	282	0	286	0	NA	NA	239	0
Wheeler	286	0	279	0	243	0	242	0
Wintergrazer 70	284	0	281	0	230	0	235	0
Wrens Abruzzi	284	0	279	0	230	0	232	2

Table 15. Disease ranking at spring regrowth of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	1.8	0.5	2.0	0.0
Bates	0.0	0.0	0.0	0.0	2.5	0.6	2.8	0.5
Brasetto	0.0	0.0	0.0	0.0	1.0	0.0	1.5	0.6
Elbon	0.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0
FL 401	NA	NA	NA	NA	3.0	0.0	3.0	0.0
Guardian	0.0	0.0	0.0	0.0	1.0	0.0	1.8	0.5
Hazlet	0.0	0.0	0.0	0.0	1.3	0.5	2.0	0.0
Maton	0.0	0.0	0.0	0.0	1.5	0.6	2.0	0.0
Maton II	0.0	0.0	0.0	0.0	2.0	0.0	2.3	0.5
Merced	NA	NA	NA	NA	3.0	0.0	3.0	0.0
Oklon	0.0	0.0	0.0	0.0	1.8	0.5	2.0	0.0
Prima	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Rymin	0.0	0.0	0.0	0.0	NA	NA	1.8	0.5
Wheeler	0.0	0.0	0.0	0.0	1.3	0.5	2.0	0.0
Wintergrazer 70	0.0	0.0	0.0	0.0	2.0	0.0	2.3	0.5
Wrens Abruzzi	0.0	0.0	0.0	0.0	2.3	0.5	2.3	0.5

Table 16. Disease ranking at 50% bloom of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	1.0	0.0	0.0	0.0	2.5	0.6	2.0	0.0
Bates	1.0	0.0	0.0	0.0	2.5	0.6	2.0	0.0
Brasetto	1.0	0.0	0.0	0.0	1.8	0.5	1.0	0.0
Elbon	1.0	0.0	0.0	0.0	2.0	0.0	1.8	0.5
FL 401	NA	NA	NA	NA	3.0	0.0	3.5	0.6
Guardian	1.0	0.0	0.0	0.0	2.5	0.6	1.8	0.5
Hazlet	1.0	0.0	0.0	0.0	2.0	0.0	2.0	0.8
Maton	1.0	0.0	0.0	0.0	2.0	0.0	1.8	0.5
Maton II	1.0	0.0	0.0	0.0	2.5	0.6	1.8	0.5
Merced	NA	NA	NA	NA	3.0	0.0	3.8	0.5
Oklon	1.0	0.0	0.0	0.0	2.3	0.5	1.5	0.6
Prima	1.0	0.0	0.0	0.0	NA	NA	NA	NA
Rymin	1.0	0.0	0.0	0.0	NA	NA	2.0	0.0
Wheeler	1.0	0.0	0.0	0.0	2.5	0.6	1.8	0.5
Wintergrazer 70	1.0	0.0	0.0	0.0	2.5	0.6	2.0	0.0
Wrens Abruzzi	1.0	0.0	0.0	0.0	2.8	0.5	2.3	0.5

Table 17. Insect ranking at spring regrowth of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	0.3	0.5	1.3	0.5
Bates	0.0	0.0	0.0	0.0	0.5	0.6	1.8	0.5
Brasetto	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6
Elbon	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.5
FL 401	NA	NA	NA	NA	0.3	0.5	2.3	0.5
Guardian	0.0	0.0	0.0	0.0	0.3	0.5	0.3	0.5
Hazlet	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0
Maton	0.0	0.0	0.0	0.0	0.3	0.5	0.8	0.5
Maton II	0.0	0.0	0.0	0.0	0.5	0.6	1.5	0.6
Merced	NA	NA	NA	NA	0.8	0.5	2.3	1.0
Oklon	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Prima	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Rymin	0.0	0.0	0.0	0.0	NA	NA	0.8	0.5
Wheeler	0.0	0.0	0.0	0.0	0.5	0.6	0.8	0.5
Wintergrazer 70	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Wrens Abruzzi	0.0	0.0	0.0	0.0	0.3	0.5	1.8	0.5

Table 18. Insect ranking at 50% bloom at regrowth of cereal rye varieties by location.								
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Bates	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0
Brasetto	0.0	0.0	0.0	0.0	0.5	1.0	1.0	0.0
Elbon	0.0	0.0	0.0	0.0	0.8	1.0	1.0	0.0
FL 401	NA	NA	NA	NA	0.3	0.5	2.5	0.6
Guardian	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0
Hazlet	0.0	0.0	0.0	0.0	0.8	1.0	1.0	0.0
Maton	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Maton II	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.0
Merced	NA	NA	NA	NA	0.0	0.0	2.5	0.6
Oklon	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0
Prima	0.0	0.0	0.0	0.0	NA	NA	NA	NA
Rymin	0.0	0.0	0.0	0.0	NA	NA	1.0	0.0
Wheeler	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0
Wintergrazer 70	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.0
Wrens Abruzzi	0.0	0.0	0.0	0.0	0.3	0.5	1.0	0.0

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 19. Performance of crimson clover averaged over the Northwest Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.5	1.2	2.3	0.8	73	34	252	32
AU Sunrise	1.9	1.4	2.4	0.8	77	35	254	33
AU Sunup	0.7	0.7	1.1	0.8	67	36	254	34
Contea	1.3	1.1	1.5	1.1	70	38	256	32
Dixie	1.5	1.2	2.3	1.0	78	34	255	32
Kentucky Pride	1.5	1.2	2.2	0.8	80	36	260	30

Table 19 (cont.). Performance of crimson clover averaged over the Northwest Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.2	0.4	0.2	0.5	0.4	0.8	0.6	0.9
AU Sunrise	0.1	0.3	0.3	0.6	0.3	0.5	0.5	0.8
AU Sunup	0.3	0.5	0.3	0.7	0.5	0.8	0.8	1.0
Contea	0.1	0.3	0.2	0.4	0.3	0.5	0.4	0.6
Dixie	0.1	0.3	0.3	0.4	0.3	0.5	0.2	0.4
Kentucky Pride	0.3	0.4	0.3	0.5	0.4	0.6	0.5	0.7

Table 20. 14-day emergence of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.8	0.5	2.0	0.0	2.3	1.0	2.3	0.5	0.0	0.0	0.0	0.0
AU Sunrise	2.8	0.5	3.0	0.0	3.0	0.0	2.8	0.5	0.0	0.0	0.0	0.0
AU Sunup	0.8	0.5	1.0	0.0	1.8	0.5	0.8	0.5	0.0	0.0	0.0	0.0
Contea	1.3	0.5	1.8	0.5	2.8	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Dixie	2.8	0.5	2.3	0.5	2.3	0.5	2.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	2.8	0.5	2.3	1.0	2.3	0.5	2.0	0.0	0.0	0.0	0.0	0.0

Table 21. 28-day emergence of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	2.5	0.6	2.5	0.6	2.8	0.5	3.0	0.0	2.0	0.0	1.0	0.0
AU Sunrise	3.0	0.0	3.0	0.0	3.0	0.0	2.8	0.5	1.8	0.5	1.0	0.0
AU Sunup	1.8	0.5	1.0	0.0	2.3	0.5	1.0	0.0	0.8	0.5	0.0	0.0
Contea	1.8	0.5	1.8	0.5	2.8	0.5	2.3	0.5	0.5	0.6	0.0	0.0
Dixie	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	1.8	0.5	0.5	0.6
Kentucky Pride	2.3	0.5	2.5	1.0	2.8	0.5	2.8	0.5	2.0	0.0	1.0	0.0

Table 22. Percent winter hardiness of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
AU Robin	56	19.3	96	3.3	88	8.6	100	0.0	89	5.8	10	11.4
AU Sunrise	75	21.9	96	4.7	99	1.5	100	0.0	87	7.7	4	5.3
AU Sunup	42	21.3	91	8.4	96	5.4	100	0.0	69	16.2	5	6.1
Contea	53	31.8	91	2.9	95	2.6	100	0.0	82	12.1	0	0
Dixie	73	23.9	98	3.3	98	3.8	100	0.0	88	3.7	15	30
Kentucky Pride	98	4.4	98	2.6	98	4.5	99	0.0	86	4.8	3	3.8

Table 23. Days to 50% bloom of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	278	0	305	7	221	0	226	0	245	2	227	0
AU Sunrise	279	1	305	8	221	0	226	0	246	2	227	0
AU Sunup	278	0	306	8	221	0	220	0	247	1	NA	NA
Contea	278	0	305	7	221	0	231	0	247	0	NA	NA
Dixie	278	0	306	0	221	0	231	0	246	2	227	0
Kentucky Pride	280	0	306	8	227	0	239	0	250	1	NA	NA

Table 24. Disease ranking at spring regrowth of crimson clover varieties by location												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.8	0.5	0.5	0.6	0.0	0.0	0.0	0.0
AU Sunrise	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	0.0	0.0	0.0	0.0	1.0	0.8	0.5	0.6	0.0	0.0	0.0	0.0
Contea	0.0	0.0	0.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Dixie	0.0	0.0	0.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	0.0	0.0	0.0	0.0	0.8	0.5	0.8	0.5	0.0	0.0	0.0	0.0

Table 25. Disease ranking at 50% bloom of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	1.0	0.8	0.3	0.5	0.0	0.0	0.0	0.0
AU Sunrise	0.0	0.0	0.0	0.0	1.3	0.5	0.8	0.5	0.0	0.0	0.0	0.0
AU Sunup	0.0	0.0	0.0	0.0	1.8	0.5	0.3	0.5	0.0	0.0	0.0	0.0
Contea	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Dixie	0.0	0.0	0.0	0.0	1.0	0.0	0.5	0.6	0.0	0.0	0.0	0.0
Kentucky Pride	0.0	0.0	0.0	0.0	1.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0

Table 26. Insect ranking at spring regrowth of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	1.8	1.0	0.8	0.5	0.0	0.0	0.0	0.0
AU Sunrise	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	0.0	0.0	0.0	0.0	1.5	0.6	1.5	0.6	0.0	0.0	0.0	0.0
Contea	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Dixie	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	0.0	0.0	0.0	0.0	1.0	0.0	1.3	0.5	0.0	0.0	0.0	0.0

Table 27. Insect ranking at 50% bloom of crimson clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.0	0.0	0.5	0.6	0.8	0.5	2.3	0.5	0.0	0.0
AU Sunrise	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.0	1.5	1.3	0.0	0.0
AU Sunup	0.0	0.0	0.0	0.0	0.8	0.5	2.0	0.0	2.0	0.8	0.0	0.0
Contea	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.3	0.5	0.0	0.0
Dixie	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5	0.5	0.6	0.0	0.0
Kentucky Pride	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	1.2	0.0	0.0

DAIKON RADISH (*Raphanus sativus*)

Table 28. Performance of daikon radish averaged over the Northwest Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	1.5	1.2	2.2	0.9	32	42	201	19
Concorde	1.2	1.1	1.9	0.9	36	45	224	21
Control	1.1	0.9	1.9	0.9	34	42	221	20
Defender	1.1	1.0	1.9	0.9	40	44	220	20
Driller	1.3	1.0	2.1	1.1	32	45	212	25
Eco-Till	1.4	1.1	2.1	0.9	28	41	205	22
Graza	0.2	0.4	0.5	0.8	35	45	230	16
Groundhog	1.5	1.2	2.0	1.0	30	44	214	28
Lunch	1.1	1.0	1.8	0.7	37	46	205	21
Nitro	1.3	1.1	2.0	1.1	27	39	206	23
Sodbuster	1.0	1.0	1.7	0.8	29	41	213	26
Tillage	1.4	1.2	2.0	1.0	30	44	206	24

Table 28 (cont.). Performance of daikon radish averaged over the Northwest Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	1.4	1.9	1.9	2.1	0.7	0.6	0.9	0.9
Concorde	1.0	1.5	1.6	1.7	0.7	0.7	0.7	0.7
Control	1.1	1.5	1.6	1.9	0.9	0.9	0.9	0.9
Defender	1.1	1.6	1.6	1.8	0.8	0.7	1.1	0.8
Driller	1.4	2.0	2.2	2.3	0.7	0.6	1.2	1.1
Eco-Till	1.4	1.9	2.1	2.2	0.7	0.7	1.1	1.1
Graza	0.8	1.1	1.6	1.8	0.7	0.6	0.8	0.9
Groundhog	1.4	1.9	2.1	2.3	0.7	0.7	0.8	0.9
Lunch	1.4	2.0	1.8	2.0	0.7	0.7	1.0	1.0
Nitro	1.4	2.0	2.0	2.2	0.7	0.7	1.1	1.0
Sodbuster	1.4	1.9	2.1	2.3	0.8	0.7	1.0	0.8
Tillage	1.4	1.9	1.8	2.0	0.7	0.7	0.6	0.7

Table 29. 14-day emergence of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.3	0.5	3.0	0.0	2.0	0.0	1.8	0.5	0.0	0.0	0.0	0.0
Concorde	2.0	0.8	2.5	0.6	1.5	0.6	1.3	0.5	0.0	0.0	0.0	0.0
Control	1.5	0.6	2.3	0.5	1.8	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Defender	2.0	0.8	2.5	0.6	1.3	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Driller	2.3	0.5	2.3	0.5	2.0	0.0	1.5	0.6	0.0	0.0	0.0	0.0
Eco-Till	2.3	0.5	2.5	0.6	2.0	0.8	1.8	0.5	0.0	0.0	0.0	0.0
Graza	0.0	0.0	0.3	0.5	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Groundhog	2.3	0.5	3.0	0.0	2.0	0.0	1.5	0.6	0.0	0.0	0.0	0.0
Lunch	1.5	0.6	2.8	0.5	1.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0
Nitro	2.0	0.8	2.8	0.5	2.0	0.0	1.3	0.5	0.0	0.0	0.0	0.0
Sodbuster	1.5	0.6	2.5	0.6	1.3	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Tillage	3.0	0.0	2.8	0.5	1.5	0.6	1.3	0.5	0.0	0.0	0.0	0.0

Table 30. 28-day emergence of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.5	0.6	2.8	0.5	3.0	0.0	2.8	0.5	1.0	0.0	1.0	0.0
Concorde	2.5	0.6	2.8	0.5	2.5	0.6	2.0	0.0	1.0	0.0	0.5	0.6
Control	1.8	0.5	2.8	0.5	3.0	0.0	1.8	0.5	1.0	0.0	1.0	0.0
Defender	2.5	0.6	2.8	0.5	2.5	0.6	2.0	0.0	1.0	0.0	0.5	0.6
Driller	2.5	0.6	3.0	0.0	3.0	0.0	2.5	0.6	1.0	0.0	0.5	0.6
Eco-Till	2.3	0.5	3.0	0.0	3.0	0.0	2.5	0.6	1.0	0.0	1.0	0.0
Graza	0.0	0.0	0.8	0.5	2.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Groundhog	2.3	0.5	3.0	0.0	3.0	0.0	2.5	0.6	1.0	0.0	0.5	0.6
Lunch	1.8	0.5	2.8	0.5	2.3	0.5	2.0	0.0	1.0	0.0	1.0	0.0
Nitro	2.5	0.6	3.0	0.0	3.0	0.0	2.5	0.6	1.0	0.0	0.3	0.5
Sodbuster	1.5	0.6	2.8	0.5	2.3	0.5	1.8	0.5	1.0	0.0	1.0	0.0
Tillage	2.8	0.5	3.0	0.0	2.3	0.5	2.3	0.5	1.0	0.0	0.5	0.6

Table 31. Percent winter survival of daikon radishes varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Big Dog	0	0	0	0	84	12.2	94	7.3	8	16.5	4	8
Concorde	0	0	0	0	96	5.1	96	4.9	10	19.5	16	22
Control	0	0	0	0	94	8.1	87	11.8	12	19.2	14	21
Defender	0	0	0	0	97	6.0	89	7.6	51	21.9	0	0
Driller	0	0	0	0	91	12.7	97	6.0	6	7.8	0	0
Eco-Till	0	0	0	0	64	24.9	98	4.5	6	8.1	0	0
Graza	0	0	0	0	97	7.0	94	12.5	11	15.6	8	17
Groundhog	0	0	0	0	88	10.8	93	9.0	1	2.5	0	0
Lunch	0	0	0	0	100	0.0	97	5.5	21	24.9	2	4
Nitro	0	0	0	0	65	27.9	89	9.6	6	11.0	0	0
Sodbuster	0	0	0	0	74	6.8	96	9.0	2	4.0	0	0
Tillage	0	0	0	0	88	11.3	93	8.7	0	0.0	0	0

Table 32. Days to 50% bloom of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA	NA	NA	NA	193	0	197	0	253	NA	NA	NA
Concorde	NA	NA	NA	NA	203	0	217	0	252	3	227	NA
Control	NA	NA	NA	NA	203	0	210	0	247	4	230	NA
Defender	NA	NA	NA	NA	203	0	210	0	247	2	NA	NA
Driller	NA	NA	NA	NA	193	0	197	0	245	2	NA	NA
Eco-Till	NA	NA	NA	NA	193	0	197	0	246	1	NA	NA
Graza	NA	NA	NA	NA	217	0	224	0	254	1	NA	NA
Groundhog	NA	NA	NA	NA	193	0	197	0	252	3	NA	NA
Lunch	NA	NA	NA	NA	193	0	197	0	244	1	NA	NA
Nitro	NA	NA	NA	NA	193	0	197	0	249	3	NA	NA
Sodbuster	NA	NA	NA	NA	193	0	197	0	248	4	NA	NA
Tillage	NA	NA	NA	NA	193	0	197	0	251	5	NA	NA

Table 33. Disease ranking at spring regrowth of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		NA		4.8	0.5	2.8	0.5	NA		NA	
Concorde	NA		NA		3.8	0.5	2.5	0.6	NA		NA	
Control	NA		NA		4.3	0.5	2.3	0.5	NA		NA	
Defender	NA		NA		4.0	0.0	2.5	0.6	NA		NA	
Driller	NA		NA		5.0	0.0	3.8	1.0	NA		NA	
Eco-Till	NA		NA		5.0	0.0	3.3	0.5	NA		NA	
Graza	NA		NA		4.3	0.5	2.0	0.0	NA		NA	
Groundhog	NA		NA		5.0	0.0	3.5	0.6	NA		NA	
Lunch	NA		NA		4.8	0.5	2.3	0.5	NA		NA	
Nitro	NA		NA		5.0	0.0	3.0	0.0	NA		NA	
Sodbuster	NA		NA		5.0	0.0	3.5	1.3	NA		NA	
Tillage	NA		NA		4.5	0.6	2.5	0.6	NA		NA	

Table 34. Disease ranking at 50% bloom of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Concorde	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Control	NA		NA		2.0	0.8	1.3	0.5	NA		NA	
Defender	NA		NA		1.5	0.6	1.3	0.5	NA		NA	
Driller	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Eco-Till	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Graza	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Groundhog	NA		NA		1.3	0.5	1.3	0.5	NA		NA	
Lunch	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Nitro	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Sodbuster	NA		NA		1.8	0.5	1.0	0.0	NA		NA	
Tillage	NA		NA		1.5	0.6	1.0	0.0	NA		NA	

Table 35. Insect ranking at spring regrowth of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Concorde	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Control	NA		NA		2.0	0.8	1.3	0.5	NA		NA	
Defender	NA		NA		1.5	0.6	1.3	0.5	NA		NA	
Driller	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Eco-Till	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Graza	NA		NA		1.3	0.5	1.0	0.0	NA		NA	
Groundhog	NA		NA		1.3	0.5	1.3	0.5	NA		NA	
Lunch	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Nitro	NA		NA		1.5	0.6	1.0	0.0	NA		NA	
Sodbuster	NA		NA		1.8	0.5	1.0	0.0	NA		NA	
Tillage	NA		NA		1.5	0.6	1.0	0.0	NA		NA	

Table 36. Insect ranking at 50% bloom of daikon radish varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		NA		1.3	0.5	2.0	0.0	0.3	0.5	0	0.0
Concorde	NA		NA		1.3	0.5	1.0	0.0	0.5	1.0	0	0.0
Control	NA		NA		1.3	0.5	1.3	0.5	1.3	1.5	0	0.0
Defender	NA		NA		1.5	0.6	1.3	0.5	1.8	0.5	0	0.0
Driller	NA		NA		1.3	0.5	2.0	0.0	1.5	1.7	0	0.0
Eco-Till	NA		NA		1.5	0.6	2.0	0.0	0.8	1.5	0	0.0
Graza	NA		NA		1.5	0.6	0.8	0.5	0.8	1.5	0	0.0
Groundhog	NA		NA		1.3	0.5	1.8	0.5	0.0	0.0	0	0.0
Lunch	NA		NA		1.5	0.6	1.3	0.5	1.3	1.5	0	0.0
Nitro	NA		NA		1.5	0.6	2.0	0.0	1.0	1.4	0	0.0
Sodbuster	NA		NA		1.8	0.5	1.5	0.6	0.8	0.5	0	0.0
Tillage	NA		NA		1.3	0.5	1.3	0.5	0.0	0.0	0	0.0

HAIRY VETCH (*Vicia villosa*)

Table 37. Performance of hairy vetch averaged over the Northwest Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.9	1.3	1.0	69	36	269	21
Lana	1.5	1.1	1.9	1.4	54	40	243	17
Purple Bounty	1.0	0.8	1.5	1.1	76	35	269	22
Purple Prosperity	1.3	1.0	1.6	1.3	70	39	268	20
TNT	1.4	1.2	1.7	1.4	75	31	265	24
Villana	1.2	1.0	1.6	1.3	69	36	270	22

Table 37 (cont.). Performance of hairy vetch averaged over the Northwest Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.2	0.7	1.1	0.2	0.4	0.6	0.7
Lana	0.2	0.5	0.4	0.8	0.3	0.4	0.7	0.7
Purple Bounty	0.1	0.3	0.6	1.0	0.2	0.4	0.5	0.7
Purple Prosperity	0.1	0.3	0.7	1.1	0.2	0.4	0.5	0.6
TNT	0.0	0.0	0.5	1.0	0.2	0.4	0.5	0.6
Villana	0.2	0.5	0.7	1.1	0.2	0.4	0.5	0.6

Table 38. 14-day emergence of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.8	1.5	0.6	1.8	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Lana	2.0	0.0	2.5	0.6	2.5	0.6	2.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	1.5	0.6	1.5	0.6	1.3	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Purple Prosperity	1.8	0.5	2.0	0.0	2.3	0.5	2.0	0.0	0.0	0.0	0.0	0.0
TNT	1.0	0.8	3.0	0.0	2.5	0.6	2.0	0.0	0.0	0.0	0.0	0.0
Villana	1.5	0.6	2.0	0.8	1.8	1.0	1.8	0.5	0.0	0.0	0.0	0.0

Table 39. 28-day emergence of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.8	1.0	2.0	0.0	2.0	0.0	2.3	0.5	0.0	0.0	0.0	0.0
Lana	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	1.8	0.5	2.3	0.5	2.3	0.5	2.5	0.6	0.0	0.0	0.0	0.0
Purple Prosperity	1.8	0.5	2.8	0.5	2.8	0.5	2.7	0.6	0.0	0.0	0.0	0.0
TNT	1.5	0.6	3.0	0.0	3.0	0.0	2.8	0.5	0.0	0.0	0.0	0.0
Villana	2.0	0.8	3.0	0.0	2.3	0.5	2.5	0.6	0.0	0.0	0.0	0.0

Table 40. Percent winter hardiness of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
CCS Groff	81	21.9	99	2.0	90	7.1	82	24.0	62	12.1	0	0.0
Lana	0	0.0	66	21.9	99	3.0	91	13.8	56	16.1	12	15.6
Purple Bounty	94	10.0	98	4.0	87	10.3	100	0.0	69	21.6	7	9.9
Purple Prosperity	89	13.1	99	2.0	100	0.0	91	11.4	45	19.8	1	2.5
TNT	91	11.9	99	2.5	88	14.8	92	10.3	56	22.1	22	25.4
Villana	91	12.3	99	2.0	95	10.5	74	21.6	55	9.6	0	0.0

Table 41. Days to 50% bloom of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	287	0	298	0	243	0	254	0	261	1	NA	
Lana	NA		267	0	220	0	239	0	245	2	NA	
Purple Bounty	286	0	298	0	243	0	254	0	261	1	NA	
Purple Prosperity	287	0	294	0	243	0	254	0	260	1	NA	
TNT	287	0	300	1	243	0	254	0	261	0	229	1
Villana	287	0	302	0	243	0	259	0	260	1	NA	

Table 42. Disease ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	0.5	0.6	0.5	1.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.0	0.0	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0

Table 43. Disease ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	1.5	0.6	2.3	0.5	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.0	0.0	1.5	0.6	3.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	0.8	0.5	2.5	0.6	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	1.5	0.6	2.8	0.5	0.0	0.0	0.0	0.0

Table 44. Insect ranking at spring regrowth of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Lana	NA	NA	0.0	0.0	1.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Villana	0.0	0.0	0.0	0.0	1.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0

Table 45. Insect ranking at 50% bloom of hairy vetch varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.8	0.5	0.0	0.0
Lana	NA	NA	0.0	0.0	1.0	0.0	1.3	0.5	1.3	0.5	0.0	0.0
Purple Bounty	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.3	1.0	0.0	0.0
Purple Prosperity	0.0	0.0	0.0	0.0	1.3	0.5	1.0	0.0	1.0	0.0	0.0	0.0
TNT	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.8	0.0	0.0
Villana	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.3	0.5	0.0	0.0

RED CLOVER (*Trifolium repens*)

Table 46. Performance of red clover averaged over the Northwest Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.3	1.0	1.7	1.0	77	36	289	12
Cyclone II	1.5	1.3	2.0	1.1	78	37	287	10
Dynamite	1.5	1.2	2.1	1.1	77	36	285	11
Freedom	1.5	1.1	2.1	1.1	75	35	283	18
Kenland	1.0	0.6	1.5	0.8	74	39	287	10
Mammoth	1.0	0.8	1.4	0.9	77	36	286	6
Starfire II	1.0	0.8	1.2	0.8	70	37	286	13
Wildcat	1.4	1.1	1.9	1.1	77	37	287	15

Table 46 (cont.). Performance of red clover averaged over the Northwest Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.2	0.4	0.5	0.8	0.4	0.7	0.9	0.8
Cyclone II	0.3	0.5	0.5	0.8	0.5	0.8	1.0	0.9
Dynamite	0.3	0.5	0.5	0.8	0.4	0.6	0.9	0.8
Freedom	0.3	0.6	0.5	0.8	0.3	0.5	1.0	0.8
Kenland	0.3	0.5	0.7	0.9	0.5	0.7	1.0	0.6
Mammoth	0.3	0.6	0.4	0.7	0.5	0.8	0.9	0.7
Starfire II	0.3	0.4	0.5	0.8	0.3	0.6	1.0	0.8
Wildcat	0.3	0.4	0.5	0.8	0.4	0.7	0.8	0.7

Table 47. 14-day emergence of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	2.5	0.6	2.0	0.0	1.8	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Cyclone II	2.8	0.5	3.0	0.0	2.0	0.0	1.5	0.6	0.0	0.0	0.0	0.0
Dynamite	2.5	0.6	2.8	0.5	1.8	0.5	2.0	0.0	0.0	0.0	0.0	0.0
Freedom	2.3	0.5	2.3	0.5	2.5	0.6	2.0	0.0	0.0	0.0	0.0	0.0
Kenland	1.5	0.6	1.5	0.6	1.0	0.0	1.0	0.0	No Data		0.0	0.0
Mammoth	1.5	0.6	1.8	0.5	1.5	0.6	1.3	0.5	0.0	0.0	0.0	0.0
Starfire II	1.5	0.6	1.5	0.6	1.5	0.6	1.5	0.6	0.0	0.0	0.0	0.0
Wildcat	2.8	0.5	2.0	0.0	2.0	0.8	1.5	0.6	0.0	0.0	0.0	0.0

Table 48. 28-day emergence of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	2.0	0.0	1.8	0.5	3.0	0.0	2.5	0.6	1.0	0.0	0.0	0.0
Cyclone II	2.8	0.5	2.8	0.5	3.0	0.0	2.3	0.5	1.5	0.6	0.0	0.0
Dynamite	2.5	0.6	2.8	0.5	2.8	0.5	2.8	0.5	1.8	0.5	0.0	0.0
Freedom	2.3	0.5	2.5	0.6	3.0	0.0	2.8	0.5	2.0	0.0	0.0	0.0
Kenland	1.5	0.6	2.0	0.0	2.0	0.0	1.8	0.5	No data		0.0	0.0
Mammoth	1.0	0.0	2.0	0.0	2.5	0.6	2.0	0.0	1.0	0.0	0.0	0.0
Starfire II	1.5	0.6	1.5	0.6	2.0	0.0	1.8	0.5	0.5	0.6	0.0	0.0
Wildcat	2.5	0.6	1.8	0.5	3.0	0.0	2.5	0.6	1.8	0.5	0.0	0.0

Table 49. Percent winter hardiness of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Cinnamon Plus	98	4.4	95	6.3	88	8.1	96	3.3	86	10.9	0	0
Cyclone II	98	1.8	97	6.0	77	12.1	100	0.0	94	6.5	0	0
Dynamite	99	1.9	97	3.8	86	13.1	96	2.9	87	13.2	0	0
Freedom	100	1.0	95	6.6	82	5.7	92	9.9	77	29.2	4	8
Kenland	100	0.0	98	4.0	77	6.9	97	6.0	No data		0	0
Mammoth	94	7.8	99	1.5	83	13.0	100	0.0	89	9.4	0	0
Starfire II	98	2.1	93	7.6	76	12.5	96	5.7	57	29.2	0	0
Wildcat	99	3.0	98	2.1	85	15.4	98	4.0	81	23.9	0	0

Table 51. Disease ranking at spring regrowth of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	0.5	0.6	0.8	0.5	0.0	0.0	0.0	0.0
Cyclone II	0.0	0.0	0.0	0.0	0.8	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Dynamite	0.0	0.0	0.0	0.0	0.8	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Freedom	0.0	0.0	0.0	0.0	0.5	0.6	1.3	0.5	0.0	0.0	0.0	0.0
Kenland	0.0	0.0	0.0	0.0	0.8	0.5	0.8	0.5	NA	NA	0.0	0.0
Mammoth	0.0	0.0	0.0	0.0	0.5	0.6	1.3	0.5	0.0	0.0	0.0	0.0
Starfire II	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0
Wildcat	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.0	0.0	0.0	0.0	0.0

Table 50. Days to 50% bloom of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	294	0	305	0	284	0	273	0	NA	NA	NA	NA
Cyclone II	294	0	298	0	284	0	273	0	NA	NA	NA	NA
Dynamite	294	0	296	0	284	0	273	0	260	NA	NA	NA
Freedom	294	0	300	0	284	0	273	0	260	NA	227	0
Kenland	294	0	298	0	284	0	273	0	NA	NA	NA	NA
Mammoth	294	0	NA	NA	284	0	281	0	NA	NA	NA	NA
Starfire II	294	0	300	0	284	0	273	0	257	NA	NA	NA
Wildcat	294	0	307	0	284	0	273	0	254	NA	NA	NA

Table 52. Disease ranking at 50% bloom of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	1.5	0.6	1.5	0.6	0.0	0.0	0.0	0.0
Cyclone II	0.0	0.0	0.0	0.0	1.3	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Dynamite	0.0	0.0	0.0	0.0	1.5	0.6	1.5	0.6	0.0	0.0	0.0	0.0
Freedom	0.0	0.0	0.0	0.0	1.5	0.6	1.8	0.5	0.0	0.0	0.0	0.0
Kenland	0.0	0.0	0.0	0.0	1.5	0.6	1.8	0.5	NA	NA	0.0	0.0
Mammoth	0.0	0.0	0.0	0.0	1.3	0.5	1.3	0.5	0.0	0.0	0.0	0.0
Starfire II	0.0	0.0	0.0	0.0	1.3	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Wildcat	0.0	0.0	0.0	0.0	1.8	0.5	1.5	0.6	0.0	0.0	0.0	0.0

Table 53. Insect ranking at spring regrowth of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.0	0.0	0.0	0.0	1.3	0.5	1.3	0.5	0.0	0.0	0.0	0.0
Cyclone II	0.0	0.0	0.0	0.0	1.5	0.6	1.5	0.6	0.0	0.0	0.0	0.0
Dynamite	0.0	0.0	0.0	0.0	1.3	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Freedom	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Kenland	0.0	0.0	0.0	0.0	1.0	0.8	1.3	0.5	NA	NA	0.0	0.0
Mammoth	0.0	0.0	0.0	0.0	1.3	0.5	1.8	0.5	0.0	0.0	0.0	0.0
Starfire II	0.0	0.0	0.0	0.0	0.8	0.5	1.3	0.5	0.0	0.0	0.0	0.0
Wildcat	0.0	0.0	0.0	0.0	1.0	0.0	1.5	0.6	0.0	0.0	0.0	0.0

Table 54. Insect ranking at 50% bloom of red clover varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.0	0.0	1.0	0.0	2.3	0.5	1.0	0.0	0.0	0.0	0.0	0.0
Cyclone II	1.0	0.0	1.8	0.5	2.3	0.5	1.3	0.5	0.0	0.0	0.0	0.0
Dynamite	1.0	0.0	1.0	0.0	2.3	0.5	1.0	0.0	0.3	0.5	0.0	0.0
Freedom	1.0	0.0	1.0	0.0	2.3	0.5	1.0	0.0	0.5	1.0	0.0	0.0
Kenland	1.0	0.0	1.0	0.0	2.0	0.0	1.0	0.0	NA	NA	0.0	0.0
Mammoth	1.0	0.0	1.0	0.0	2.0	0.0	1.3	0.5	0.0	0.0	0.0	0.0
Starfire II	1.0	0.0	1.0	0.0	2.0	0.0	1.3	0.5	0.8	1.5	0.0	0.0
Wildcat	1.0	0.0	1.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0

WINTER PEA (*Pisum sativum*)

Table 55. Performance of winter pea averaged over the Northwest Region								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.4	1.1	1.7	1.3	5.0	12	224	34
Dunn	1.5	1.2	1.6	1.2	4.6	13	210	29
Frost Master	0.8	0.9	0.9	1.0	53.8	36	270	29
Lynx	0.6	0.6	0.8	1.0	42.1	46	276	20
Maxum	1.3	1.1	1.8	1.4	7.6	19	210	29
Survivor 15	1.5	1.2	1.7	1.3	59.5	38	277	25
Whistler	1.3	1.1	1.7	1.3	49.4	39	264	22
Windham	1.2	0.9	1.3	0.9	59.0	42	262	21

Table 55 (cont.). Performance of winter pea averaged over the Northwest Region								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.9	1.4	1.7	2.5	0.5	0.8	1.5	1.9
Dunn	1.3	1.9	1.7	2.5	0.6	0.9	1.4	1.9
Frost Master	0.8	0.9	0.6	1.3	0.7	1.4	0.5	0.9
Lynx	0.8	0.9	0.0	0.0	0.4	0.8	0.3	0.5
Maxum	1.1	1.6	1.6	2.4	0.7	1.0	1.4	1.8
Survivor 15	0.6	1.1	0.6	1.2	0.5	1.1	0.3	0.6
Whistler	0.9	0.8	1.3	2.2	0.5	0.9	1.5	1.6
Windham	0.8	0.9	1.1	2.1	0.5	1.0	1.2	1.3

Table 56. 14-day emergence of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.3	1.0	2.5	0.6	1.5	0.6	2.0	0.0	0.0	0.0	0.0	0.0
Dunn	2.0	0.0	3.0	0.0	2.0	0.0	2.3	0.5	0.0	0.0	0.0	0.0
Frost Master	0.0	0.0	1.0	0.0	1.8	0.5	2.0	0.0	0.0	0.0	0.0	0.0
Lynx	0.3	0.5	1.0	0.0	1.0	0.0	1.3	0.5	0.0	0.0	0.0	0.0
Maxum	1.3	0.5	2.8	0.5	2.0	0.0	2.0	0.8	0.0	0.0	0.0	0.0
Survivor 15	2.3	0.5	3.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Whistler	2.0	0.0	2.8	0.5	1.8	0.5	1.5	0.6	0.0	0.0	0.0	0.0
Windham	1.3	0.5	2.0	0.0	1.8	0.5	2.0	0.0	0.0	0.0	0.0	0.0

Table 57. 28-day emergence of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.5	0.6	2.5	0.6	2.5	0.6	2.8	0.5	0.0	0.0	0.0	0.0
Dunn	2.0	0.0	2.5	0.6	2.8	0.5	2.5	0.6	0.0	0.0	0.0	0.0
Frost Master	0.3	0.5	0.8	0.5	2.0	0.0	2.3	0.5	0.0	0.0	0.0	0.0
Lynx	0.3	0.5	0.5	0.6	2.0	0.0	2.3	0.5	0.0	0.0	0.0	0.0
Maxum	1.8	0.5	3.0	0.0	3.0	0.0	2.8	0.5	0.0	0.0	0.0	0.0
Survivor 15	2.5	0.6	3.0	0.0	2.0	0.0	2.8	0.5	0.0	0.0	0.0	0.0
Whistler	1.8	0.5	3.0	0.0	2.8	0.5	2.8	0.5	0.0	0.0	0.0	0.0
Windham	1.8	0.5	1.8	0.5	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0

Table 58. Percent winter hardiness of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------											
Arvica 4010	0	0.0	0	0.0	0	0.0	0	0.0	30	8.2	0	0.0
Dunn	0	0.0	0	0.0	0	0.0	1	2.5	27	21.1	0	0.0
Frost Master	31	13.0	100	0.0	42	34.4	55	24.2	83	19.4	11	22.0
Lynx	27	39.1	100	0.0	23	39.8	0	0.0	85	26.5	19	37.5
Maxum	0	0.0	0	0.0	0	0.0	5	6.2	41	29.0	0	0.0
Survivor 15	66	35.1	100	0.0	21	24.0	65	33.1	74	20.6	32	47.2
Whistler	13	18.9	91	7.0	49	51.2	54	18.9	75	26.7	15	30.0
Windham	10	20.0	100	0.0	32	33.8	80	23.8	93	8.7	41	49.4

Table 59. Days to 50% bloom of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		NA		NA		197	0.0	261		261	NA
Dunn	NA		NA		NA		197	0.0	261		NA	
Frost Master	294	0.0	298	0.0	NA		239	0.0	261		NA	
Lynx	NA		292	0.0	NA		NA		255	2.8	254	
Maxum	NA		NA		NA		197	0.0	261		NA	
Survivor 15	294	0.0	301	0.0	NA		245	0.0	NA		258	4.9
Whistler	NA		291	0.0	NA		239	0.0	261	1	NA	
Windham	294	0.0	289	0.0	NA		239	0.0	256	3	255	0.7

Table 60. Disease ranking at spring regrowth of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		NA		NA		2.8	0.5	0	0	0	0
Dunn	NA		NA		NA		3.8	0.5	0	0	0	0
Frost Master	0.3	0.5	1	0	1.7	1.2	2.0	0	0	0	0	0
Lynx	1	0	1	0	2		2.0	0.8	0	0	0	0
Maxum	NA		NA		NA		3.3	0.5	0	0	0	0
Survivor 15	0	0	0	0	3	0	1.8	0.5	0	0	0	0
Whistler	1	0	1	0	2	0	1.8	0.5	0	0	0	0
Windham	1	1.4	1	0	2		2.0	0	0	0	0	0

Table 61. Disease ranking at 50% bloom of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	NA	NA	NA	NA	5.0	0.0	0	0	0	0
Dunn	NA	NA	NA	NA	NA	NA	5.0	0.0	0	0	0	0
Frost Master	0	NA	0	0	NA	NA	2.8	1.0	0	0	0	0
Lynx	NA	NA	0	0	NA	NA	NA	NA	0	0	0	0
Maxum	NA	NA	NA	NA	NA	NA	4.8	0.5	0	0	0	0
Survivor 15	0	0	0	0	NA	NA	2.8	1.0	0	0	0	0
Whistler	NA	NA	0	0	NA	NA	5.0	0.0	0	0	0	0
Windham	0	NA	0	0	NA	NA	4.8	0.5	0	0	0	0

Table 62. Insect ranking at spring regrowth of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	NA	NA	NA	NA	1.5	0.6	0	0	0	0
Dunn	NA	NA	NA	NA	NA	NA	1.8	0.5	0	0	0	0
Frost Master	0	0	0	0	4	1	1	0	0	0	0	0
Lynx	0	0	0	0	3	NA	1	0	0	0	0	0
Maxum	NA	NA	NA	NA	NA	NA	2	0	0	0	0	0
Survivor 15	0	0	0	0	3.5	0.71	1	0	0	0	0	0
Whistler	0	0	0	0	2.5	0.71	1.3	0.5	0	0	0	0
Windham	0	0	0	0	4	NA	1.3	0.5	0	0	0	0

Table 63. Insect ranking at 50% bloom of winter pea varieties by location.												
Variety	Idaho 2016-2017		Idaho 2017-2018		Oregon 2016-2017		Oregon 2017-2018		Washington 2016-2017		Washington 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA	NA	NA	NA	NA	NA	4	0.8	0.5	0.6	0	0
Dunn	NA	NA	NA	NA	NA	NA	4	0.0	0.3	0.5	0	0
Frost Master	0	NA	0	0	NA	NA	2	0.8	0.3	0.5	0	0
Lynx	NA	NA	1	0	NA	NA	NA	NA	0.0	0.0	0	0
Maxum	NA	NA	NA	NA	NA	NA	3.8	0.5	0.5	1.0	0	0
Survivor 15	0	0	0	0	NA	NA	1.3	0.5	0.0	0.0	0	0
Whistler	NA	NA	1	0	NA	NA	4	0.8	1.0	0.8	0	0
Windham	0	NA	1	0	NA	NA	3.3	0.5	1.0	0.8	0	0

SOUTHWEST REGION DATA

Includes data for Tucson, Arizona, Lockeford, California, Meeker, Colorado, Los Lunas, New Mexico, and Fallon, Nevada. Refer to Page 1 for data definitions.

BLACK OATS (*Avena strigosa*) and BLACK SEEDED OATS (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the Southwestern Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.1	1.1	2.4	0.8	85	38	210	33
Soil Saver	2.2	0.9	2.7	0.5	48	48	191	80

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the Southwestern Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.2	0.3	0.7	1.0	0.1	0.2	0.4	0.8
Soil Saver	0.2	0.3	0.4	0.5	0.0	0.1	0.1	0.4

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	0.5	0.6	2.5	0.6	0.3	0.5	NA				2.5	0.6	3.0	0.0	3.0	0.0
Soil Saver	3.0	0.0	1.0	0.0	3.0	0.0	0.8	1.0					2.3	0.5	3.0	0.0	2.8	0.5

Table 3. 28-day emergence of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.8	0.5	1.3	1.0	2.5	0.6	1.5	0.6	2.5	0.6	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Soil Saver	3.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	2.3	0.5	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0

Table 4. Percent winter survival of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
Cosaque	NA		100	0	100	0	96	9	NA				100	0	100	0	99	2
Soil Saver			100	0	100	0	85	6					48	20	0	0	1	2

Table 5. Days to 50% bloom of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA		174	0	182	0	204	0	NA				212	0	219	0	267	0
Soil Saver			160	6	182	0	187	0					204	1	219	0	NA	NA

Table 6. Disease ranking at spring regrowth of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA		0.0	0.0	0.5	0.6	0.8	0.5	NA				0.0	0.0	0.0	0.0	0.0	0.0
Soil Saver			0.0	0.0	0.5	0.6	0.5	0.6					0.5	0.6	0.0	0.0	0.0	0.0

Table 7. Disease ranking at 50% bloom of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA		0.0	0.0	2.5	0.6	1.0	0.0	NA				1.5	1.0	0.0	0.0	0.0	0.0
Soil Saver			0.0	0.0	1.0	0.0	1.0	0.0					0.8	0.5	0.0	0.0	0.0	0.0

Table 8. Insect ranking at spring regrowth of black oats and black seeded oats by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA		0	0	0	0	0	0	NA				0.5	1	0	0	0	0
Soil Saver			0	0	0	0	0	0					0.3	0.5	0	0	0	0

Table 9. Insect ranking at 50% bloom of black oats and black seeded oats by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	NA		0	0	1	0	0	0	NA				2	0	0	0	0	0
Soil Saver			0	0	1	0	0	0					0	0	0	0	0	0

CEREAL RYE (*Secale cereale*)

Table 10. Performance of cereal rye averaged over the Southwest Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.8	0.5	2.9	0.3	93	23	182	25
Bates	2.7	0.5	2.8	0.4	92	19	179	29
Brasetto	2.5	0.7	2.6	0.7	96	14	197	24
Elbon	2.7	0.5	2.8	0.4	93	22	183	25
FL 401	2.7	0.5	2.8	0.4	69	36	167	50
Guardian	2.2	0.8	2.6	0.5	95	18	201	23
Hazlet	2.7	0.7	2.8	0.5	95	18	198	22
Maton	2.6	0.6	2.8	0.4	95	23	181	26
Maton II	2.5	0.7	2.7	0.5	95	20	182	29
Merced	2.7	0.5	2.8	0.4	75	36	169	47
Oklon	2.8	0.4	2.8	0.4	96	21	186	24
Rymin	2.6	0.6	2.8	0.5	94	13	197	23
Wheeler	2.5	0.8	2.8	0.4	94	20	200	25
Wintergrazer 70	2.8	0.4	3.0	0.0	91	20	180	27
Wrens Abruzzi	2.8	0.4	2.8	0.4	89	24	178	30

Table 10 (cont.). Performance of cereal rye averaged over the Southwest Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.1	0.3	0.5	0.9	0	0.0	0.0	0.0
Bates	0.0	0.1	0.7	1.3	0	0.0	0.0	0.1
Brasetto	0.1	0.3	0.5	0.9	0	0.0	0.0	0.0
Elbon	0.0	0.1	0.6	1.0	0	0.0	0.1	0.4
FL 401	0.3	0.5	1.0	1.5	0	0.0	0.0	0.1
Guardian	0.1	0.4	0.6	1.1	0	0.0	0.0	0.0
Hazlet	0.1	0.3	0.8	1.4	0	0.0	0.0	0.0
Maton	0.1	0.2	0.5	1.0	0	0.0	0.0	0.0
Maton II	0.0	0.1	0.5	0.9	0	0.0	0.0	0.0
Merced	0.2	0.4	1.1	1.7	0	0.0	0.0	0.0
Oklon	0.0	0.1	0.5	1.0	0	0.0	0.0	0.0
Rymin	0.0	0.1	0.8	1.3	0	0.0	0.0	0.0
Wheeler	0.1	0.2	0.6	1.1	0	0.0	0.0	0.0
Wintergrazer 70	0.0	0.1	0.5	0.9	0	0.0	0.0	0.1
Wrens Abruzzi	0.0	0.1	0.6	1.0	0	0.0	0.0	0.1

Table 11. 14-day emergence of cereal rye by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3.0	0.0	1.8	0.5	3.0	0.0	3.0	0.0	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Bates	3.0	0.0	1.8	0.5	3.0	0.0	3.0	0.0	2.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Brasetto	2.8	0.5	1.0	0.0	2.8	0.5	2.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Elbon	3.0	0.0	1.8	0.5	3.0	0.0	2.5	0.6	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
FL 401	3.0	0.0	1.8	0.5	3.0	0.0	2.3	0.5	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Guardian	2.8	0.5	1.0	0.0	3.0	0.0	1.8	0.5	2.8	0.5	2.3	0.5	2.0	0.0	1.0	0.0	3.0	0.0
Hazlet	3.0	0.0	1.3	0.5	3.0	0.0	3.0	0.0	2.3	1.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Maton	2.8	0.5	1.8	0.5	3.0	0.0	2.5	0.6	2.0	0.0	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0
Maton II	3.0	0.0	1.3	0.5	3.0	0.0	2.5	0.6	2.0	0.0	2.5	0.6	3.0	0.0	2.8	0.5	2.8	0.5
Merced	2.8	0.5	1.8	0.5	3.0	0.0	2.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Oklon	3.0	0.0	2.0	0.0	3.0	0.0	3.0	0.0	2.3	0.5	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Rymin	2.5	0.6	1.5	0.6	3.0	0.0	3.0	0.0	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Wheeler	2.8	0.5	1.0	0.0	3.0	0.0	2.3	1.0	2.3	0.5	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0
Wintergrazer 70	3.0	0.0	2.0	0.0	3.0	0.0	2.8	0.5	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Wrens Abruzzi	3.0	0.0	2.0	0.0	3.0	0.0	2.8	0.5	2.3	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0

Table 12. 28-day emergence of cereal rye by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Bates	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Brasetto	3.0	0.0	1.0	0.0	2.8	0.5	3.0	0.0	2.3	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Elbon	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	2.3	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
FL 401	3.0	0.0	2.0	0.0	3.0	0.0	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Guardian	3.0	0.0	2.0	0.0	3.0	0.0	2.3	0.5	2.5	0.6	2.5	0.6	2.8	0.5	2.0	0.0	3.0	0.0
Hazlet	3.0	0.0	1.8	0.5	3.0	0.0	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Maton	2.8	0.5	2.3	0.5	3.0	0.0	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Maton II	3.0	0.0	1.8	0.5	3.0	0.0	3.0	0.0	2.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Merced	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	2.3	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Oklon	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Rymin	2.5	0.6	1.8	0.5	3.0	0.0	3.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Wheeler	2.8	0.5	2.0	0.0	3.0	0.0	2.8	0.5	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Wintergrazer 70	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Wrens Abruzzi	3.0	0.0	2.0	0.0	3.0	0.0	3.0	0.0	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0

Table 13. Percent winter survival cereal rye by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
Aroostook	NA		100	0	100	1	92	6	54	21	100	0	100	0	100	0	99	2
Bates	NA		100	0	100	0	90	7	71	22	78	25	98	3	100	0	100	0
Brasetto	NA		100	0	100	0	97	6	92	17	80	22	97	5	100	0	100	0
Elbon	NA		100	0	96	9	91	8	63	23	98	5	99	3	100	0	100	0
FL 401	NA		100	0	100	0	92	6	1	1	59	32	76	17	100	0	21	17
Guardian	NA		100	0	79	42	100	0	91	11	89	24	100	0	100	0	100	0
Hazlet	NA		100	0	99	3	89	7	89	13	84	29	100	0	99	2	100	0
Maton	NA		100	0	100	0	91	6	79	24	96	9	99	3	100	0	99	2
Maton II	NA		100	0	100	0	94	8	89	13	85	16	99	2	100	0	97	7
Merced	NA		100	0	100	0	90	7	1	1	57	27	98	5	100	0	53	52
Oklon	NA		100	0	100	0	91	2	84	19	95	6	98	3	100	0	100	0
Rymin	NA		100	0	95	11	94	7	85	19	83	34	99	3	100	0	100	0
Wheeler	NA		100	0	100	0	96	9	80	41	80	22	100	0	100	0	100	0
Wintergrazer 70	NA		100	0	100	0	91	8	58	12	84	13	95	4	100	0	100	0
Wrens Abruzzi	NA		100	0	100	0	90	7	51	35	73	30	98	5	100	0	99	2

Table 14. Days to 50% bloom of cereal varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	NA		162	5	161	0	173	2	306	0	328	0	178	0	191	0	228	0
Bates	NA		145	5	161	0	172	3	306	0	328	0	178	0	191	0	228	0
Brasetto	NA		169	21	182	0	192	1	306	0	328	0	198	0	204	0	239	0
Elbon	NA		158	3	161	0	177	0	306	0	328	0	181	0	191	0	228	0
FL 401	NA		93	0	140	0	155	0	306	0	328	0	181	0	191	0	239	0
Guardian	NA		183	0	176	0	194	1	306	0	328	0	201	2	211	0	239	0
Hazlet	NA		183	0	176	0	192	1	306	0	328	0	195	0	206	4	239	0
Maton	NA		157	3	161	0	172	1	306	0	328	0	178	1	191	0	228	0
Maton II	NA		152	5	161	0	174	3	306	0	328	0	178	0	191	0	234	10
Merced	NA		105	2	140	0	155	0	306	0	328	0	181	0	191	0	241	3
Oklon	NA		158	3	174	0	182	0	306	0	328	0	181	0	191	0	228	0
Rymin	NA		178	8	176	0	193	1	306	0	328	0	191	3	204	0	239	0
Wheeler	NA		183	0	176	0	192	1	306	0	328	0	195	0	211	0	245	0
Wintergrazer 70	NA		153	5	160	3	174	2	306	3	328	3	178	0	191	0	228	0
Wrens Abruzzi	NA		141	1	158	3	171	2	306	3	328	3	181	0	191	0	228	0

Table 15. Disease ratings at spring regrowth of cereal rye varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	NA		0	0	0	0	0.8	1.5	0	0	0	0	0	0	0	0	0	0
Bates	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Brasetto	NA		0	0	0	0	0.8	1.0	0	0	0	0	0	0	0	0	0	0
Elbon	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
FL 401	NA		0	0	0	0	1.0	0.0	0	0	0	0	1	0	0	0	0	0
Guardian	NA		0	0	0	0	1.0	1.4	0	0	0	0	0	0	0	0	0	0
Hazlet	NA		0	0	0	0	0.8	1.5	0	0	0	0	0	0	0	0	0	0
Maton	NA		0	0	0	0	0.5	1.0	0	0	0	0	0	0	0	0	0	0
Maton II	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Merced	NA		0	0	0	0	1.0	0.0	0	0	0	0	0.5	0.6	0	0	0	0
Oklon	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Rymin	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Wheeler	NA		0	0	0	0	0.5	0.6	0	0	0	0	0	0	0	0	0	0
Wintergrazer 70	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Wrens Abruzzi	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0

Table 16. Disease ratings at 50% bloom of cereal rye varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	NA		0	0	2.3	0.5	1.5	0.6	0	0	0	0	0	0	0	0	0	0
Bates	NA		0	0	3.0	0.8	2.0	0.0	0	0	0	0	0	0	0	0	0	0
Brasetto	NA		0	0	2.0	0.0	1.8	0.5	0	0	0	0	0	0	0	0	0	0
Elbon	NA		0	0	2.0	0.0	2.0	0.0	0	0	0	0	0	0	0	0	0	0
FL 401	NA		0	0	2.0	0.0	4.0	0.0	0	0	0	0	1	0	0	0	0	0
Guardian	NA		0	0	2.5	0.6	2.0	0.0	0	0	0	0	0	0	0	0	0	0
Hazlet	NA		0	0	3.3	0.5	2.3	0.5	0	0	0	0	0	0	0	0	0	0
Maton	NA		0	0	2.5	0.6	1.3	0.5	0	0	0	0	0	0	0	0	0	0
Maton II	NA		0	0	1.8	0.5	2.0	0.0	0	0	0	0	0	0	0	0	0	0
Merced	NA		0	0	3.0	0.0	4.0	0.0	0	0	0	0	0.5	0.6	0	0	0	0
Oklon	NA		0	0	2.5	1.0	1.0	0.0	0	0	0	0	0	0	0	0	0	0
Rymin	NA		0	0	2.8	0.5	2.5	0.6	0	0	0	0	0	0	0	0	0	0
Wheeler	NA		0	0	2.8	0.5	1.8	0.5	0	0	0	0	0	0	0	0	0	0
Wintergrazer 70	NA		0	0	2.3	0.5	1.5	0.6	0	0	0	0	0	0	0	0	0	0
Wrens Abruzzi	NA		0	0	2.3	0.5	1.8	0.5	0	0	0	0	0.3	0.5	0	0	0	0

Table 17. Insect ratings at spring regrowth of cereal rye varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bates	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brasetto	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elbon	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FL 401	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guardian	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazlet	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maton	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maton II	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Merced	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oklon	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rymin	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheeler	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wintergrazer 70	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wrens Abruzzi	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 18. Insect ratings at 50% bloom of cereal rye varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bates	NA		0	0	0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0
Brasetto	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elbon	NA		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
FL 401	NA		0	0	0	0	0	0	0	0	0	0	0.3	0.5	0	0	0	0
Guardian	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazlet	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maton	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maton II	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Merced	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oklon	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rymin	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheeler	NA		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wintergrazer 70	NA		0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0	0	0
Wrens Abruzzi	NA		0	0	0.3	0.5	0	0	0	0	0	0	0	0	0	0	0	0

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 19. Performance of crimson clover averaged over the Southwest Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.3	1.0	1.5	0.9	70	45	196	57
AU Sunrise	1.6	0.8	1.8	0.9	66	43	194	57
AU Sunup	0.5	0.7	0.8	0.8	55	47	192	58
Contea	1.0	0.9	1.5	1.1	62	44	199	56
Dixie	1.4	1.1	1.7	1.1	68	42	208	99
Kentucky Pride	1.7	1.0	1.9	1.0	66	43	215	99

Table 19 (cont.). Performance of crimson clover averaged over the Southwest Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.0	0.0	0.1	0.4	0.2	0.6	0.3	0.5
AU Sunrise	0.0	0.0	0.1	0.4	0.1	0.3	0.3	0.5
AU Sunup	0.1	0.3	0.3	0.5	0.2	0.7	0.3	0.5
Contea	0.0	0.0	0.4	0.6	0.3	0.7	0.3	0.5
Dixie	0.0	0.0	0.4	0.7	0.2	0.6	0.3	0.5
Kentucky Pride	0.0	0.0	0.3	0.5	0.3	0.8	0.4	0.6

Table 20. 14-day emergence of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.3	1.0	0.8	0.5	1.5	0.6	0.5	0.6	0.5	0.6	1.5	0.6	3.0	0.0	1.5	1.0	1.0	0.8
AU Sunrise	2.0	1.2	1.0	0.0	2.0	0.0	1.3	0.5	1.0	0.8	1.8	1.3	3.0	0.0	1.3	0.5	1.5	0.6
AU Sunup	0.8	0.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	2.0	0.0	0.0	0.0	0.3	0.5
Contea	1.3	1.0	0.0	0.0	1.8	0.5	0.3	0.5	0.0	0.0	0.0	0.0	2.0	0.0	1.5	0.6	1.5	0.6
Dixie	1.8	1.3	0.3	0.5	2.0	0.0	0.5	0.6	0.3	0.5	1.5	0.6	3.0	0.0	1.5	0.6	1.8	0.5
Kentucky Pride	2.5	1.0	0.5	0.6	2.0	0.0	1.0	0.0	1.3	1.0	2.0	0.8	3.0	0.0	1.8	0.5	1.8	1.0

Table 21. 28-day emergence of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.8	0.5	1.0	0.0	2.0	0.0	1.0	0.0	0.3	0.5	1.0	0.8	3.0	0.0	2.3	0.5	1.0	0.8
AU Sunrise	2.0	1.2	1.3	0.5	2.0	0.0	1.5	0.6	0.5	0.6	1.3	1.0	3.0	0.0	2.3	0.5	2.3	0.5
AU Sunup	1.8	0.5	0.3	0.5	1.0	0.0	0.8	0.5	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.3	0.5
Contea	1.8	1.0	0.3	0.5	1.8	0.5	1.0	0.0	0.0	0.0	0.0	0.0	2.5	0.6	2.5	1.0	2.0	0.8
Dixie	2.5	0.6	0.8	0.5	2.0	0.0	1.0	0.0	0.3	0.5	1.0	0.8	3.0	0.0	2.0	1.4	2.0	0.8
Kentucky Pride	2.5	1.0	1.3	0.5	2.0	0.0	1.5	0.6	0.8	1.0	2.0	0.0	3.0	0.0	2.8	0.5	1.5	1.3

Table 22. Percent winter survival of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
AU Robin	NA		100	0	100	0	100	0	0	0	0	0	100	0	10	18	78	27
AU Sunrise	NA		100	0	100	0	97	7	3	7	0	0	100	0	40	26	20	21
AU Sunup	NA		100	0	100	0	99	3	0	0	0	0	66	29	0	0	22	9
Contea	NA		100	0	100	0	93	8	0	0	0	0	93	9	28	28	23	29
Dixie	NA		100	0	100	0	100	0	15	24	0	0	100	0	11	20	53	33
Kentucky Pride	NA		100	0	100	0	89	13	6	11	0	0	100	0	10	11	53	39

Table 23. Days after planting to 50% bloom of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA		153	1.0	155	0	176	0	NA		NA		191	0	196	3.5	NA	NA
AU Sunrise	NA		152	0.0	153	5.7	176	0	NA		NA		185	0	195	4.0	228	0
AU Sunup	NA		157	3.5	149	3	167	0	NA		NA		178	1	198	NA	228	NA
Contea	NA		152	NA	161	0	180	1.2	NA		NA		197	0.5	198	0.0	246	9.2
Dixie	NA		NA	NA	161	0	181	0	NA		NA		195	0.5	198	0.0	228	NA
Kentucky Pride	NA		NA	NA	174	0	187	0	NA		NA		204	1	204	0.0	252	NA

Table 24. Disease ranking at spring regrowth of crimson clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA		0.0	0.0	0.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunrise	NA		0.0	0.0	0.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	NA		0.0	0.0	0.3	0.5	0.0	0.0	NA		NA		0.5	0.6	0.0	0.0	0.0	0.0
Contea	NA		0.0	0.0	0.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Dixie	NA		0.0	0.0	0.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	NA		0.0	0.0	0.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 25. Disease ranking at 50% bloom of crimson clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA		0.0	0.0	1.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunrise	NA		0.0	0.0	1.0	0.0	0.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	NA		0.0	0.0	1.0	0.0	1.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Contea	NA		0.0	NA	1.0	0.0	1.5	0.6	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Dixie	NA		NA	NA	1.0	0.0	1.5	0.6	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	NA		NA	NA	1.0	0.0	1.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 26. Insect ranking at spring regrowth of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA		0.0	0.0	0.3	0.5	1.5	1.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunrise	NA		0.0	0.0	0.0	0.0	1.0	0.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	NA		0.0	0.0	0.0	0.0	1.8	1.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Contea	NA		0.0	0.0	0.3	0.5	1.8	1.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Dixie	NA		0.0	0.0	0.3	0.5	1.5	1.0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	NA		0.0	0.0	0.0	0.0	2.0	1.2	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 27. Insect ranking at 50% bloom of crimson clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	NA		0	0	1	0	1	0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunrise	NA		0	0	1	0	1	0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
AU Sunup	NA		0	0	1	0	1	0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Contea	NA		0	NA	1	0	1	0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Dixie	NA		NA	NA	1	0	1	0	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Kentucky Pride	NA		NA	NA	1	0	1.3	0.5	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0

DAIKON RADISH (*Raphanus sativus*)

Table 28. Performance of daikon radish averaged over the Southwest Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.2	0.6	2.5	0.5	59	50	156	29
Concorde	2.3	0.6	2.6	0.6	56	48	166	32
Control	2.2	0.6	2.6	0.5	64	43	162	30
Defender	1.6	0.9	2.3	0.8	61	46	159	32
Driller	2.3	0.6	2.4	0.6	55	52	140	64
Eco-Till	2.1	0.6	2.4	0.5	55	50	156	31
Graza	0.6	0.6	1.3	0.8	63	46	172	28
Groundhog	2.0	0.5	2.5	0.5	57	51	156	32
Lunch	1.7	0.7	2.3	0.6	62	46	154	29
Nitro	2.1	0.6	2.4	0.6	57	51	156	31
Sodbuster	1.7	0.8	2.2	0.7	54	50	147	69
Tillage	2.0	0.6	2.4	0.6	56	52	144	68

Table 28 (cont.). Performance of daikon radish averaged over the Southwest Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	0.7	0.9	1.2	1.5	0.7	0.7	0.8	0.5
Concorde	0.8	0.6	1.2	1.5	1.5	1.2	1.6	1.0
Control	0.9	0.8	1.4	1.7	0.8	0.7	0.9	1.0
Defender	0.8	0.7	1.3	1.5	1.0	0.8	1.3	0.8
Driller	0.8	0.6	1.1	1.3	1.0	0.7	0.9	0.6
Eco-Till	0.6	0.8	1.1	1.3	1.1	0.9	1.1	0.7
Graza	0.6	0.8	1.1	1.2	0.7	0.7	1.0	0.7
Groundhog	0.9	0.8	1.2	1.4	1.2	1.0	1.3	0.8
Lunch	0.8	0.9	1.1	1.2	1.2	0.9	1.0	0.8
Nitro	0.8	0.6	1.4	1.4	1.3	0.8	1.2	0.7
Sodbuster	0.6	0.8	1.2	1.4	0.9	0.7	0.9	0.4
Tillage	0.6	0.7	1.2	1.4	1.4	1.6	1.4	1.6

Table 29. 14-day emergence of daikon radish varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.5	0.6	1.3	0.5	2.0	0.0	2.8	0.5	2.0	0.0	2.5	0.6	2.3	0.5	1.8	0.5	2.8	0.5
Concorde	2.5	0.6	1.5	0.6	2.0	0.0	2.5	0.6	2.3	0.5	2.8	0.5	2.8	0.5	2.3	0.5	2.3	0.5
Control	2.8	0.5	1.5	0.6	2.0	0.0	2.3	1.0	2.0	0.0	2.5	0.6	2.8	0.5	2.0	0.0	2.3	0.5
Defender	1.0	0.0	0.3	0.5	1.5	0.6	2.5	1.0	2.3	1.0	2.8	0.5	2.0	0.0	2.0	0.0	1.5	0.6
Driller	1.5	0.6	1.8	0.5	2.0	0.0	2.5	0.6	2.3	0.5	2.5	0.6	2.5	0.6	2.5	0.6	3.0	0.0
EcoTill	2.0	0.0	1.3	0.5	2.0	0.0	2.8	0.5	2.0	0.0	2.3	0.5	1.8	0.5	2.3	0.5	2.5	0.6
Graza	1.0	0.0	0.0	0.0	1.0	0.0	1.3	1.0	0.0	0.0	1.3	0.5	1.0	0.0	0.5	0.6	0.3	0.5
Groundhog	1.8	0.5	1.5	0.6	2.0	0.0	2.5	1.0	2.0	0.0	2.5	0.6	2.0	0.0	2.0	0.0	2.5	0.6
Lunch	1.0	0.0	0.5	0.6	1.8	0.5	2.5	0.6	2.0	0.0	2.5	0.6	2.0	0.0	2.0	0.0	1.8	0.5
Nitro	1.8	0.5	1.3	0.5	2.0	0.0	2.3	0.5	2.0	0.0	2.8	0.5	3.0	0.0	2.3	0.5	2.5	0.6
Sodbuster	1.0	0.0	0.8	0.5	1.3	0.5	2.8	0.5	1.8	0.5	2.8	0.5	1.8	0.5	1.8	0.5	2.3	1.0
Tillage	1.5	0.6	1.3	0.5	1.8	0.5	2.8	0.5	2.0	0.0	2.5	0.6	2.3	0.5	2.0	0.0	2.5	0.6

Table 30. 28-day emergence of daikon radish varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.8	0.5	2.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	3.0	0.0	2.5	0.6	3.0	0.0	3.0	0.0
Concorde	2.8	0.5	1.8	0.5	2.0	0.0	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Control	3.0	0.0	2.0	0.0	2.0	0.0	2.5	0.6	2.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Defender	1.8	0.5	1.3	0.5	1.5	0.6	2.8	0.5	2.5	0.6	2.8	0.5	2.3	0.5	3.0	0.0	3.0	0.0
Driller	2.0	0.0	1.8	0.5	2.0	0.0	2.8	0.5	2.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0
EcoTill	2.0	0.0	2.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	2.5	0.6	2.3	0.5	3.0	0.0	3.0	0.0
Graza	1.8	0.5	0.5	0.6	1.0	0.0	1.5	0.6	0.3	0.5	2.0	0.5	1.5	0.6	1.8	0.5	1.8	1.3
Groundhog	2.3	0.5	2.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	2.8	0.5	2.5	0.6	3.0	0.0	3.0	0.0
Lunch	2.0	0.0	1.5	0.6	1.8	0.5	3.0	0.0	2.3	0.5	2.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0
Nitro	2.0	0.0	1.8	0.5	2.0	0.0	2.8	0.5	2.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Sodbuster	1.8	0.5	1.3	0.5	1.8	0.5	2.8	0.5	2.0	0.0	3.0	0.0	2.3	0.5	3.0	0.0	2.8	0.5
Tillage	2.0	0.0	1.8	0.5	2.0	0.0	2.8	0.5	2.3	0.5	2.8	0.5	2.5	0.6	3.0	0.0	3.0	0.0

Table 31. Percent winter survival of daikon radish varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
Big Dog	NA		100	0	95	7	100	0	NA				100	0	15	18	4	9
Concorde	NA		100	0	83	20	97	7	NA				100	0	9	14	6	9
Control	NA		100	0	89	16	98	4	NA				100	0	40	31	20	14
Defender	NA		100	0	96	8	95	10	NA				100	0	16	15	22	24
Driller	NA		100	0	92	10	95	6	NA				100	0	0	0	0	0
EcoTill	NA		100	0	92	12	87	11	NA				100	0	2	5	3	7
Graza	NA		100	0	91	11	100	0	NA				100	0	5	10	42	32
Groundhog	NA		100	0	96	4	98	5	NA				100	0	0	0	7	7
Lunch	NA		100	0	94	12	98	4	NA				100	0	11	23	30	48
Nitro	NA		100	0	97	7	94	9	NA				100	0	6	13	2	5
Sodbuster	NA		100	0	88	15	91	10	NA				100	0	0	0	2	5
Tillage	NA		100	0	91	12	100	0	NA				100	0	0	0	2	4

Table 32. Days to 50% bloom of daikon radish varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		141	1.0	125	0	141	0.0	NA				181	0	NA			
Concorde	NA		134	0.0	140	0.5	155	0.0	NA				194	3	NA			
Control	NA		131	7.0	139	0	155	0.0	NA				187	2	NA			
Defender	NA		127	0.0	132	0	154	1.7	NA				185	1	NA			
Driller	NA		141	0.0	120	0	141	0.0	NA				156	1	NA			
EcoTill	NA		138	4.0	125	0	141	0.0	NA				178	0	NA			
Graza	NA		141		148	0	173	1.0	NA				195	0	NA			
Groundhog	NA		138	3.6	122	0	141	0.0	NA				181	0	NA			
Lunch	NA		140	7.1	119	0	141	0.0	NA				177	1	NA			
Nitro	NA		141	0.0	122	0	141	0.0	NA				177	0	NA			
Sodbuster	NA		139	4.0	125	0	141	0.0	NA				184	0	NA			
Tillage	NA		138	4.9	120	0	141	0.0	NA				178	0	NA			

Table 33. Disease ranking at spring regrowth of daikon radish varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		0.0	0.0	1.8	0.5	1.0	0.0	NA				0.0	0.0	NA			
Concorde	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.5	0.0	NA			
Control	NA		0.0	0.0	1.8	0.5	1.5	0.6	NA				0.6	0.0	NA			
Defender	NA		0.0	0.0	1.8	0.5	1.0	0.0	NA				0.6	0.0	NA			
Driller	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.6	0.0	NA			
EcoTill	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.0	0.0	NA			
Graza	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.0	0.0	NA			
Groundhog	NA		0.0	0.0	1.8	0.5	1.3	0.5	NA				0.6	0.0	NA			
Lunch	NA		0.0	0.0	1.8	0.5	1.3	0.5	NA				0.0	0.0	NA			
Nitro	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.5	0.0	NA			
Sodbuster	NA		0.0	0.0	1.5	0.6	1.0	0.0	NA				0.0	0.0	NA			
Tillage	NA		0.0	0.0	1.3	0.5	1.0	0.0	NA				0.0	0.0	NA			

Table 34. Disease ranking at 50% bloom of daikon radish varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		0.0	0.0	3.0	0.0	1.8	0.5	NA				0.0	0.0	NA			
Concorde	NA		0.0	0.0	2.0	0.0	3.0	0.0	NA				0.0	0.0	NA			
Control	NA		0.0	0.0	2.8	0.5	3.0	0.0	NA				0.0	0.0	NA			
Defender	NA		0.0	0.0	2.3	1.0	3.0	0.0	NA				0.0	0.0	NA			
Driller	NA		0.0	0.0	2.5	0.6	1.8	0.5	NA				0.0	0.0	NA			
EcoTill	NA		0.0	0.0	2.5	0.6	1.8	0.5	NA				0.0	0.0	NA			
Graza	NA		0.0	0.0	2.0	0.0	2.0	0.0	NA				0.0	0.0	NA			
Groundhog	NA		0.0	0.0	2.5	0.6	2.3	0.5	NA				0.0	0.0	NA			
Lunch	NA		0.0	0.0	2.3	0.6	1.8	0.5	NA				0.0	0.0	NA			
Nitro	NA		0.0	0.0	3.0	0.0	2.3	0.5	NA				0.0	0.0	NA			
Sodbuster	NA		0.0	0.0	2.8	0.5	2.0	0.0	NA				0.0	0.0	NA			
Tillage	NA		0.0	0.0	2.8	0.5	2.0	0.0	NA				0.0	0.0	NA			

Table 35. Insect ranking at spring regrowth of daikon radish varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		0.0	0.0	1.3	0.5	1.0	0.0	NA				0.0	0.0	NA			
Concorde	NA		3.0	2.2	2.0	0.0	1.3	0.5	NA				0.3	0.5	NA			
Control	NA		0.0	0.0	1.5	0.6	1.3	0.5	NA				0.3	0.5	NA			
Defender	NA		1.8	2.4	1.5	0.6	1.3	0.5	NA				0.0	0.0	NA			
Driller	NA		1.3	2.5	1.8	0.5	1.0	0.0	NA				0.0	0.0	NA			
EcoTill	NA		2.0	2.3	1.8	1.0	0.8	0.5	NA				0.0	0.0	NA			
Graza	NA		0.0	0.0	1.3	0.5	1.0	0.0	NA				0.0	0.0	NA			
Groundhog	NA		2.5	2.1	1.5	0.6	1.0	0.0	NA				0.0	0.0	NA			
Lunch	NA		2.0	2.4	1.5	0.6	1.0	0.0	NA				0.0	0.0	NA			
Nitro	NA		2.3	2.6	1.5	0.6	0.8	0.5	NA				0.5	0.6	NA			
Sodbuster	NA		1.3	2.5	1.5	0.6	0.8	0.5	NA				0.0	0.0	NA			
Tillage	NA		3.8	1.3	1.3	0.5	0.8	0.5	NA				0.0	0.0	NA			

Table 36. Insect ranking at 50% of daikon radish varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	NA		0.0	0.0	1.0	0.0	1.0	0.0	NA				0.8	0.5	NA			
Concorde	NA		3.0	2.2	1.8	0.5	2.0	0.0	NA				0.5	0.6	NA			
Control	NA		0.0	0.0	1.5	0.6	2.0	0.0	NA				0.0	0.0	NA			
Defender	NA		1.8	2.4	1.8	0.5	2.0	0.0	NA				0.3	0.5	NA			
Driller	NA		1.3	2.5	1.0	0.0	1.0	0.0	NA				0.0	0.0	NA			
EcoTill	NA		2.0	2.3	1.0	0.0	1.0	0.0	NA				0.3	0.5	NA			
Graza	NA		0.0	0.0	1.3	0.5	1.5	0.6	NA				1.0	0.0	NA			
Groundhog	NA		2.5	2.1	1.0	0.0	1.3	0.5	NA				0.8	0.5	NA			
Lunch	NA		2.0	2.4	1.0	0.0	0.8	0.5	NA				0.0	0.0	NA			
Nitro	NA		2.3	2.6	1.0	0.0	1.0	0.0	NA				0.5	0.6	NA			
Sodbuster	NA		1.3	2.5	1.0	0.0	1.0	0.0	NA				0.3	0.5	NA			
Tillage	NA		3.8	1.3	1.0	0.0	1.0	0.0	NA				0.0	0.0	NA			

HAIRY VETCH (*Vicia villosa*)

Table 37. Performance of hairy vetch averaged over the Southwest Region.

Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.9	0.6	1.8	0.6	77	20	219	48
Lana	1.1	0.7	1.9	0.9	65	45	208	93
Purple Bounty	0.7	0.7	1.8	0.7	77	26	217	48
Purple Prosperity	1.0	0.6	1.9	0.6	84	26	218	47
TNT	1.2	0.6	2.0	0.7	81	24	220	46
Villana	1.0	0.8	1.8	0.6	78	25	220	47

Table 37 (cont.). Performance of hairy vetch averaged over the Southwest Region.

Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.0	0.0	0.5	0.8	0.0	0.0	0.1	0.4
Lana	0.2	0.3	0.8	1.3	0.0	0.1	0.3	0.5
Purple Bounty	0.0	0.0	0.4	0.8	0.0	0.0	0.1	0.4
Purple Prosperity	0.0	0.0	0.5	0.8	0.0	0.0	0.1	0.4
TNT	0.0	0.0	0.5	0.8	0.0	0.0	0.1	0.4
Villana	0.0	0.0	0.5	0.9	0.0	0.0	0.1	0.4

Table 38. 14-day emergence of hairy vetch varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.0	0.0	0.0	1.3	0.5	0.8	0.5	2.0	0.0	1.8	0.5	1.0	0.0	1.0	0.0	0.3	0.5
Lana	1.0	0.0	1.0	0.0	1.3	0.5	1.0	0.0	2.3	0.5	2.5	0.6	0.0	0.0	1.5	0.6	0.8	0.5
Purple Bounty	0.5	0.6	0.0	0.0	1.3	0.5	1.0	0.0	1.5	1.0	1.0	0.8	1.0	0.8	0.5	0.6	0.0	0.0
Purple Prosperity	1.3	0.5	0.0	0.0	1.5	0.6	1.0	0.0	1.5	0.6	2.8	0.5	1.3	0.5	1.0	0.0	0.3	0.5
TNT	1.0	0.0	0.5	0.6	1.8	0.5	1.5	0.6	1.5	1.0	2.5	0.6	1.3	0.5	1.0	0.0	1.0	0.0
Villana	1.0	0.8	0.0	0.0	1.8	0.5	1.5	0.6	2.0	0.0	2.3	1.0	0.8	0.5	0.5	0.6	0.3	0.5

Table 39. 28-day emergence of hairy vetch varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.5	0.6	1.5	0.6	2.0	0.8	2.0	0.0	2.3	0.5	1.5	1.0	2.0	0.0	2.0	0.0	1.3	1.0
Lana	1.5	0.6	2.0	0.0	1.8	0.5	2.5	0.6	2.0	0.0	2.0	1.4	0.3	0.5	3.0	0.0	2.0	0.8
Purple Bounty	1.8	0.5	1.0	0.0	2.0	0.0	2.0	0.0	1.8	1.3	0.5	1.0	2.3	0.5	2.3	1.0	1.0	0.0
Purple Prosperity	2.0	0.0	1.3	0.5	2.0	0.0	1.8	0.5	2.0	0.0	2.3	0.5	2.0	0.8	2.5	0.6	1.5	0.6
TNT	2.0	0.0	1.5	0.6	1.8	0.5	2.0	0.0	1.8	1.3	2.3	1.0	2.3	0.5	3.0	0.0	1.8	0.5
Villana	1.8	0.5	1.3	0.5	2.0	0.0	2.3	0.5	2.0	0.0	1.8	1.3	1.3	0.5	2.3	0.5	1.3	0.5

Table 40. Percent winter survival of hairy vetch varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
CCS Groff	NA		100	0	81	22	98	5	44	29	NA		88	8	60	42	71	29
Lana	NA		100	0	93	14	100	0	0	0	NA		0	0	87	18	73	23
Purple Bounty	NA		100	0	69	33	100	0	30	28	NA		100	0	69	21	70	22
Purple Prosperity	NA		100	0	70	35	100	0	31	33	NA		100	0	100	0	86	20
TNT	NA		100	0	92	16	100	0	36	45	NA		98	5	74	25	69	22
Villana	NA		100	0	79	18	100	0	32	18	NA		98	5	78	19	62	30

Table 41. Days to 50% bloom of hairy vetch varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		154	0	187	3	202	2	306	0.0	NA		226	0	211	0	247	4
Lana	NA		154	0	176	0	187	1	306	0.0	NA		NA	NA	191	0	232	9
Purple Bounty	NA		158	8	187	3	200	1	306	0.0	NA		212	0	206	4	247	4
Purple Prosperity	NA		165	8	182	0	199	0	306	0.0	NA		226	0	204	0	245	0
TNT	NA		165	8	187	3	206	2	306	0.0	NA		216	0	211	0	249	4
Villana	NA		158	8	187	3	207	0	306	0.0	NA		225	1	211	0	247	4

Table 42. Disease ranking at spring regrowth of hairy vetch varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	0.3	0.5	0.8	0.5	NA	0.5	NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	NA		0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	NA		0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
TNT	NA		0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0
Villana	NA		0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 43. Disease ranking at 50% bloom of hairy vetch varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		0.0	0.0	2.0	0.0	1.3	0.5	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	3.0	0.0	2.0	0.0	NA		NA		NA	NA	0.0	0.0	0.0	0.0
Purple Bounty	NA		0.0	0.0	2.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	NA		0.0	0.0	2.0	0.0	1.3	0.5	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
TNT	NA		0.0	0.0	2.0	0.0	1.3	0.5	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Villana	NA		0.0	0.0	2.0	0.0	1.8	0.5	0		NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 44. Insect ranking at spring regrowth of hairy vetch varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		0.0	0.0	0.0	0.0	0.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	0.0	0.0	0.3	0.5	NA		NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Bounty	NA		0.0	0.0	0.0	0.0	0.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	NA		0.0	0.0	0.0	0.0	0.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
TNT	NA		0.0	0.0	0.0	0.0	0.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Villana	NA		0.0	0.0	0.0	0.0	0.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0

Table 45. Insect ranking at 50% bloom of hairy vetch varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	NA		0.0	0.0	0.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Lana	NA		0.0	0.0	1.0	0.0	1.0	0.0	NA		NA		NA	NA	0.0	0.0	0.0	0.0
Purple Bounty	NA		0.0	0.0	0.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Purple Prosperity	NA		0.0	0.0	0.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
TNT	NA		0.0	0.0	0.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0
Villana	NA		0.0	0.0	0.0	0.0	1.0	0.0	0		NA		0.0	0.0	0.0	0.0	0.0	0.0

RED CLOVER (*Trifolium repens*)

Table 46. Performance of red clover averaged over the Southwest Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.3	1.0	1.4	1.1	74	27	269	53
Cyclone II	1.2	0.9	1.5	1.0	81	28	269	52
Dynamite	1.3	1.0	1.8	0.9	67	33	268	54
Freedom	1.0	0.9	1.5	0.9	73	37	269	52
Kenland	0.8	1.1	1.0	1.1	66	28	267	55
Mammoth	1.2	1.0	1.4	0.9	73	31	276	43
Starfire II	0.6	0.8	0.9	0.7	67	33	269	53
Wildcat	1.4	1.0	1.6	1.1	76	23	268	54

Table 46 (cont.). Performance of red clover averaged over the Southwest Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0	0	0	0	0	0	0	0
Cyclone II	0	0	0	0	0	0	0	0
Dynamite	0	0	0	0	0	0	0	0
Freedom	0	0	0	0	0	0	0	0
Kenland	0	0	0	0	0	0	0	0
Mammoth	0	0	0	0	0	0	0	0
Starfire II	0	0	0	0	0	0	0	0
Wildcat	0	0	0	0	0	0	0	0

Table 47. 14-day emergence of red clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.8	0.5	0.0	0.0	1.8	0.5	0.3	0.5	2.0	0.8	2.3	0.5	3.0	0.0	1.3	0.5	1.3	0.5
Cyclone II	0.5	0.6	0.0	0.0	1.8	0.5	0.5	0.6	2.0	0.0	2.5	2.5	2.5	0.6	1.3	0.5	1.3	1.0
Dynamite	1.0	0.0	0.0	0.0	1.0	0.0	0.5	0.6	2.3	0.5	0.3	0.6	2.8	0.5	2.0	0.0	1.0	0.8
Freedom	1.0	0.0	0.0	0.0	1.3	0.5	0.3	0.5	0.8	0.5	1.8	1.3	2.8	0.5	1.0	0.0	1.3	1.3
Kenland	0.3	0.5	0.0	0.0	0.5	0.6	0.0	0.0	1.0	1.2	1.3	1.0	3.0	0.0	1.3	0.5	0.8	0.5
Mammoth	1.0	0.0	0.0	0.0	1.3	0.5	0.3	0.5	1.8	0.5	0.0	0.0	3.0	0.0	1.3	0.5	0.8	0.5
Starfire II	0.5	0.6	0.0	0.0	0.3	0.5	0.0	0.0	1.3	1.0	2.0	0.0	2.0	0.0	0.5	0.6	0.3	0.5
Wildcat	1.0	0.0	0.0	0.0	1.5	0.6	0.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	2.0	0.0	1.3	0.5

Table 48. 28-day emergence of red clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.8	0.5	0.5	0.6	1.8	0.5	0.5	0.6	1.8	1.3	0.8	1.0	3.0	0.0	1.5	1.7	1.8	1.0
Cyclone II	1.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	2.3	0.5	1.5	0.6	3.0	0.0	1.8	1.0	1.3	1.0
Dynamite	1.0	0.0	0.5	0.6	1.8	0.5	1.0	0.0	2.3	0.5	1.8	1.3	3.0	0.0	2.8	0.5	1.8	0.5
Freedom	1.0	0.0	0.5	0.6	2.0	0.0	1.0	0.0	1.0	0.8	1.8	1.3	3.0	0.0	1.5	0.6	1.8	1.0
Kenland	0.5	0.6	0.0	0.0	1.0	0.8	0.5	0.6	1.0	1.2	1.3	1.0	3.0	0.0	1.3	1.5	1.0	0.8
Mammoth	1.3	0.5	0.8	0.5	1.5	0.6	0.5	0.6	1.5	1.0	2.3	0.5	3.0	0.0	1.3	0.5	1.8	0.5
Starfire II	1.0	0.0	0.0	0.0	0.5	0.6	0.8	0.5	0.8	1.0	1.8	0.5	2.0	0.0	1.0	0.8	1.0	0.0
Wildcat	1.0	0.0	0.5	0.6	1.8	0.5	0.5	0.6	2.0	1.4	2.8	0.5	3.0	0.0	2.3	1.0	2.0	0.8

Table 49. Percent winter survival of red clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
Cinnamon Plus	NA		100	0	80	11	71	48	26	23	NA		98	5	NA		69	34
Cyclone II	NA		100	0	81	16	96	9	25	8	NA		99	2	NA		86	22
Dynamite	NA		100	0	65	25	50	58	11	18	NA		99	3	NA		78	28
Freedom	NA		100	0	76	18	96	9	5	8	NA		99	2	NA		61	31
Kenland	NA		100	0	72	20	50	58	37	48	NA		97	3	NA		43	33
Mammoth	NA		100	0	90	14	70	48	21	19	NA		100	0	NA		60	32
Starfire II	NA		100	0	63	34	25	50	31	46	NA		97	3	NA		83	20
Wildcat	NA		100	0	79	25	69	47	36	44	NA		99	2	NA		71	35

Table 50. Days to 50% bloom of red clover varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	NA		NA		NA		NA		306	0	NA		231	1.5	NA		NA	
Cyclone II	NA		NA		NA		NA		306	0	NA		232	0.0	NA		NA	
Dynamite	NA		NA		NA		NA		306	0	NA		229	3.5	NA		NA	
Freedom	NA		NA		NA		NA		306	0	NA		232	0.0	NA		NA	
Kenland	NA		NA		NA		NA		306	0	NA		228	1.5	NA		NA	
Mammoth	NA		NA		NA		NA		306	0	NA		245	0.0	NA		NA	
Starfire II	NA		NA		NA		NA		306	0	NA		231	2.3	NA		NA	
Wildcat	NA		NA		NA		NA		306	0	NA		230	4.0	NA		NA	

Table 51. Disease ranking at spring regrowth of red clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Cyclone II	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Dynamite	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Freedom	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Kenland	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Mammoth	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Starfire II	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Wildcat	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0

Table 52. Disease ranking at 50% bloom of red clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Cyclone II	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Dynamite	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Freedom	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Kenland	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Mammoth	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Starfire II	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	
Wildcat	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		NA	

Table 53. Insect ranking at spring regrowth of red clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Cyclone II	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Dynamite	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Freedom	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Kenland	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Mammoth	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Starfire II	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0
Wildcat	NA		0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	NA		0	0.0

Table 54. Insect ranking at 50% bloom of red clover varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Cyclone II	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Dynamite	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Freedom	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Kenland	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Mammoth	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Starfire II	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0
Wildcat	NA		NA		NA		NA		0	0.0	0	0.0	0	0.0	NA		0	0.0

WINTER PEA (*Pisum sativum*)

Table 55. Performance of winter pea averaged over the Southwest Region.								
Variety	14-day emergence		28-day emergence		% Winter survival		Days to 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.8	0.6	2.4	0.5	66	45	140	93
Dunn	1.7	0.8	2.3	0.5	45	42	143	96
Frost Master	1.0	0.7	1.5	0.8	51	42	155	105
Lynx	0.8	0.7	1.3	0.8	52	39	134	96
Maxum	1.6	0.8	2.2	0.8	68	42	157	88
Survivor 15	2.1	0.8	2.6	0.5	75	33	168	113
Whistler	1.3	0.6	1.9	0.9	76	36	163	98
Windham	1.1	0.7	1.7	0.9	59	32	163	110

Table 55 (cont.). Performance of winter pea averaged over the Southwest Region.								
Variety	Disease ranking at regrowth		Disease ranking at 50% bloom		Insect ranking at regrowth		Insect ranking at 50% bloom	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.6	0.9	0.9	1.7	0.2	0.4	0.3	0.5
Dunn	1.0	1.4	1.0	1.7	0.2	0.4	0.2	0.5
Frost Master	0.6	1.0	1.6	1.9	0.2	0.4	0.5	0.8
Lynx	0.7	1.2	1.3	1.6	0.2	0.6	0.6	0.8
Maxum	0.5	0.9	1.0	1.8	0.2	0.4	0.4	0.9
Survivor 15	0.4	0.7	0.9	1.2	0.1	0.4	0.8	1.0
Whistler	0.3	0.6	0.7	1.1	0.2	0.6	0.5	0.8
Windham	0.8	1.1	1.3	1.5	0.1	0.3	0.5	0.8

Table 56. 14-day emergence of winter pea varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.8	0.5	1.5	0.6	1.3	0.5	2.5	0.6	2.5	0.6	1.8	1.5	2.0	0.0	2.0	0.0	1.3	0.5
Dunn	2.0	0.0	1.8	0.5	1.8	0.5	3.0	0.0	1.5	0.6	2.0	0.8	1.8	0.5	1.3	0.5	0.5	0.6
Frost Master	1.3	0.5	1.5	0.6	1.3	0.5	2.0	0.0	0.0	0.0	0.5	1.0	1.0	0.0	1.0	0.0	0.3	0.5
Lynx	1.3	0.5	1.0	0.0	0.8	0.5	2.0	0.0	0.0	0.0	2.0	0.8	0.3	0.5	0.8	0.5	0.3	0.5
Maxum	1.5	0.6	1.3	1.0	1.8	0.5	2.5	0.6	2.0	0.0	1.5	1.3	1.3	0.5	1.8	0.5	0.8	1.0
Survivor 15	1.8	0.5	1.8	0.5	1.8	0.5	2.8	0.5	No data				3.0	0.0	2.5	0.6	1.0	0.0
Whistler	1.8	0.5	1.3	0.5	1.0	0.0	2.0	0.0	0.5	0.6	1.3	1.0	1.0	0.0	1.5	0.6	1.0	0.8
Windham	1.5	0.6	1.3	0.5	1.3	0.5	2.0	0.0	0.0	0.0	0.8	1.0	1.5	0.6	1.0	0.0	0.5	0.6

Table 57. 28-day emergence of winter pea varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.0	0.0	2.0	0.0	2.0	0.0	3.0	0.0	2.3	0.5	1.5	1.3	2.3	0.5	3.0	0.0	3.0	0.0
Dunn	2.0	0.0	2.0	0.0	2.0	0.0	3.0	0.0	1.8	0.5	2.0	0.8	2.0	0.0	3.0	0.0	2.8	0.5
Frost Master	1.8	0.5	2.0	0.0	1.3	0.5	2.5	0.6	0.0	0.0	0.0	0.0	1.5	0.6	2.0	0.0	1.0	0.0
Lynx	1.8	0.5	1.3	0.5	1.0	0.0	2.5	0.6	0.0	0.0	2.3	0.5	0.5	0.6	2.0	0.0	1.0	0.0
Maxum	2.0	0.0	1.5	0.6	2.0	0.0	3.0	0.0	1.8	1.3	1.5	1.3	1.8	0.5	2.8	0.5	3.0	0.0
Survivor 15	2.0	0.0	2.0	0.0	2.0	0.0	3.0	0.0	No data				3.0	0.0	3.0	0.0	3.0	0.0
Whistler	2.0	0.0	1.5	0.6	1.3	0.5	3.0	0.0	0.5	0.6	1.0	0.8	1.8	0.5	2.8	0.5	2.8	0.5
Windham	1.8	0.5	1.8	0.5	1.3	0.5	2.8	0.5	0.3	0.5	0.5	0.6	1.5	0.6	2.5	0.6	2.0	0.8

Table 58. Percent winter survival of winter pea varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	----------%----------																	
Arvica 4010	NA		100	0.0	94	7	83	29	0	0.0	0	0.0	99	3	86	28	0	0.0
Dunn	NA		100	0.0	77	23	82	36	0	0.0	0	0.0	9	6	48	28	0	0.0
Frost Master	NA		100	0.0	79	19	100	0	0	0.0	0	0.0	33	22	28	26	15	12
Lynx	NA		100	0.0	86	28	80	24	0	0.0	0	0.0	25	50	63	25	13	25
Maxum	NA		100	0.0	90	12	86	28	0	0.0	0	0.0	100	0	87	15	15	18
Survivor 15	NA		100	0.0	82	13	92	17	Not planted				63	46	53	18	60	37
Whistler	NA		100	0.0	98	4	100	0	0	0.0	0	0.0	72	48	93	9	72	42
Windham	NA		100	0.0	83	26	86	28	13	25	0	0.0	60	49	34	12	40	34

Table 59. Days to 50% bloom of winter pea varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		93	0	128	1	181	0	0	0.0	0	0.0	216	0	219	0	NA	NA
Dunn	NA		93	0	129	0	205	0	0	0.0	0	0.0	218	2	215	6	NA	NA
Frost Master	NA		169	NA	175	1	200	5	0	0.0	0	0.0	230	0	NA	NA	NA	NA
Lynx	NA		169	NA	175	1	193	0	0	0.0	0	0.0	NA	NA	NA	NA	NA	NA
Maxum	NA		97	7	129	0	181	0	0	0.0	0	0.0	217	1	220	1	256	0
Survivor 15	NA		NA	NA	188	0	206	2	Not planted				222	7	225	NA	NA	NA
Whistler	NA		169	0	174	0	193	0	0	0.0	0	0.0	223	3	219	0	NA	NA
Windham	NA		NA	NA	175	1	193	0	0	0.0	0	0.0	228	4	219	NA	NA	NA

Table 60. Disease ranking at spring regrowth of winter pea varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		0	0.0	1.3	0.5	2.5	0.6	0	0.0	0	0.0	0.8	0.5	0	0.0	0	0.0
Dunn	NA		0	0.0	1.5	1.0	3.3	0.5	0	0.0	0	0.0	3.0	0.8	0	0.0	0	0.0
Frost Master	NA		0	0.0	0.8	0.5	1.5	1.0	0	0.0	0	0.0	2.3	1.3	0	0.0	0	0.0
Lynx	NA		0	0.0	1.3	1.3	1.3	1.5	0	0.0	0	0.0	2.8	1.0	0	0.0	0	0.0
Maxum	NA		0	0.0	1.5	1.0	2.3	1.0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Survivor 15	NA		0	0.0	0.8	1.0	1.5	0.6	Not planted				0.3	0.5	0	0.0	0	0.0
Whistler	NA		0	0.0	1.3	0.5	1.0	0.8	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0
Windham	NA		0	0.0	1.8	1.0	2.5	0.6	0	0.0	0	0.0	2.0	0.8	0	0.0	0	0.0

Table 61. Disease ranking at 50% bloom of winter pea varieties by location.

Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		0	0.0	2.0	0.0	5.0	0.0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Dunn	NA		0	0.0	3.0	0.0	3.0	NA	0	0.0	0	0.0	4.3	0.5	0	0.0	0	0.0
Frost Master	NA		0	0.0	2.8	0.5	4.0	0.0	0	0.0	0	0.0	4.0	0.0	0	0.0	0	0.0
Lynx	NA		0	0.0	2.0	0.0	2.3	0.5	0	0.0	0	0.0	4.3	0.5	0	0.0	0	0.0
Maxum	NA		0	0.0	2.5	1.0	5.0	0.0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Survivor 15	NA		0	NA	2.0	0.0	3.0	0.0	Not planted				0.0	0.0	0	0.0	0	0.0
Whistler	NA		0	0.0	2.5	0.6	2.3	0.5	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0
Windham	NA		0	NA	2.0	0.0	3.0	0.0	0	0.0	0	0.0	3.3	0.5	0	0.0	0	0.0

Table 62. Insect ranking at spring regrowth of winter pea varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		0.5	0.6	0.5	0.6	0	0.0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Dunn	NA		0.5	0.6	0.5	0.6	0	0.0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Frost Master	NA		0.5	0.6	0.8	0.5	0	0.0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Lynx	NA		0.3	0.5	1.3	1.3	0	0.0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Maxum	NA		0.3	0.5	0.5	0.6	0	0.0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Survivor 15	NA		0.3	0.5	0.5	0.6	0	0.0	Not planted				0.3	0.5	0	0.0	0	0.0
Whistler	NA		0.8	1.5	0.5	0.6	0	0.0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Windham	NA		0.0	0.0	0.5	0.6	0	0.0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0

Table 63. Insect ranking at 50% bloom of winter pea varieties by location.																		
Variety	Arizona 2016-2017		Arizona 2017-2018		California 2016-2017		California 2017-2018		Colorado 2017-2018		Colorado 2018-2019		New Mexico 2016-2017		Nevada 2016-2017		Nevada 2017-2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	NA		0	0	1	0	1	0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Dunn	NA		0	0	1	0	2	NA	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Frost Master	NA		0	NA	1	0	2	0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Lynx	NA		0	NA	1.3	0.5	2	0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0
Maxum	NA		0	0	2	2	1	0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Survivor 15	NA		NA	NA	2	0	2	0	Not planted				0.5	0.6	0	0.0	0	0.0
Whistler	NA		0	0	1	0	2	0	0	0.0	0	0.0	0.5	0.6	0	0.0	0	0.0
Windham	NA		NA	NA	1	0	2	0	0	0.0	0	0.0	0.3	0.5	0	0.0	0	0.0

COLORADO, MONTANA, AND NORTH DAKOTA REGIONAL DATA - SPRING SEEDED COVER CROPS

Includes data for Colorado, Montana, and North Dakota. The same species and protocol used for other trials were also used for this trial, except the cover crops were spring planted.

Evaluations

Cover crop varieties were evaluated for several factors to determine adaptation of each variety.

Evaluation factor	Explanation
Emergence at 14 and 28 days after planting	0 = poor (<25% germination); 1 = moderate (30-60% germination); 2 = good (65-85% germination); 3 = excellent (90-100% germination).
Days after planting to 50% bloom	The number of days after planting until each cover crop variety was estimated to have reached 50% of peak bloom/anthesis; <65=Early, 66-79=Mid, >80=Late.
Disease and insect ranking	0 = no damage; 1 = slight damage; 3 = moderate damage; 5 = severe damage. Two evaluations were taken during the spring growing season.

BLACK OATS (*Avena strigosa*) and BLACK SEEDED OATS (*Avena sativa*)

Table 1. Performance of black oats/black seeded oats averaged over the PMC locations.

Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	1.6	1.0	2.4	0.8	92	39	1.3	2.1
Soil Saver	2.1	0.9	2.5	0.9	77	14	0.5	0.8

Table 1 (cont.). Performance of black oats/black seeded oats averaged over the PMC locations.

Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.3	0.4	0.3	0.5	0.9	0.6
Soil Saver	0.3	0.4	0		0.5	0.5

[1/] Disease 2 and insect 2 rankings for CO and MT only.

Table 2. 14-day emergence of black oats and black seeded oats by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	1.5	0.6	0.8	0.5	0.3	0.5	1.8	0.5	2.3	0.5	3.0	0.0
Soil	1.8	0.5	1.3	0.6	0.8	0.9	2.5	0,6	3.0	0.0	3.0	0.0

Table 3. 28-day emergence of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	2.3	0.5	1.0	0.8	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Soil	2.3	0.5	0.8	0.9	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0

Table 4. Days to 50% bloom of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	81	0.0	99	9	84	0.0	107	0.0	N/A	N/A	91	0.0
Soil Saver	81	0.0	90	16	94	46	65	0.0	69	5	60	0.0

Table 5. Disease 1 ranking of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0		0		0		0		5.0	0.0	2.8	0.5
Soil Saver	0		0		0		0		2.0	0.0	1.0	0.0

Table 6. Disease 2 ranking of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0		0		0		1	0.0	N/A		N/A	
Soil Saver	0		0		0		1	0.0	N/A		N/A	

Table 7. Insect 1 ranking of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	1.3	2.5	0		0		0		0		N/A	
Soil Saver	0		0		0		0		0		N/A	

Table 8. Insect 2 ranking of black oats and black seeded oats by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cosaque	0.5	.06	0.5	0.6	1.5	0.6	1	0.0	N/A		N/A	
Soil Saver	0		0		1	0.0	1	0.0	N/A		N/A	

CEREAL RYE (*Secale cereale*)

Table 9. Performance of cereal rye averaged over PMC locations.								
Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.5	0.5	2.9	0.1	75	39	1.7	1.9
Bates	2.3	0.8	2.7	1.2	63	32	1.1	1.5
Brasetto	2.3	0.6	2.7	0.4	84	48	1.1	1.5
Elbon	2.4	0.7	2.7	0.6	71	37	1.0	1.3
FL 401	2.3	0.8	2.7	0.6	54	9	1.1	1.5
Guardian	2.1	1.1	2.6	0.4	93	52	1.1	1.5
Hazlet	2.4	0.6	2.7	0.4	87	49	1.3	1.6
Maton	2.5	0.5	2.8	0.5	76	40	1.3	1.6
Maton II	1.9	0.8	2.7	0.5	64	33	1.4	1.7
Merced	2.4	0.8	2.8	0.4	55	15	1.0	1.7
Oklon	2.3	0.6	2.8	0.3	73	38	1.4	1.4
Rymin	2.4	0.8	2.9	0.3	91	51	1.6	2.1
Wheeler	2.2	0.7	2.7	0.5	74	39	1.2	1.4
Wintergrazer 70	2.5	0.7	2.8	0.4	62	33	1.3	1.8
Wrens Abruzzi	2.4	0.8	2.8	0.5	55	29	1.2	1.4

Table 9 (cont.). Performance of cereal rye averaged over the PMC locations.						
Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.4	0.5	0	0.0	0.8	0.5
Bates	0.3	0.2	0	0.0	0.6	0.5
Brasetto	0.4	0.5	0	0.0	1.0	0.7
Elbon	0.5	0.4	0	0.0	0.6	0.3
FL 401	0.1	0.2	0	0.0	0.4	0.4
Guardian	0.5	0.5	0	0.0	1.1	0.7
Hazlet	0.5	0.5	0	0.0	1.0	0.7
Maton	0.2	0.3	0	0.0	1.5	1.2
Maton II	0.2	0.2	0	0.0	0.5	0.4
Merced	0.0	0.0	0	0.0	0.2	0.2
Oklon	0.3	0.3	0	0.0	0.6	0.4
Rymin	0.4	0.5	0	0.0	0.9	0.5
Wheeler	0.6	0.9	0	0.0	0.5	0.5
Wintergrazer 70	0.3	0.2	0	0.0	0.1	0.2
Wrens Abruzzi	0.2	0.2	0	0.0	0.3	0.3
[1/] Disease 2 and insect 2 rankings for CO and MT only.						

Table 10. 14-day emergence of cereal rye by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.5	0.6	1.8	0.9	2.8	0.5	3.0	0.0	2.0	0.0	3.0	0.0
Bates	2.3	0.5	1.0	0.8	2.8	0.5	3.0	0.0	1.5	0.6	3.0	0.0
Brasetto	2.0	0.0	1.5	0.6	2.3	0.5	3.0	0.0	1.8	0.5	3.0	0.0
Elbon	2.5	0.6	1.3	0.5	3.0	0.0	3.0	0.0	1.8	0.5	3.0	0.0
FL 401	2.0	0.8	1.0	0.8	3.0	0.0	3.0	0.0	2.0	0.0	3.0	0.0
Guardian	2.3	0.6	1.5	1.0	3.0	0.0	2.5	0.6	0	0.0	3.0	0.0
Hazlet	2.3	0.5	1.5	0.6	2.8	0.5	3.0	0.0	2.0	0.0	3.0	0.0
Maton	2.5	0.6	1.8	1.3	2.7	0.6	3.0	0.0	2.0	0.0	3.0	0.0
Maton II	2.0	0.0	1.0	0.8	2.0	0.0	2.3	0.5	1	0.8	3.0	0.0
Merced	2.5	0.6	1.5	1.0	2.8	0.5	3.0	0.0	1.3	0.5	3.0	0.0
Oklon	2.0	0.0	1.5	0.6	2.3	0.5	3.0	0.0	2.0	0.0	3.0	0.0
Rymin	2.3	0.5	1.3	0.5	3.0	0.0	3.0	0.0	1.5	0.5	3.0	0.0
Wheeler	2.3	0.5	1.5	0.6	2.0	0.0	3.0	0.0	1.5	1.0	3.0	0.0
Wintergrazer 70	2.8	0.5	1.3	0.5	2.8	0.5	3.0	0.0	2.0	0.0	3.0	0.0
Wren Abruzzi	2.5	0.6	1.0	0.8	3.0	0.0	3.0	0.0	1.8	0.5	3.0	0.0

Table 11. 28-day emergence of cereal rye varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	2.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Bates	2.8	0.5	1.5	1.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Brasetto	2.5	0.5	2.3	0.5	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Elbon	2.5	0.6	1.5	1.3	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
FL 401	2.8	0.5	1.5	1.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Guardian	2.5	0.6	2.0	1.2	3.0	0.0	3.0	0.0	2.3	1.5	3.0	0.0
Hazlet	2.3	0.5	2.0	0.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Maton	2.8	0.5	1.8	1.3	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Maton II	3.0	0.0	1.8	0.9	2.4	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Merced	2.8	0.5	2.0	0.8	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Oklon	2.5	0.6	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Rymin	3.0	0.0	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Wheeler	3.0	0.0	1.8	0.9	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Wintergrazer 70	3.0	0.0	2.0	0.8	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Wren Abruzzi	2.8	0.5	1.8	0.9	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0

Table 12. Days to 50% bloom of cereal varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	81	0.0	75	33	79	20	66	50	N/A		N/A	
Bates	63	13.0	63	27	67	0	57	1	N/A		N/A	
Brasetto	81	0.0	66	25	105	0.5	N/A		N/A		N/A	
Elbon	77	8.5	72	24	71	1	64	4	N/A		N/A	
FL 401	50	0.0	66	27	60	0	55	2	43	0.0	47	0.0
Guardian	81	0.0	91	25	107	3	N/A		N/A		N/A	
Hazlet	81	0.0	76	32	105	0.5	N/A		N/A		N/A	
Maton	81	0.0	91	25	69	1	62	0	N/A		N/A	
Maton II	62	6.3	69	27	68	1	57	1	N/A		N/A	
Merced	50	0.0	84	28	56	0	49	0	43	0.0	46	2.0
Oklon	77	8.5	84	24	70	1	59	5	N/A		N/A	
Rymin	81	0.0	88	30	105	0.5	N/A		N/A		N/A	
Wheeler	81	0.0	71	24	81	6	62	0	N/A		N/A	
Wintergrazer 70	50	0.0	77	30	65	3	55	2	N/A		N/A	
Wren Abruzzi	52	3.5	49	4	63	3	56	0	N/A		N/A	

Table 13. Disease 1 rankings of cereal rye varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0	0.0	0	0.0	0	0.0	0	0.0	2	0.8	3.8	1.3
Bates	0	0.0	0	0.0	0	0.0	0	0.0	2.3	0.5	2.8	0.5
Brasetto	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0	2.8	0.5
Elbon	0	0.0	0	0.0	0	0.0	0	0.0	1.8	0.5	2.5	0.6
FL 401	0	0.0	0	0.0	0	0.0	0	0.0	2.5	1	2.8	0.5
Guardian	0	0.0	0	0.0	0	0.0	0	0.0	2.7	1.2	2.8	0.5
Hazlet	0	0.0	0	0.0	0	0.0	0	0.0	3.8	0.5	3.0	0.8
Maton	0	0.0	0	0.0	0	0.0	0	0.0	2.0	0.0	3.0	0.8
Maton II	0	0.0	0	0.0	0	0.0	0	0.0	1.5	0.6	3.3	0.9
Merced	0	0.0	0	0.0	0	0.0	0	0.0	2.3	1.3	3.0	0.0
Oklon	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0	2.8	1.3
Rymin	0	0.0	0	0.0	0	0.0	0	0.0	3	0.0	4.0	0.8
Wheeler	0	0.0	0	0.0	0	0.0	0	0.0	1.5	0.6	2.8	0.9
Wintergrazer	0	0.0	0	0.0	0	0.0	0	0.0	2.3	0.5	3.3	0.5
Wren Abruzzi	0	0.0	0	0.0	0	0.0	0	0.0	1.5	0.6	2.8	0.9

Table 14. Disease 2 ranking of cereal rye varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	.25	0.5	0		0	0.0	1.3	0.5	N/A		N/A	
Bates	0.5	1	0.25	0.5	0	0.0	0.25	0.5	N/A		N/A	
Brasetto	0		0.25	0.5	0	0.0	1.3	0.5	N/A		N/A	
Elbon	0.5	0.6	0.5	0.6	0	0.0	1	0.0	N/A		N/A	
FL 401	0		0		0	0.0	0.5	0.6	N/A		N/A	
Guardian	0.5	0.6	0		0	0.0	1.3	0.5	N/A		N/A	
Hazlet	0.5	0.6	0.25	0.5	0	0.0	1.3	0.5	N/A		N/A	
Maton	0		0		0	0.0	0.8	0.5	N/A		N/A	
Maton II	0.5	0.6	0		0	0.0	0.25	0.5	N/A		N/A	
Merced	0		0		0	0.0	0		N/A		N/A	
Oklon	0.25	0.5	0		0	0.0	0.8	0.5	N/A		N/A	
Rymin	0.25	0.5	0		0	0.0	1.3	0.5	N/A		N/A	
Wheeler	0.25	0.5	0		0	0.0	2.3	0.5	N/A		N/A	
Wintergrazer 70	0.5	0.6	0.25	0.5	0	0.0	0.5	.06	N/A		N/A	
Wren Abruzzi	0.25	0.5	0		0	0.0	0.5	.06	N/A		N/A	

Table 15. Insect 1 ranking of cereal rye varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0		0		0		0		0			
Bates	0		0		0		0		0			
Brasetto	0		0		0		0		0			
Elbon	0		0		0		0		0			
FL 401	0		0		0		0		0			
Guardian	0		0		0		0		0			
Hazlet	0		0		0		0		0			
Maton	0		0		0		0		0			
Maton II	0		0		0		0		0			
Merced	0		0		0		0		0			
Oklon	0		0		0		0		0			
Rymin	0		0		0		0		0			
Wheeler	0		0		0		0		0			
Wintergrazer 70	0		0		0		0		0			
Wren Abruzzi	0		0		0		0		0			

Table 16. Insect 2 rankings of cereal rye varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Aroostook	0.3	0.5	0.3	0.5	1.3	0.5	0.8	0.5	N/A		N/A	
Bates	1.0	0.8	0		0		1.0	0.0	N/A		N/A	
Brasetto	0.3	0.5	0		1.0	0.0	1.5	0.6	N/A		N/A	
Elbon	0.5	0.6	0.3	0.5	0.8	0.5	0.5	0.6	N/A		N/A	
FL 401	0		0		0		0.8	0.5	N/A		N/A	
Guardian	0.5	0.6	0		1.3	0.5	1.3	0.5	N/A		N/A	
Hazlet	0.8	0.5	0.3	0.5	1.5	0.6	1.5	0.6	N/A		N/A	
Maton	0.8	0.5	0		3	0.0	1.0	0.0	N/A		N/A	
Maton II	0.8	0.5	0		0		1.0	0.0	N/A		N/A	
Merced	0		0.3	0.5	0		0		N/A		N/A	
Oklon	0.5	0.6	0		0.3	0.5	1.0	0.0	N/A		N/A	
Rymin	0.5	0.6	0		1.0	0.0	1.0	0.0	N/A		N/A	
Wheeler	0.5	0.6	0		1.0	1.0	0.0		N/A		N/A	
Wintergrazer	1.0	0.0	0.3	0.5	0	1.0	0.0		N/A		N/A	
Wren Abruzzi	0.3	0.5	0		0	0.8	0.5		N/A		N/A	

CRIMSON CLOVER (*Trifolium incarnatum*)

Table 17. Performance of crimson clover averaged over PMC locations.

Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.5	1.2	1.9	1.1	80	13	0.2	0.4
AU Sunrise	1.4	1.3	1.8	1.2	78	15	0.2	0.4
AU Sunup	1.1	1.5	1.2	1.3	71	19	0.2	0.4
Contea	1.1	1.5	1.3	1.3	82	16	0.2	0.4
Dixie	1.3	1.4	1.7	1.2	84	13	0.2	0.4
Kentucky Pride	1.6	1.1	1.9	1.0	85	13	0.2	0.4

Table 17 (cont.). Performance of crimson clover averaged over PMC locations.

Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
AU Robin	0.3	0.5	0		0.3	0.4
AU Sunrise	0.2	0.4	0		0.4	0.5
AU Sunup	0.1	0.3	0		0.4	0.8
Contea	0.2	0.4	0		0.5	0.6
Dixie	0.2	0.4	0		0.5	0.6
Kentucky Pride	0.2	0.4	0		0.5	0.6

[1/] Disease 2 and insect 2 rankings for CO and MT only.

Table 18. 14-day emergence of crimson clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.0	0.8	0		0.8		1.0	0.0	3.0	0.0	3.0	0.0
AU Sunrise	0.8	0.5	0		0.5		1.0	0.0	3.0	0.0	3.0	0.0
AU Sunup	0		0		0		0.3	0.5	3.0	0.0	3.0	0.0
Contea	0		0		0		0.5	0.6	3.0	0.0	3.0	0.0
Dixie	0.8	0.5	0		0		1	0.0	3.0	0.0	3.0	0.0
Kentucky Pride	1.5	.06	0.3	0.5	1	0.8	1	0.0	3.0	0.0	3.0	0.0

Table 19. 28-day emergence of crimson clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	1.3	0.5	0		2.0	0.0	2	0.0	3.0	0.0	3.0	0.0
AU Sunrise	1	0.0	0		2.0	0.8	1.7	0.6	3.0	0.0	3.0	0.0
AU Sunup	0		0		0.3	0.5	1.5	0.6	2.3	0.0	3.0	0.0
Contea	0.8	0.5	0		0		1.3	0.5	2.8	0.0	3.0	0.0
Dixie	1.3	0.5	0		1.5	0.6	1.3	0.5	3.0	0.0	3.0	0.0
Kentucky Pride	1.3	0.5	0.5	1	2.0	0.0	1.5	0.6	3.0	0.0	3.0	0.0

Table 20. Days to 50% bloom of crimson clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean[1/]	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	81	0.0	103	N/A	76	7	77	7	82	14	63	2
AU Sunrise	81	0.0	103	N/A	65	2	75	2	81	13	62	2
AU Sunup	81	0.0	103	N/A	65	2	63	8	62	9	50	0.0
Contea	81	0.0	103	N/A	84	0.0	60	2	94	11	70	7
Dixie	81	0.0	103	N/A	75	4	79	8	94	9	69	7
Kentucky Pride	81	0.0	103	N/A	80	5	70	8	101	0.0	77	3

[1/] Days to 50% bloom from a single replication.

Table 21. Disease 1 ranking of crimson clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0		0		0		0		0.2	0.4	1	0.0
AU Sunrise	0		0		0		0		0.2	0.4	1	0.0
AU Sunup	0		0		0		0		0		1	0.0
Contea	0		0		0		0		0		1	0.0
Dixie	0		0		0		0		0		1	0.0
Kentucky Pride	0		0		0		0		0		1	0.0

Table 22. Disease 2 ranking of crimson clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0		0		0		1	0.0	N/A		N/A	
AU Sunrise	0		0		0		0.7	0.6	N/A		N/A	
AU Sunup	0		0		0		0.5	0.6	N/A		N/A	
Contea	0		0		0		0.8	0.5	N/A		N/A	
Dixie	0		0		0		0.8	0.5	N/A		N/A	
Kentucky Pride	0		0		0		0.8	0.5	N/A		N/A	

Table 23. Insect 1 ranking of crimson clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0		0		0		0		0		0	
AU Sunrise	0		0		0		0		0		0	
AU Sunup	0		0		0		0		0		0	
Contea	0		0		0		0		0		0	
Dixie	0		0		0		0		0		0	
Kentucky Pride	0		0		0		0		0		0	

Table 24. Insect 2 ranking of crimson clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AU Robin	0		0		0.8	0.5	0.3	.06	N/A		N/A	
AU Sunrise	0		0		0.5	1.0	1.0	0.0	N/A		N/A	
AU Sunup	0		0		0		1.5	1	N/A		N/A	
Contea	0		0		1.3	0.5	0.8	0.5	N/A		N/A	
Dixie	0		0		1	0.0	1.0	0.0	N/A		N/A	
Kentucky Pride	0		0		1	0.0	1.0	0.0	N/A		N/A	

DAIKON RADISH (*Raphanus sativus*)

Table 25. Performance of daikon radish averaged over the PMC locations.								
Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.2	0.9	2.4	1.0	67	21	0	
Concorde	2.4	0.9	2.5	1.0	63	22	0	
Control	2.5	0.7	2.5	0.8	70	19	0	
Defender	2.2	1.0	2.4	1.0	67	19	0	
Driller	2.4	0.8	2.5	0.8	66	21	0	
Eco-Till	2.3	0.8	2.6	0.7	67	21	0	
Graza	0.8	1.1	1.6	1.2	93	52	0	
Groundhog	2.3	0.9	2.4	1.0	67	21	0	
Lunch	2.1	0.8	2.3	0.9	69	19	0	
Nitro	2.2	0.7	2.4	0.9	68	20	0	
Sodbuster	1.9	0.7	2.3	0.8	68	20	0	
Tillage	2.0	0.8	2.3	0.8	66	22	0	

Table 25 (cont.). Performance of daikon radish averaged over the PMC locations.						
Variety	Disease 2 ranking		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
Big Dog	0.8	1.0	2.0	0.7	1.6	1.2
Concorde	0.8	0.9	2.0	0.7	1.5	1.1
Control	0.8	1.0	2.2	0.7	1.6	1.2
Defender	1.0	0.9	2.3	0.8	1.7	1.2
Driller	0.8	1.0	2.3	0.8	1.8	1.4
Eco-Till	0.9	1.0	2.0	0.7	1.8	1.3
Graza	0.6	0.9	2.1	0.7	2.0	1.9
Groundhog	0.7	1.0	2.3	0.8	1.7	1.3
Lunch	0.8	1.0	2.3	0.8	1.9	1.3
Nitro	0.8	1.0	2.2	0.7	1.7	1.2
Sodbuster	0.9	0.9	2.3	0.8	1.8	1.2
Tillage	0.7	1.0	2.2	0.8	1.7	1.3
[1/] Insect 2 rankings for CO and MT only.						

Table 26. 14-day emergence of daikon radish varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.0	0.0	0.5	1	2.5	0.6	2.5	0.6	2.8	0.5	3.0	0.0
Concorde	2.0	0.8	0.8	0.5	3.0	0.0	3.0	0.0	2.8	0.5	3.0	0.0
Control	1.8	0.5	1.3	0.5	3.0	0.0	3.0	0.0	2.8	0.5	3.0	0.0
Defender	2.0	0.0	0.5	0.6	3.0	0.0	3.0	0.0	1.5	0.6	3.0	0.0
Driller	2.0	0.0	0.8	0.5	2.8	0.5	3.0	0.0	2.5	0.6	3.0	0.0
Eco-Till	1.5	0.5	1.3	0.5	3.0	0.0	2.8	0.5	2.3	0.9	3.0	0.0
Graza	0.3	0.5	1.0	1.2	0		0.8	0.5	0		2.8	0.5
Groundhog	1.8	0.5	0.8	0.5	2.5	0.6	3.0	0.0	2.8	0.5	3.0	0.0
Lunch	1.8	0.5	0.8	0.5	2.0	0.0	3.0	0.0	2.0	0.8	3.0	0.0
Nitro	1.8	0.5	1.0	0.0	2.5	0.6	2.8	0.5	2.0	0.0	3.0	0.0
Sodbuster	1.3	0.5	1.3	0.5	2.0	0.0	2.3	0.5	1.5	1.3	3.0	0.0
Tillage	1.3	0.5	0.8	0.5	2.0	0.0	2.8	0.5	1.8	0.9	3.0	0.0

Table 27. 28-day emergence of daikon radish varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.0	0.8	0.5	1.0	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Concorde	2.3	0.9	0.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Control	2.0	0.0	1.0	0.8	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Defender	2.0	0.0	0.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Driller	2.0	0.0	1.0	0.8	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Eco-Till	2.0	0.0	1.3	1.3	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Graza	0.3	0.5	1.0	1.1	0.5	0.6	2.0	0.8	3.0	0.0	3.0	0.0
Groundhog	1.8	0.5	0.5	0.6	2.8	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Lunch	1.8	0.5	0.8	0.6	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Nitro	2.0	0.8	0.8	0.5	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Sodbuster	1.5	0.6	1.3	1.3	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Tillage	1.5	0.6	1.0	0.0	2.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0

Table 28. Days to 50% bloom of daikon radish varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean[1/]	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	81	0	103		57	3	57	1	54	7	47	0
Concorde	70	8	103		59	3	56	5	48	4	43	2
Control	81	0	103		63	2	60	2	57	0.5	55	4
Defender	74	8	103		61	1	55	2	55	2	55	0
Driller	81	0	103		56	0	56	3	52	8	49	2
Eco-Till	81	0	103		56	0	61	2	52	5	49	2
Graza	81	0	103		96	0	N/A		N/A		N/A	
Groundhog	81	0	103		56	0	58	1	57	5	49	2
Lunch	81	0	103		56	0	59	3	62	3	54	3
Nitro	81	0	103		56	0	59	2	59	4	49	2
Sodbuster	81	0	103		56	0	58	3	57	0	53	4
Tillage	81	0	103		56	0	57	4	53	3	45	4

[1/]Days to 50% bloom from single replication.

Table 29. Disease 1 ranking of daikon radish varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	0		0		0		0		0		0	
Concorde	0		0		0		0		0		0	
Control	0		0		0		0		0		0	
Defender	0		0		0		0		0		0	
Driller	0		0		0		0		0		0	
Eco-Till	0		0		0		0		0		0	
Graza	0		0		0		0		0		0	
Groundhog	0		0		0		0		0		0	
Lunch	0		0		0		0		0		0	
Nitro	0		0		0		0		0		0	
Sodbuster	0		0		0		0		0		0	
Tillage	0		0		0		0		0		0	

Table 30. Disease 2 ranking of daikon radish varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	0.5	0.6	0		0		0		0		0	
Concorde	0.5	1.0	0.3	0.5	0		0		0		0	
Control	1.0	1.2	0		0		0		0		0	
Defender	1.3	1.5	0.5	0.6	0		0		0		0	
Driller	1.0	1.2	0		0		0		0		0	
Eco-Till	1.5	1.3	0		0		0		0		0	
Graza	0.3	0.5	0		0		0		0		0	
Groundhog	0.3	0.5	0		0		0		0		0	
Lunch	0.8	1.5	0		0		0		0		0	
Nitro	1.0	0.9	0		0		0		0		0	
Sodbuster	0.8	0.5	0.3	0.5	0		0		0		0	
Tillage	0.3	0.5	0		0		0		0		0	

Table 31. Insect 1 ranking of daikon radish varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.5	1.0	1.5	1.8	1.0	1.2	3.0	0.0	2		2	
Concorde	1.8	1.5	2.3	1.5	1.0	1.2	3.0	0.0	2		2	
Control	3.0	0.0	2.3	1.5	1.0	1.2	3.0	0.0	2		2	
Defender	3.0	0.0	2.5	1.0	1.0	1.2	3.0	0.0	2		2	
Driller	3.0	0.0	3.0	0.0	1.0	1.2	3.0	0.0	2		2	
Eco-Till	2.5	1.0	1.3	1.3	1.0	1.2	3.0	0.0	2		2	
Graza	2.5	1.0	2.0	1.2	1.0	1.2	3.0	0.0	2		2	
Groundhog	3.0	1.6	2.5	1.0	1.0	1.2	3.0	0.0	2		2	
Lunch	3.0	0.0	3.0	0.0	1.0	1.2	3.0	0.0	2		2	
Nitro	2.5	1.0	2.5	1.0	1.0	1.2	3.0	0.0	2		2	
Sodbuster	3.0	0.0	2.5	1.0	1.0	1.2	3.0	0.0	2		2	
Tillage	2.0	1.2	3.0	0.0	1.0	1.2	3.0	0.0	2		2	

Table 32. Insect 2 ranking of daikon radish varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Big Dog	2.0	0.8	0.3	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Concorde	1.5	0.6	0.5	0.6	1.0	1.2	3.0	0.0	N/A		N/A	
Control	2.0	0.8	0.5	0.6	1.0	1.2	3.0	0.0	N/A		N/A	
Defender	2.0	0.8	0.8	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Driller	3.0	0.0	0.3	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Eco-Till	2.5	1.0	0.5	0.6	1.0	1.2	3.0	0.0	N/A		N/A	
Graza	1.0	0.0	0.8	0.5	1.0	1.2	5.0	0.0	N/A		N/A	
Groundhog	2.5	1.3	0.3	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Lunch	2.8	1.3	0.8	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Nitro	2.0	0.8	0.8	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Sodbuster	2.3	0.9	0.8	0.5	1.0	1.2	3.0	0.0	N/A		N/A	
Tillage	2.3	0.9	0.5	0.6	1.0	1.2	3.0	0.0	N/A		N/A	

HAIRY VETCH (*Vicia villosa*)

Table 33. Performance of hairy vetch averaged over PMC locations.								
Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.5	1.0	2.1	1.0	69	15	0	
Lana	1.5	1.0	2.4	0.9	65	16	0	
Purple Bounty	1.6	0.9	2.0	0.9	69	18	0	
Purple Prosperity	1.9	0.9	2.2	1.1	69	18	0	
TNT	1.6	1.0	2.4	0.8	94	12	0	
Villana	1.6	0.9	2.3	0.9	95	12	0	

Table 33 (cont.). Performance of hairy vetch averaged over PMCs.						
Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0.1	0.2	0		0	
Lana	0.1	0.3	0		0	
Purple Bounty	0.0	0.0	0		0.1	0.15
Purple Prosperity	0.1	0.2	0		0	
TNT	0.3	0.5	0		0.2	0.40
Villana	0.3	0.5	0		0.3	0.50
[1/] Disease 2 and insect 2 for CO and MT only.						

Table 34. 14-day emergence of hairy vetch varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS	1.0	0.0	1.0	0.0	0		2.0	0.0	2.0	0.0	3.0	0.0
Lana	1.5	0.6	0.8	0.9	0		2.0	0.0	1.5	1.0	3.0	0.0
Purple	0.25	0.5	1	0.8	1.80	0.5	2.0	0.0	1.5	0.6	2.8	0.5
Purple	1.3	0.5	0.5	0.6	2.5	0.6	2.0	0.0	1.8	0.5	3.0	0.0
TNT	1	0.8	1.5	0.6	0		2.0	0.0	2.0	0.0	3.0	0.0
Villana	1.5	0.6	0.8	0.5	0.5	0.6	2.0	0.0	1.5	1.0	3.0	0.0

Table 35. 28-day emergence of hairy vetch varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	1.0	0.0	0.8	0.5	2.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Lana	1.6	0.6	0.8	0.9	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Purple Bounty	1.0	0.0	1.0	0.9	1.8	0.5	2.3	0.5	3.0	0.0	3.0	0.0
Purple Prosperity	1.0	0.0	0.5	0.6	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
TNT	1.3	0.5	1.5	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Villana	1.8	0.5	0.8	0.5	2.3	0.9	3.0	0.0	3.0	0.0	3.0	0.0

Table 36. Days to 50% bloom of hairy vetch varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	81	0.0	92	14.0	67	3.0	62	0.0	53	0.0	56	2.5
Lana	74	8.0	92	14.0	62	0.0	62	0.0	50	4.0	51	1.2
Purple Bounty	81	0.0	99	9.0	68	2.5	62	0.0	53	0.0	53	0.0
Purple	81	0.0	99	9.0	67	2.0	62	0.0	53	0.0	53	0.0
TNT	81	0.0	103	N/A	98	10	N/A		N/A		N/A	
Villana	81	0.0	103	N/A	101	4	N/A		N/A		N/A	

Table 37. Disease 1 ranking of hairy vetch varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0		0		0		0		0		0	
Lana	0		0		0		0		0		0	
Purple Bounty	0		0		0		0		0		0	
Purple	0		0		0		0		0		0	
TNT	0		0		0		0		0		0	
Villana	0		0		0		0		0		0	

Table 38. Disease 2 ranking of hairy vetch varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0		0		0		0.3	0.5	N/A		N/A	
Lana	0		0		0		0.5	0.6	N/A		N/A	
Purple Bounty	0		0		0		0		N/A		N/A	
Purple	0		0		0		0.3	0.5	N/A		N/A	
TNT	0		0		0		1.0	0.0	N/A		N/A	
Villana	0		0		0		1.0	0.0	N/A		N/A	

Table 39. Insect 1 ranking of hairy vetch varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0		0		0		0		0		0	
Lana	0		0		0		0		0		0	
Purple Bounty	0		0		0		0		0		0	
Purple	0		0		0		0		0		0	
TNT	0		0		0		0		0		0	
Villana	0		0		0		0		0		0	

Table 40. Insect 2 ranking of hairy vetch varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CCS Groff	0		0		0		0		N/A		N/A	
Lana	0		0		0		0		N/A		N/A	
Purple Bounty	0		0		0		0.3	0.5	N/A		N/A	
Purple	0		0		0		0		N/A		N/A	
TNT	0		0		0		0.8	0.5	N/A		N/A	
Villana	0		0		0		1.0	0.0	N/A		N/A	

RED CLOVER (*Trifolium repens*)

Table 41. Performance of red clover averaged over PMCs.								
Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.1	0.9	1.9	1.0	81	34	0	0
Cyclone II	1.1	1.1	1.8	1.2	82	12	0	0
Dynamite	1.4	1.1	1.8	1.0	84	10	0	0
Freedom	1.2	1.3	1.8	1.1	84	13	0	0
Kenland	1.0	0.9	1.7	1.2	82	13	0	0
Mammoth	1.1	1.2	1.7	1.1	101	53	0	0
Starfire II	1.1	0.8	1.4	1.3	86	10	0	0
Wildcat	1.3	1.2	1.9	1.1	85	12	0	0

Table 41 (cont.). Performance of red clover averaged over PMCs.						
Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.3	0.4	0	0	0.7	0.9
Cyclone II	0.1	0.3	0.1	0.2	0.5	0.6
Dynamite	0.2	0.4	0	0	0.5	0.6
Freedom	0.3	0.5	0	0	0.6	0.7
Kenland	0.3	0.5	0	0	0.6	0.7
Mammoth	0.3	0.5	0	0	0.6	0.7
Starfire II	0.3	0.5	0	0	0.6	0.8
Wildcat	0.2	0.4	0	0	0.5	0.6
[1/] Disease 2 and insect 2 for CO and MT only.						

Table 42. 14-day emergence of red clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon	1.5	0.6	0.5	0.6	0		0.5	0.6	1.8	1.3	2.3	0.5
Cyclone II	1	0.8	0.3	0.5	0		0.5	0.6	2.3	0.5	2.5	0.6
Dynamite	1	0.0	0.5	1.0	0		1.5	0.6	2.5	0.6	2.8	0.5
Freedom	1.3	0.5	0.3	0.5	0		0.3	0.5	3.0	0.0	2.5	0.6
Kenland	1.3	0.5	0		0		0.5	0.6	2.0	0.0	2.0	0.0
Mammoth	1	0.8	0		0		0.5	0.6	2.3	0.5	2.8	0.5
Starfire II	1	0.0	0.3	0.5	0		1.0	0.0	2.0	0.0	2.0	0.0
Wildcat	0.8	0.5	0.3	0.5	0.3	1.0	1.0	0.0	2.5	0.6	3.0	0.0

Table 43. 28-day emergence of red clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	1.5	0.6	0.5	0.6	1.0	0.0	1.3	0.6	3	0	3	0
Cyclone II	1.3	0.5	0		2	0.0	1.3	0.9	3	0	3	0
Dynamite	1.5	0.6	0.5	1.0	1.5	0.6	1.5	0.6	3	0	3	0
Freedom	1.5	0.6	0		2	0.9	1.3	0.5	3	0	3	0
Kenland	1.5	0.6	0		1.3	0.9	1.3	0.5	3	0	3	0
Mammoth	1.3	0.5	0.3	0.5	1.8	0.5	1.0	0.0	3	0	3	0
Starfire II	0.8	0.5	0.3	0.5	0.3	0.5	0.8	0.5	3	0	3	0
Wildcat	1.0	0.8	0.3	0.5	2.5	0.5	1.5	0.6	3	0	3	0

Table 44. Days to 50% bloom of red clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	81	0.0	103[1/]		90	5.0	82	2.0	84	5.0	69	4.0
Cyclone II	81	0.0	103		84	0.0	76	3.0	80	4.0	66	4.0
Dynamite	81	0.0	103		84	0.0	81	5.0	83	4.0	72	0.0
Freedom	81	0.0	103		93	3.0	82	6.0	80	4.0	66	4.0
Kenland	81	0.0	103		86	3.0	80	4.0	77	0.0	64	0.0
Mammoth	81	0.0	103		105	0.5	115	0.0	N/A		N/A	
Starfire II	81	0.0	103		92	3.0	82	5.0	83	4.0	74	3.0
Wildcat	81	0.0	103		89	6.0	84	5.0	84	3.0	66	4.0

[1/]Dys to 50% bloom from 1 replication.

Table 45. Disease 1 ranking of red clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0		0		0		0		0		0	
Cyclone II	0		0		0		0		0		0	
Dynamite	0		0		0		0		0		0	
Freedom	0		0		0		0		0		0	
Kenland	0		0		0		0		0		0	
Mammoth	0		0		0		0		0		0	
Starfire II	0		0		0		0		0		0	
Wildcat	0		0		0		0		0		0	

Table 46. Disease 2 ranking of red clover varieties by location.

Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0.5	1.0	0		0		0.8	0.5	N/A		N/A	
Cyclone II	0		0		0		0.5	0.6	N/A		N/A	
Dynamite	0		0		0		0.8	0.5	N/A		N/A	
Freedom	0		0		0		1.0	0.0	N/A		N/A	
Kenland	0		0		0		1.0	0.0	N/A		N/A	
Mammoth	0		0		0		1.0	0.0	N/A		N/A	
Starfire II	0		0		0		1.0	0.0	N/A		N/A	
Wildcat	0		0		0		0.8	0.5	N/A		N/A	

Table 47. Insect 1 ranking of red clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0		0		0		0		0		0	
Cyclone II	0		0.3	0.5	0		0		0		0	
Dynamite	0		0		0		0		0		0	
Freedom	0		0		0		0		0		0	
Kenland	0		0		0		0		0		0	
Mammoth	0		0		0		0		0		0	
Starfire II	0		0		0		0		0		0	
Wildcat	0		0		0		0		0		0	

Table 48. Insect 2 ranking of red clover varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cinnamon Plus	0		0		1.8	0.5	1.0	0.0	N/A		N/A	
Cyclone II	0		0		1.0	0.0	1.0	0.0	N/A		N/A	
Dynamite	0		0		1.0	0.0	1.0	0.0	N/A		N/A	
Freedom	0		0		1.3	0.5	1.0	0.0	N/A		N/A	
Kenland	0		0		1.3	0.5	1.0	0.0	N/A		N/A	
Mammoth	0		0		1.3	0.5	1.0	0.0	N/A		N/A	
Starfire II	0		0		1.5	0.6	1.0	0.0	N/A		N/A	
Wildcat	0		0		1.0	0.0	1.0	0.0	N/A		N/A	

WINTER PEA (*Pisum sativum*)

Table 49. Performance of winter pea averaged over PMCs.								
Variety	14-day emergence		28-day emergence		Days to 50% bloom		Disease 1 ranking	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.6	1.2	2.4	1.1	70	19	1.6	2.5
Dunn	1.5	1.2	2.3	1.1	68	17	1.6	2.4
Frost Master	1.1	1.2	1.8	1.3	68	14	1.7	2.6
Lynx	1.1	1.2	1.9	1.3	70	19	1.6	2.5
Maxum	1.4	1.1	2.2	1.1	67	18	1.7	2.6
Survivor 15[1/]	1.7	1.5	1.5	1.7	N/A		4.8	0.4
Whistler	1.6	1.2	2.2	1.0	70	16	1.6	2.5
Windham	1.1	1.2	2.0	1.0	64	19	1.7	2.6
[1/]Survivor 15 emergence data are only for ND and MT, disease and insect damage for ND only taken in August.								

Table 44 (cont.). Performance of winter pea averaged over PMCs.						
Variety	Disease 2 ranking[1/]		Insect 1 ranking		Insect 2 ranking[1/]	
	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.3	0.5	0		0.3	0.5
Dunn	0.2	0.4	0		0.4	0.4
Frost Master	0.4	0.4	0		0.5	0.5
Lynx	0.2	0.2	0		0.2	0.2
Maxum	0.2	0.2	0		0.2	0.2
Survivor 15	N/A		N/A			
Whistler	0.3	0.4	0		0.3	0.4
Windham	0.2	0.2	0		0.1	0.2
[1/] Disease 2 and insect damage for CO and MT						

Table 45. 14-day emergence of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	1.3	0.6	0.3	0.6	0.3	0.5	3.0	0.0	1.8	0.5	3.0	0.0
Dunn	1.0	0.0	0.3	0.5	0.3	0.5	2.8	0.5	1.5	0.6	3.0	0.0
Frost Master	0		0.3	0.6	0		2.0	0.8	1.0	0.8	3.0	0.0
Lynx	0		0.7	0.6	0	0	1.8	0.5	1.0	0.8	3.0	0.0
Maxum	1.0	0.0	0.5	0.6	0.3	0.5	2.5	0.6	1.3	0.5	3.0	0.0
Survivor 15	Not planted				0		0		2.0	0.0	3.0	0.0
Whistler	0.3	0.5	0.3	0.6	0	0.5	2.5	0.6	1.0	0.8	3.0	0.0
Windham	0		0.7	1.2	0		2.0	0.0	1.0	0.8	3.0	0.0

Table 46. 28-day emergence of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	2.0	0.0	0.3	0.6	2.8	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Dunn	1.8	0.5	0.3	0.6	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Frost Master	0.3	0.5	0.3	0.6	1.5	0.6	2.5	0.6	3.0	0.0	3.0	0.0
Lynx	0		0.7	0.6	2.0	0.8	2.8	0.5	3.0	0.0	3.0	0.0
Maxum	1.0	0.0	0.5	0.6	2.5	0.6	3.0	0.0	3.0	0.0	3.0	0.0
Survivor 15	Not planted				0		0		3.0	0.0	3.0	0.0
Whistler	1.0	0.0	1.0	1.0	2.3	0.5	3.0	0.0	3.0	0.0	3.0	0.0
Windham	0.8	0.5	0.7	1.2	2.3	0.9	2.0	0.0	3.0	0.0	3.0	0.0

Table 47. Days to 50% bloom of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	81	0.0	103	0.0	68	1.0	57	1.0	59	3.0	52	5.0
Dunn	73	6.0	99	9.0	68	1.0	57	1.0	62	3.0	51	0.0
Frost Master	77	9.0	91	10.0	66	2.0	57	1.0	62	3.0	53	5.0
Lynx	81	0.0	103	0.0	67	2.0	57	1.0	62	3.0	51	0.0
Maxum	71	7.0	99	9.0	68	1.0	56	0.0	58	6.0	49	2.0
Survivor 15	Not planted				N/A		N/A		N/A		N/A	
Whistler	81	0.0	97	10.0	68	1.2	58	0.0	62	3.0	55	3.0
Windham	74	8.0	97	10.0	60	0.0	56	0.0	51	4.0	46	2.0

Table 48. Disease 1 ranking of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0		0		0		0		4.5	0.6	5.0	0.0
Dunn	0		0		0		0		4.3	0.5	5.0	0.0
Frost Master	0		0		0		0		5.0	0.0	5.0	0.0
Lynx	0		0		0		0		4.8	0.5	5.0	0.0
Maxum	0		0		0		0		5.0	0.0	5.0	0.0
Survivor 15	Not planted				N/A		N/A		4.5	0.6	5.0	0.0
Whistler	0		0		0		0		4.8	0.5	5.0	0.0
Windham	0		0		0		0		5.0	0.0	5.0	0.0

Table 49. Disease 2 ranking at 50% bloom of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.3	0.6	0		0		1.0	0.0	N/A		N/A	
Dunn	0		0		0		0.8	0.5	N/A		N/A	
Frost Master	0.3	0.5	0.3	0.6	0		1.0	0.0	N/A		N/A	
Lynx	0.3	0.6	0		0		0.3	0.6	N/A		N/A	
Maxum	0.3	0.5	0		0		0.3	0.5	N/A		N/A	
Survivor 15	Not planted				N/A		N/A		N/A		N/A	
Whistler	0.3	0.5	0		0		0.8	0.5	N/A		N/A	
Windham	0.3	0.5	0		0		0.3	0.5	N/A		N/A	

Table 50. Insect 1 ranking of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0		0		0		0		0		0	
Dunn	0		0		0		0		0		0	
Frost Master	0		0		0		0		0		0	
Lynx	0		0		0		0		0		0	
Maxum	0		0		0		0		0		0	
Survivor 15	Not planted				N/A		N/A		0		0	
Whistler	0		0		0		0		0		0	
Windham	0		0		0		0		0		0	

Table 51. Insect 2 ranking of winter pea varieties by location.												
Variety	Colorado 2017		Colorado 2018		Montana 2017		Montana 2018		North Dakota 2017		North Dakota 2018	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arvica 4010	0.3	0.6	0		0		1.0	0.0	N/A		N/A	
Dunn	0.3	0.5	0.3	0.5	0		1.0	0.0	N/A		N/A	
Frost Master	0.8	0.5	0		0		1.0	0.0	N/A		N/A	
Lynx	0.3	0.6	0		0		0.5	0.6	N/A		N/A	
Maxum	0.3	0.5	0.3	0.5	0				N/A		N/A	
Survivor 15	Not planted				N/A		N/A		N/A		N/A	
Whistler	0.3	0.5	0		0		0.8	0.5	N/A		N/A	
Windham	0		0		0		0.3	0.5	N/A		N/A	

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