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ANNUAL REPORT
2016

HIGH PLAINS AGRICULTURAL LABORATORY

UNIVERSITY OF NEBRASKA PANHANDLE RESEARCH AND EXTENSION CENTER

LOCATION: Six miles Northwest of Sidney, Nebraska

This report was prepared by the High Plains staff, and Manager, Jake Hansen

HPAL ADVISORY BOARD
2016-2017

Walt Akeson	1815 Duchess Dr., Longmont, CO 80501	308-776-6510	wakeson@earthlink.net
Aaron Berger	Kimball Co. Ext. Office 209 3rd St. Kimball, NE 69145	308-235-3122	aberger2@unl.edu
Deb Brauer	Crossroads CO-OP 800 Greenwood Rd. P.O. Box 153 Sidney, NE 69162	308-254-4230	deb@crossroadscoop.com
Kent Brauer	520 Charles Dr. Sidney, NE 69162	308-254-5755	kurtis_brauer@hotmail.com
Jon Carter	15591 Road 14 Chappell, NE 69129	308-874-2892	jcarter@vistabeam.com
Don Cruise	2809 Road 111 Sidney, NE 69162	308-254-7377	donrcruise@yahoo.com
Chris Cullan	Cullan Farms 6733 Franklin Road Hemingford, NE 69348	308-487-3905	candjcullan@bbc.net
Karen DeBoer	Cheyenne Co. Ext. Office 920 Jackson St. P.O. Box 356 Sidney, NE 69162	308-254-4455	kdeboer1@unl.edu
Ken Disney	Disney Farms 14309 Road 10 Lodgepole, NE 69149	308-483-5673 cell 308-250-0221	
Scott Easterly	10344 Road 12 Sidney, NE 69162	308-254-4052	easterly@peetzplace.com
Carmen Egging-Draper	Farm Credit Services 9562 Rd. 50 Dalton, NE 69131	308-249-4795	carmen.draper@fcsamerica

David Hagstrom	3595 Road 24 South Kimball, NE 69145	308-235-2701	dphagstrom@gmail.com
Bryce Halstead	708 Webster St. Kimball, NE 69145	308-235-2106	lhalstead3@charter.net
Mark Halstead	6333 Road 18 Dix, NE 69133	308-235-7139	markalanhalstead@huskers.unl.edu
Scott Hawthorne	3705 Road 24 South Kimball, NE 69145	308-430-0515	hawthornescott@hotmail.com
Chris Johnson	3605 Road 99 Sidney, NE 6916	308-249-2600	topher450@hotmail.com
Leon Kriesel	Kriesel Certified Seed 4626 Road 111 Gurley, NE 69142	308-884-2424	kcsent@vistabeam.com
Mike Leininger	American National Bank P.O. Box 19 Sidney, NE 69162	308-254-5536	mleininger@anbsidney.com
Alton Lerwick	70585 Carter Canyon Rd. Lyman, NE 69352	308-247-3139	lerwicka@gmail.com
Grant Lerwick	4071 Stegall Rd. Harrisburg, NE 69345		
Blake Mackey	Scoular Grain P.O. Box 257 3220 Road 107 Sidney, NE 69162		bmackey@scoular.com
Randy Mathewson	2675 Rd. 87 Potter, NE 69156	308-254-6156	rgm@prairieweb.com
Kristin Miller	NRCS 2244 Jackson Street Sidney, NE 69162	308-254-4507	kristin.miller@ne.usda.gov

Pete Miller	14532 Rd. 40 Lodgepole, NE 69149	308-483-5685	pmiller1320@yahoo.com
Clint Norman	Security First Bank P.O. Box 137 Sidney, NE 69162	08-254-4525	cnorman@security1stbank.com
Eugene Radke	3026 Road 199 Big Springs, NE 69122	308-889-3429	garadke1@atcjet.net
Jerry Radke	19910 Road 22 Big Springs, NE 69122	308-889-5160	jerryradke5160@gmail.com
Bryan Reimers	10439 Road 58 Dalton, NE 69131	308-377-2403	breimers@panhandlecoop.com
Keith Rexroth	2478 Parkview Rd. Sidney, NE 69162	308-249-1750	rexrothk@msn.com
Doug Schmale	3664 Road 139 Lodgepole, NE 69149	308-483-5505	drylandfarm@yahoo.com
Brian Townsend	180497 Co. Rd. C Mitchell, NE 69357	308-632-3351	townbldg@actcom.net
Jared Truetken	Points West Community Bank 809 Illinois St. Sidney, NE 69162	308-254-7110	jtruetken@pwcbank.com
Merle Vigil	USDA-ARS 40335 Co. Rd GG P.O. Box 40 Akron, CO 80720	907-345-2259	merle.vigil@ars.usda.gov
Tony Walker	1410 Rd 103 Sidney, NE 69162	308-254-5810	tonycrwalker@hotmail.com

PERSONNEL AT HPAL

2016

Employee	Title	Period Worked
Jake Hansen	Manager	Sept 2016-Dec 2016
Rob Higgins	Manager	April 2015-May 2016
Tom Nightingale	Summer Work	Jan 1975-Oct 2016
Paul McMillan	Farm Foreman	Mar 1983-Dec 2016
Vernon Florke	Crops Technician	May 2007-Dec 2016
Bill Struckmeyer	BQMS Technician	Jan 2014-Dec 2016
Travis Orrell	Crops Technician	July 2015-Dec 2016
James Burford	Crops Technician	June 2016-Dec 2016
David Wills	Summer Work	April 2016-Dec 2016
Hannah Greenwell	Graduate Student	May 2016-Aug 2016
David Blanke	Summer Work	May 2016-Aug 2016
Duane Nightingale	Summer Work	April 2016-Aug 2016
Larry Nelson	Summer Work	April 2016-Aug 2016
Emily Gill	Summer Work	May 2016-Aug 2016
Tyler Taylor	Graduate Student	May 2016-Aug 2016
Jaidyn Taylor	Summer Work	June 2016-Aug 2016

PROFESSIONAL STAFF OF THE PANHANDLE RESEARCH AND EXTENSION CENTER WHO CONDUCTED EXPERIMENTAL TRIALS OR WERE INVOLVED AT THE HIGH PLAINS AG LAB

STAFF MEMBER	TITLE
Dr. Jack Whittier	Director, Panhandle Res & Ext Center
Dr. Gary Hergert	Prof of Agronomy/Horticulture
Dr. Jeff Bradshaw	Assoc. Professor of Entomology
Dr. Dipak Santra	Assoc. Professor of Agronomy/Horticulture
Dr. Karla Jenkins	Asst. Professor of Animal Science
Dr. Cody Creech	Asst. Professor of Agronomy/Horticulture
Dr. Mitch Stephenson	Asst. Professor of Range and Forage
Karen Deboer	Extension Educator
Aaron Berger	Extension Educator
Karen Schultz	Business Manager Panhandle Res & Ext Center
Harrison Boateng	System Support Specialist
Pam Joern	Accounting Associate
Stefanie Cruz	Interim Assistant Business Manager

PROFESSIONAL STAFF OUTSIDE THE PANHANDLE RESEARCH AND EXTENSION CENTER WHO HAD COOPERATIVE STUDIES WITH REGULAR STAFF MEMBERS

NAME	ORGANIZATION
Dr. Stephen Baenziger	Prof of Agronomy/Horticulture
Dr. Gary Hein	Prof of Entomology & Director of Plant Health Program
Dr. Robert Graybosch	USDA-ARS
Dr. Stephen Wegulo	Assoc Professor of Plant Pathology
Dr. Teshome Regassa	Research Asst. Professor
Dr. Edward Cahoon	Professor of Biochemistry
Dr. Humberto Blanco	Assoc Prof Agronomy
Dr. Daniel Schachtman	Professor and director, Center for Biotechnology

RESEARCH TRIALS CONDUCTED DURING 2016

WHEAT AND BARLEY

TRIAL	STAFF	DESCRIPTION
Wheat Nursery	Baenziger Graybosch Santra	Exp. Varieties in comparison with established varieties
Wheat Quality	Baenziger Lan Xu	Milling and baking quality of Varieties
Long Term Tillage Study	Creech Higgins Orrell	Comparisons of Plow, Subtill, and No Till
Winter Wheat Variety Trial	Santra Regassa Florke	Varieties & exp. Lines
2-Gene Clearfield Winter Wheat	Creech Higgins Orrell	Evaluation of seed treatment combined with fungicide treatments
Clearfield Winter Wheat	Creech Orrell	Evaluation of weed control and tolerance of 2-gene CL winter wheat for feral rye control
Planting date & variety selection for management of the wheat curl mite complex	Hein McMechan Higgins Creech	Evaluation of early and late planting of commercial varieties of winter wheat
Winter Wheat	Creech Higgins Orrell	Timing of Gibberellic acid treatments in winter wheat
Winter Barley	Baenziger Santra Florke	Variety Trial
BASF Beyond Application Timing	Creech Orrell	Evaluate timing of Beyond treatments
Albaugh Adjuvant Trial	Creech Orrell	Investigate the effects of adjuvants on the efficacy of winter annual control

Albaugh Rye and Jointed Goat Grass Herbicide Trial	Creech Orrell	Evaluate effectiveness of Albaugh technology of winter annual control
Clearfield Plus Winter Wheat Variety Qualification	Baenziger Creech Orrell	Demonstrate the tolerance of new applications of Beyond Variety Qualifications
Effects Soil Applied Biochar on Organic Matter Content	Creech Humberto Blanco Orrell Nielson	Investigate the effects of soil allied Biochar on soil fertility
Long-Term Crop Rotation Study	Burford Creech Orrell	Evaluate the viability of several common crop rotations
BASF Irrigated Wheat Fungicide Trial	Creech Orrell	Investigate the effects of fall applied fungicide on irrigated winter wheat
BASF Dryland Wheat Fungicide (Priaxor) Trial	Creech Orrell	Investigate the effects of fall applied fungicide on dryland winter wheat
Wheat Planting Date/Row Spacing/ Seeding Rate Study	Burford Creech Orrell Taylor	Evaluate the effect of planting date, row spacing, and seeding rate on winter wheat yield
Valent Outrider/Maverick study	Burford Creech Orrell	Investigate the residual effects of Outrider and Maverick herbicides on multiple crops
Wheat Residue Study	Burford Creech Orrell	Investigate the effects of wheat residue strength on rotations
Wheat Preventitive Fungicide Trial	Burford Creech Orrell	Evaluate preventable fungicides in winter wheat
Valent Gibberellic Acid Application Trial	Burford Creech Orrell	The effects of timing on GA applications

Forages

Trial	Staff	Description
Winter Triticale	Santra Baenziger Florke	Winter Triticale Varieties
Summer annual inter seeding of Perennial pasture Multistate trial	Stephenson Jenkins Creech	Inter seeding of cool season pasture with legumes

Oilseed Crops: Sunflower and Winter Canola

Trial	Staff	Description
Sunflower Varieties, oils	Santra Florke	Dryland and irrigated sunflower varieties
Winter Canola	Creech Santra Burford Orrell	Evaluation of no-till, minimum till, and stale seedbeds for winter canola production
Winter Canola	Santra Florke Rickey	Winter screening nursery & variety trial

Legumes

Trial	Staff	Description
Pea Variety Trial	Santra Florke Rickey	Dryland variety trial
Winfield Extruded Granule Field Pea Herbicide Trial	Creech Orrell Hardt	Evaluation of pre-emergence treatments in field peas
Winfield Section 3 Adjuvant Trial	Creech Orrell	Evaluation of pre-emergence treatments in field peas

BASF Zidua Field Pea Herbicide Trial	Creech Orrell Gill	Evaluation of pre-emergence treatment in field peas
FMC Field Pea Herbicide Trial	Creech Orrell Gill	Evaluation of pre-emergence and post treatments in field peas
Herbicide Trial for Nebraska Weed Guide Field Pea Section	Creech Orrell Taylor	Evaluating effectiveness of currently labeled herbicides for publications of The Nebraska Weed Guide
FMC AMTZ Field Pea Herbicide Trial	Creech Orrell	Evaluation of pre-emergence treatment in field peas
Dryland/Irrigated Dry Edible Bean Variety Trial	Creech Orrell Taylor Wills Burford Urrea	Variety Trial

Millet, Sorghum, Corn

Trial	Staff	Description
Proso Millet Variety Trial	Santra Florke	Dryland & Irrigated Varieties
Proso Millet Breeding	Santra Florke Rickey	Bulk selection of proso head rows
Milo Variety Trial	Creech Orrell	Dryland milo varieties
Dryland No-Till Corn	Creech Orrell	Microbiology inoculation study
Winfield Armezon Dryland Corn Herbicide Trial	Creech Orrell	Evaluate effectiveness of Armenzon and Armezon pro on dryland corn

Millet, Sorghum, Corn

Trial	Staff	Description
Bioenergy Sorghum Variety Trial	Creech Orrell Schachtman	Variety Trial
Hoegemeyer Dryland Corn Variety Trial	Burford Creech Orrell Taylor	Variety Trial

Cattle

Trial	Staff	Description
Pasture Trial	Jenkins Greenwell	Evaluating the feeding value of field peas as a protein source relative to distillers grains

2016 HPAL

NORTH

UNIVERSITY of NEBRASKA
HIGH PLAINS AG LAB

ROT. #1 – Wheat-Millet-Fallow-Wheat-Summer Crop-Fallow
Fields 1, 2, 3 Organic Rotation

ROT. #2 – Wheat – Fallow
Fields 4, 5, 14, 15

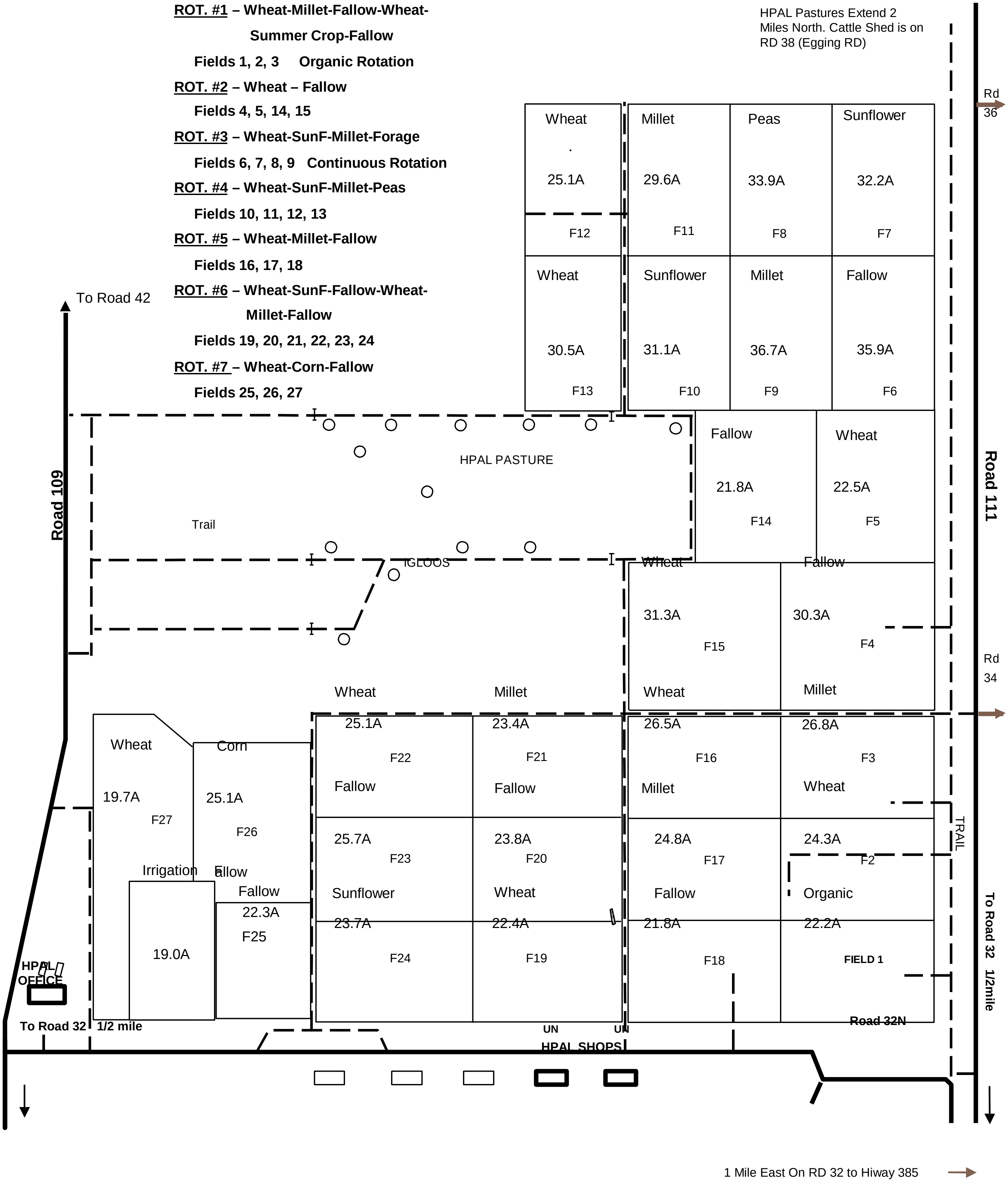
ROT. #3 – Wheat-SunF-Millet-Forage
Fields 6, 7, 8, 9 Continuous Rotation

ROT. #4 – Wheat-SunF-Millet-Peas
Fields 10, 11, 12, 13

ROT. #5 – Wheat-Millet-Fallow
Fields 16, 17, 18

ROT. #6 – Wheat-SunF-Fallow-Wheat-Millet-Fallow
Fields 19, 20, 21, 22, 23, 24

ROT. #7 – Wheat-Corn-Fallow
Fields 25, 26, 27



2017 HPAL

NORTH

UNIVERSITY of NEBRASKA
HIGH PLAINS AG LAB

ROT. #1 – Pea-Wheat-Millet
Fields 1E,1C,1W Organic Rotation

Rot. #2-Wheat-Corn(sorgum)-Fallow
Fields 2,3

ROT. #3 – Wheat – Fallow
Fields 4, 5, 14, 15

ROT. #4– Wheat-SunF-Millet-Fallow
Fields 6, 9, 10, 13

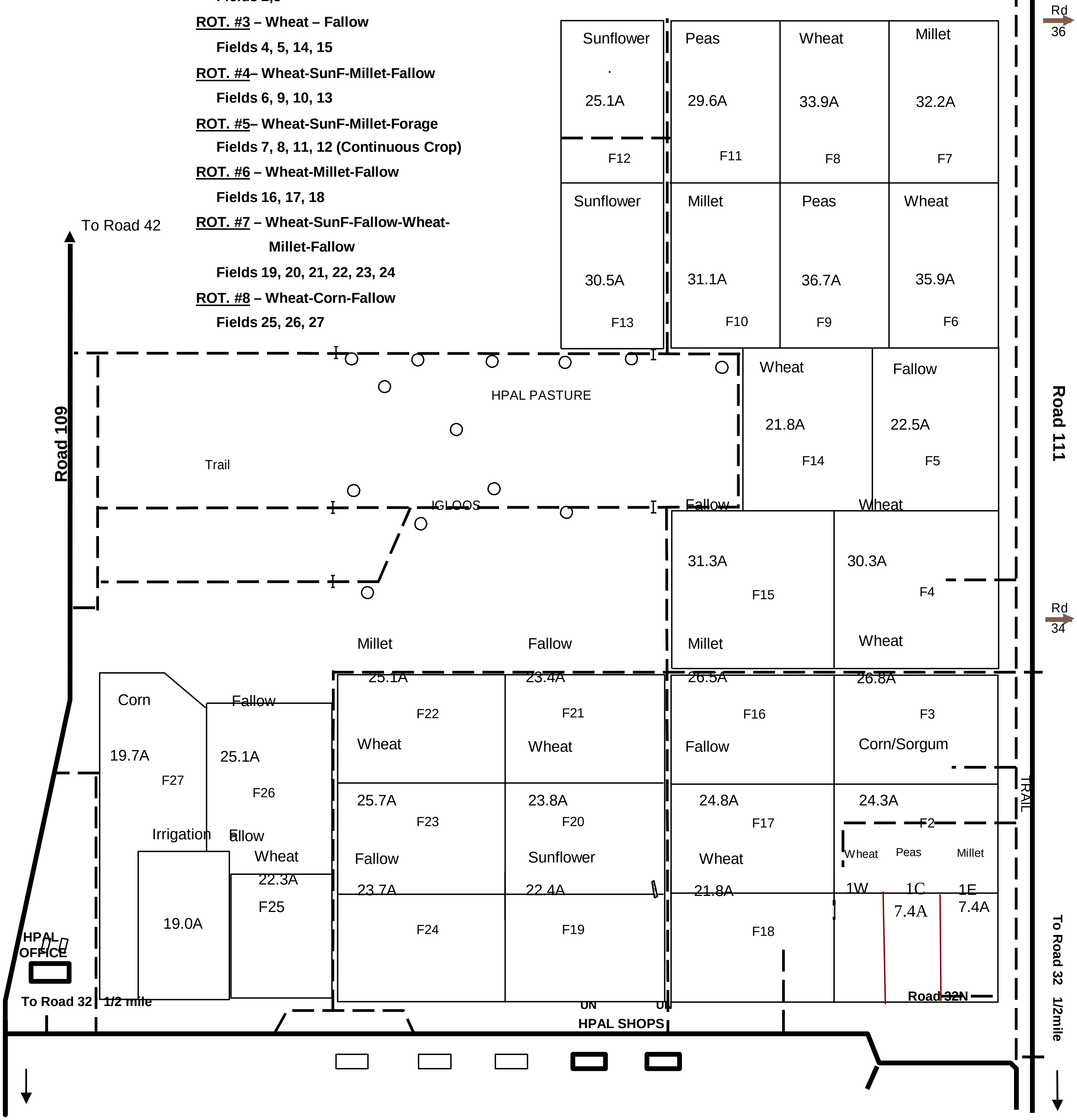
ROT. #5– Wheat-SunF-Millet-Forage
Fields 7, 8, 11, 12 (Continuous Crop)

ROT. #6 – Wheat-Millet-Fallow
Fields 16, 17, 18

ROT. #7 – Wheat-SunF-Fallow-Wheat-Millet-Fallow
Fields 19, 20, 21, 22, 23, 24

ROT. #8 – Wheat-Corn-Fallow
Fields 25, 26, 27

HPAL Pastures Extend 2 Miles North. Cattle Shed is on RD 38 (Egging RD)



1 Mile East On RD 32 to Hiway 385

Yield Summaries
2013-2014-2015-2016

ROTATION	2013	2014	2015	2016
R#1	**WHEAT-MILLET-FALLOW-WHEAT-SUNFLOWER-FALLOW; ORGANIC**			
F1	FALLOW	WHEAT-34.6 bu/a	MILLET-36.4 bu/a	Millet -28.2 bu/a
F2	WHEAT-40.6 bu/a	Millet-29.0 bu/a	FALLOW	WHEAT - 43.7 bu/a
F3	MILLET-0 bu/a-hail	FALLOW	Wheat-51.3 bu/a	Fallow
R#2	**WHEAT-FALLOW**			
F4	WHEAT- 44.3 bu/a	FALLOW	WHEAT-32.2 bu/a	FALLOW
F5	FALLOW	WHEAT-44.8 bu/a	FALLOW	WHEAT - 42.6 bu/a
F14	WHEAT-47.4 bu/a	FALLOW	WHEAT-38.5 bu/a	FALLOW
F15	FALLOW	WHEAT-44.2 bu/a	FALLOW	WHEAT - 35.44 bu/a
R#3	**WHEAT-SUNFLOWER-MILLET-FALLOW**			
F6	WHEAT-39.2 bu/a	SUNF-1558 lb/a	MILLET-44 bu/a	FALLOW
F9	FALLOW	WHEAT-31.5 bu/a	SUNF-1005 lb/a	MILLET - 49.96 bu/a
F10	MILLET-10.7 bu/a	FALLOW	WHEAT 50 bu/a	SUNF - 1583.28 lbs/a
F13	SUNF-710 lb/a	MILLET-36.5 bu/a	FALLOW	WHEAT - 36.3 bu/a
R#4	**WHEAT-SUNFLOWER-MILLET-FORAGE/PEAS**			
F7	MILLET-0 bu/a-hail	PEAS-23 bu/a	WHEAT-48.6 bu/a	SUNF - 1734.16 lbs/a
F8	WHEAT-37.5 bu/a	SUNF-1773 lbs/a	MILLET-48 bu/a	PEAS - 15 bu/a
F11	FALLOW	WHEAT-22.4 bu/a	SUNF-915 lb/a	MILLET - 54.66 bu/a
F12	SUNF-710 lb/a	MILLET-35.8 bu/a	PEAS-37 bu/a	WHEAT - 35.5 bu/a

Yeild Summaries (con't)

ROTATION				
	2013	**2014**	**2015**	**2016**
R#5	**WHEAT-MILLET-FALLO**	**/**		
F16	WHEAT-23.8 bu/a	MILLET-41.2 bu/a	FALLOW	WHEAT - 43.9 bu/a
F17	MILLET-10.7 bu/a	FALLOW	WHEAT-54.2 bu/a	MILLET - 20.84 bu/a
F18	FALLOW	WHEAT-49.1 bu/a	MILLET-37 bu/a	FALLOW
R#6	**WHEAT-SUNFLOWER-FALLOW-WHEAT-MILLET-FALLOW**			
F19	WHEAT-41.9 bu/a	SUNF-1534 lb/a	FALLOW	WHEAT - 29.8 bu/a
F20	FALLOW	WHEAT-51.2 bu/a	SUNF-773 lb/a	FALLOW
F21	MILLET-10.7 bu/a	FALLOW	WHEAT-39.7 bu/a	MILLET - 41.55
F22	WHEAT-30.3 bu/a	MILLET-35.5 bu/a	FALLOW	WHEAT-38.3 bu/a
F23	FALLOW	WHEAT-53.9 bu/a	MILLET-41 bu/a	FALLOW
F24	SUNF-969 lb/a	FALLOW	WHEAT-46 bu/a	SUNF - 1602 lbs/a
R#7	**WHEAT-CORN-FALLOW**			
F25	FALLOW	WHEAT-53.8 bu/a	CORN-69 bu/a	FALLOW
F26	CORN-79.3 bu/a	FALLOW	WHEAT-45.9 bu/a	CORN - 86.88 bu/a
F27	WHEAT-41.2 bu/a	CORN-79.5 bu/a	FALLOW	WHEAT-35.1 bu/a

CROP	2013	2014	2015	2016
WHEAT	34.7 bu/a	43.3 bu/a	45.1 bu/a	37.9 bu/a
MILLET	5.8 bu/a-hail	35.6 bu/a	41.3 bu/a	41.76 bu/a
SUNF	783.3 lb/a	1621.7 lb/a	898 lb/a	1640 lb/a
CORN	79.3 bu/a	79.5 bu/a	69 bu/a	86.88 bu/a

HIGH PLAINS AG LAB WEATHER DATA
OCTOBER 1, 2014 - SEPTEMBER 30, 2015

	Precipitation		Maximum Temp		Minimum Temp	
Month	Year	Normal	Year	Normal	Year	Normal
October 2015	1.68	0.92	67.4	64.3	39.1	33.9
November 2015	0.76	0.46	48.9	49.8	24.4	21.9
December 2015	1.35	0.33	37.9	40.9	17.5	14.7
January 2016	0.20	0.29	37.4	39.5	18.4	12.6
February 2016	1.21	0.37	47.0	43.4	24.7	16.3
March 2016	1.43	0.90	57.0	50.4	28.5	22.7
April 2016	3.18	1.66	59.0	59.9	34.7	31.4
May 2016	2.35	2.98	65.3	69.3	41.5	41.6
June 2016	1.52	3.13	86.2	79.9	55.3	51.4
July 2016	1.14	2.56	89.2	87.9	59.1	57.4
August 2016	3.36	1.96	84.6	85.9	55.0	55.5
September 2016	0.91	1.39	77.9	77.0	48.8	45.6
TOTAL PRECIPITATION	19.09	16.95				
YEARLY AVERAGE TEMPERATURE			63.2	62.4	37.3	33.8

Normal = 69 year average

2016 Crop Rotation #1A
3 Year Stacked Organic
Field 1E, 1M, 1W Peas,
Wheat, Millet

Operations

Field 1E – 7.4 Acres – Wheat – Previous Crop - Peas

June 18	One Pass
August 5	One Pass
September 12	Planted Freeman Wheat 48lbs/a

Field 1C – 7.4 Acres – Millet – Previous Crop – Wheat

June 20	Planted Millet
October 17	Harvested Millet 13 cwt/a

Field 1W – 7.4 Acres – Peas – Previous Crop – Millet

April 6	Planted Peas
July 1	Peas Disked Under for Green Manure
August 8	One Pass
September 12	Planted Freeman Wheat 48 lbs/a

2016 Crop Rotation #1B Wheat,
Corn (Sorghum), Fallow Fields
2,3

Field 2 – 24.3 – Wheat – Previous Crop – Fallow

April 12	8oz/a LV6
July 13	Harvested Wheat 43.71 bu/a
September 5	20oz/a Roundup RT3 + Class Act

Field 3 – 26.8 – Fallow – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	50 lb/a Nitrogen
June 8	Disked
August 11	24oz/a Roundup Powermax + 12oz/a LV6 + Class Act 1gal/100
September 7	One Pass
September 26	Planted Wheat Freeman 48 lbs/a

2016 Crop Rotation #2
2 Year
Fields 4,5,14,15
Wheat, Fallow

<u>Operations</u>

Field 4 – 30.3 Acres – Fallow – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1gal/100 Class Act
April 14	50lb/a Nitrogen
May 24	24oz/a Roundup Powermax + 8oz/a LV6 + Class Act
June 21	24oz/a Roundup Powermax + 1.6oz/a Sharpen + Crop oil + Class Act
July 8	Disked
August 6	One Pass
September 7	One Pass
September 8	Planted Settler CL Wheat 48lbs/a

Field 5 – 22.5 Acres – Wheat – Previous Crop – Fallow

April 13	40z/a Beyond + 2 gal 32 0-0 + 5oz/a LV6 + 1qt/100 Preference
July 13	Harvest Wheat 42.59bu/a
August 11	24oz/a Roundup Powermax + 12oz/a LV6 + 1 gal/100 Class Act
September 5	20oz/a Roundup RT3 + Class Act 1 gal/100

Field 14 – 21.8 Acres – Fallow – Previous Crop – Wheat

April 6	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	50lb/a Nitrogen
June 8	24oz/a Roundup Powermax + 2qt/100 Class Act
June 21	24oz/a Roundup Powermax + 1.6oz/a Sharpen + Crop oil + Class Act
July 8	Disked
August 6	One Pass
September 7	One Pass
September 9	Planted Settler CL Wheat 48lbs/a

Field 15 – 22.5 Acres – Wheat – Previous Crop – Fallow

April 13	4oz/a Beyond + 5oz/a LV6 + 2 gal 32 0-0 + 1 qt/100 Preference
July 14	Harvested Wheat 35.4 bu/a
August 11	24oz/a Roundup Powermax + 12oz/a LV6 + 1gal/100 Class Act
September 6	20oz/a Roundup RT3 + Class Act 1g/100

2016 Crop Rotation #3
4 Year
Fields 6,9,10,13
Wheat, Sunflower, Millet, Fallow

Operations

Field 6 – 35.9 Acres – Fallow – Previous Crop – Millet

April 14	50lb/a Nitrogen
May 24	24oz/a Roundup Powermax + 8oz/a LV6 + Class Act
June 21	24oz/a Roundup Powermax + 1.6oz/a Sharpen + Crop Oil + Class Act
September 7	One Pass
September 9	Planted Wheat Settler CL 48 lbs/a

Field 9 – 36.7 Acres – Millet – Previous Crop – Sunflowers

April 14	50lb/a Nitrogen
May 23	24oz/a Roundup Powermax + 8 oz/a Dicamba + Class Act
June 16	Planted Huntsman Millet
July 7	16oz/a Amine 4
September 15	7qt/100 Level 7 + 32 oz/a Crop Smart Plus + .5gal/100 Sitka
September 30	Harvested Millet 49 bu/a

Field 10 - 31.1 Acres – Sunflower – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	50lb/a Nitrogen
June 7	Planted Sunflowers Croplan 306 NS 17,000/a
June 8	2.8 oz/a Spartan Charge + 2.2 pt Prowl H2O (Generic) + 24oz/a Roundup Powermax + 2qt/100 Class Act
August 5	Aerial Applied Stallion Insecticide
October 27	Harvested Sunflowers 1583.3 lbs/a

Field 13 – 30.5 Acres – Wheat – Previous Crop – Fallow

April 12	8oz/a LV6
July 13	Harvested Wheat 36.25 bu/a
August 11	24oz/a Roundup Powermax + 16oz/a LV6 + 1gal/100 Class Act
September 6	20oz/a Roundup RT3 + Class Act 1 gal/100

2016 Crop Rotation # 4
4 Year Continuous
Fields 7,8,11,12
Wheat, Sunflowers, Millet, Peas

<u>Operations</u>

Field 7 – 32.2 Acres – Sunflowers – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1gal/100 Class Act
April 14	50lb/a Nitrogen
May 24	24oz/a Roundup Powermax + 8oz/a LV6 + Class Act
June 7	Planted Sunflower Croplan 306 NS @ 17,000/a
June 8	2.8oz/a Spartan Charge + 2.2 pt Prowl H20 (Generic) + 24oz/a Roundup Powermax + 2qt/100 Class Act
August 5	Aerial applied Stallion
October 19	Harvested Sunflowers 1734 lbs/a

Field 8 – 33.9 Acres – Peas – Previous Crop – Millet

April 4	Planted Admiral Peas 3bu/a
April 8	24oz/a Roundup Powermax + 1.5 oz/a Optill + 1 gal/100 Class act + 1 gal/100 MSO
July 18	Harvest Peas
July 29	25oz/a Roundup Powermax + 16 oz/a LV6 + 1 gal/100 Class Act
September 2	20 oz/a Roundup RT3 Class Act 1gal/100
September 13	Planted Wheat Freeman 60 lbs/a

Field 11 – 29.6 Acres – Millet – Previous - Crop Sunflowers

April 14	50lb/a Nitrogen
May 23	24oz/a Roundup Powermax + 8oz/a Dicamba + Class Act
June 16	Planted Millet
July 7	16oz/a Amine 4
September 15	7qt/100 Level 7 + 32oz/a Cropsmart Plus + .5gal/100 Sitka
September 29	Harvested Millet 54 bu/a

Field 12 – 25.1 Acres – Wheat – Previous Crop – Peas

April 12	8oz/a LV6
July 13	Harvested Wheat 35.54 bu/a
August 11	24oz/a Roundup Powermax + 16oz/a LV6 + 1 gal/100 Class Act
September 6	20oz/a Roundup RT3 + Class Act 1 gal/100

2016 Crop Rotation #5
3 Year
Fields 16,17,18
Wheat, Millet, Fallow

Operations

Field 16 – 26.5 – Wheat – Previous Crop – Fallow

April 13	4oz/a beyond + 5 oz/a LV6 + 2 gal 23 0-0 + 1qt/100 Preference
June 13	Harvested Wheat 43.94 bu/a
August 11	24oz/a Roundup Powermax + 12oz/a LV6 + 1 gal/100 Class Act
September 5	20oz/a Roundup RT3 + Class Act 1gal/100

Field 17 – 24.8 Acres – Millet – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	50 lbs/a Nitrogen
June 21	24oz/a Roundup Powermax + 1.6 oz/a Sharpen + Crop Oil + Class Act
June 17	Planted Millet
July 7	16oz/a Amine 4
October 17	Harvested Millet 20.84 bu/a

Field 18- 21.8 Acres – Fallow – Previous Crop – Millet

April 14	50 lbs/a Nitrogen
May 24	24oz/a Roundup Powermax + 8 oz/a LV6 + Class Act
June 21	24oz/a Roundup Powermax + 1.6oz/a Sharpen + Crop Oil + Class Act
July 29	25oz/a Roundup Powermax + 16 oz/a LV6 + 1gal/100 Class Act
September 2	20oz/a Roundup RT3 + Class Act 1 gal/100
September 15	Planted Wheat Freeman 60lbs/a

2016 Crop Rotation #6
6 Year
Fields 19, 20, 21, 22, 23, 24
Wheat, Sunflower, Fallow, Wheat, Millet, Fallow

<u>Operations</u>

Field 19 – 22.4 Acres – Wheat – Previous Crop – Fallow

April 12	8oz/a LV6
July 12	Harvested Wheat 29.82 bu/a
August 11	24oz/a Roundup Powermax + 12 oz/a LV6 + 1 gal/100 Class Act
September 2	20 oz/a Roundup RT3 + 1gal/100 Class Act

Field 20 – 23.8 Acres – Fallow – Previous Crop – Sunflower

April 14	50 lb/a Nitrogen
May 24	24oz/a Roundup Powermax + 8 oz/a LV6 + Class Act
June 21	24oz/a Roundup Powermax + 1.6 oz/a Sharpen + Crop Oil + Class Act
July 29	25oz/a Roundup Powermax + 16 oz/a LV6 + 1 gal/100 Class Act
September 2	20 oz/a Roundup RT3 + 1gal/100 Class Act
September 14	Planted Wheat Freeman 60lbs/a

Field 21 – 23.4 Acres – Millet – Previous Crop – Wheat

April 8	32 oz/a Roundup Powermax + 1 gal/a Class Act
April 14	50 lb/a Nitrogen
June 21	24oz/a Roundup Powermax + 1.6 oz/a Sharpen + Crop Oil + Class Act
September 15	7qt/100 Level 7 + 32oz/a Cropsmart plus + Sitka .5 gal/100
October 3	Harvested Millet 41.5 bu/a

Field 22 – 25.1 Acres – Wheat – Previous Crop – Fallow

April 12	8 oz/a LV6
July 12	Harvested Wheat 29.82 bu/a
August 11	24oz/a Roundup Powermax + 12 oz/a LV6 + 1 gal/100 Class Act
September 6	20 oz/a Roundup RT3 + Class Act 1 gal/100

Field 23 – 25.7 Acres – Fallow – Previous Crop – Millet

April 14	50 lbs/a Nitrogen
May 24	24oz/a Roundup Powermax + 8 oz/a LV6 + Class Act
June 21	24oz/a Roundup Powermax + 1.6 oz/a Sharpen + Crop Oil
July 29	25oz/a Roundup Powermax + 16 oz/a LV6 + 1 gal/100 Class Act
September 2	20oz/a Roundup RT3 + Class Act
September 14	Planted Wheat Freeman 60lbs/a

Field 24 – 23.7 Acres – Sunflowers – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	50lbs/a Nitrogen
June 7	Planted Sunflowers Croplan 306 NS 17,000/a
June 8	2.8oz/a Spartan Charge + 2.2 pt Prowl H20 (Generic) + 24oz/Roundup Powermax + 2 qt/100 Class Act
August 5	Aerial Applied Stallion Insecticide
October 28	Harvest Sunflowers 1602.6 lbs/a

2016 Crop Rotation #7
3 Year
Fields 25,26,27
Wheat, Corn, Fallow

Operations

Field 25 – 22.3 Acres – Fallow – Previous Crop – Corn

April 14	50lbs/a Nitrogen
May 24	24oz/a Roundup Powermax + 8 oz/a LV6
June 21	24oz/a Roundup Powermax + 1.6oz/a Sharpen + Crop Oil + Class Act
July 29	25oz/a Roundup Powermax + 16oz/a LV6 + 1 gal/a Class Act
September 2	20 oz/a Roundup RT3 + 1 gal/a Class Act
September 22	Planted Wheat Freeman 60lbs/a

Field 26 - 25.1 Acres – Corn – Previous Crop – Wheat

April 8	32oz/a Roundup Powermax + 1 gal/100 Class Act
April 14	80 lb/a Nitrogen
May 17	Planted Corn Croplan 3337 VT2P @ 14,000/a
June 21	28oz/a Roundup RT3 + 2 qt/100 Class Act
October 18	Harvested Corn 86.9 bu/a

Field 27 – 19.7 Acres – Wheat – Previous Crop – Fallow

April 12	8 oz/a LV6

Using High-Carbon Char as an Amendment to Improve Soil and Crop Yields

Humberto Blanco*, Bijesh Maharjan, Cody Creech, Nevin Lawrence,
Jim Schild, Gary Hergert, and Rex Nielsen
Panhandle Research and Extension Center, UNL, Scottsbluff, NE 69361
*Department of Agronomy and Horticulture, UNL, Lincoln, NE 68583

Objective
This project evaluated the impacts of the high-Carbon char produced by the Western Sugar Cooperative in Scottsbluff, NE on seed emergence, stand, crop yields, weed response, and soil properties (indicators of soil quality) on two soil types at HPAL.

Methods
High-C char was applied to a highly eroded site and a higher quality site in different stages of a three-year crop rotation of wheat – corn – field peas at HPAL. A randomized complete block design with six char treatments and 4 replications was used. Plot size was 10 by 30 feet. Best agronomic practices including fertilization, irrigation, and insect scouting were used.

Char Treatments
Char was applied based upon the amount of carbon in the char, which was 30% w/w on average. The six treatments included: a control (no char), 0.75, 1.50, 2.25, 3.00, and 3.75 tons of C acre^{-1}. These treatments corresponded to 0, 3000, 6000, 9000, 12000, and 15000 lbs of char acre^{-1}. Char was applied in the early spring 2016 before crop planting and disked into the top 6 inches of soil.

Results
Baseline soil samples were collected prior to char application. Soil samples will be collected yearly in the spring in the coming years. Next soil samples will be collected spring 2017, the impact of char on soil properties will be then assessed.

Field peas were lost to hail. Winter wheat was planted fall of 2016. Grain yield was collected from corn by harvesting the two center rows of each plot. No difference in corn grain yield was found among the char treatments (Fig 1-2). Yields and response to the char treatments is expected to increase in the coming years as no tillage will be used on the study to maintain maximum residue on the soil surface and nitrogen rates will be tailored to for each plot to bring the soil carbon nitrogen ratio into balance. High-C did not negatively impact yield even when applied at high levels which may suggest fertilizer is not or marginally impacted by high-C applications.

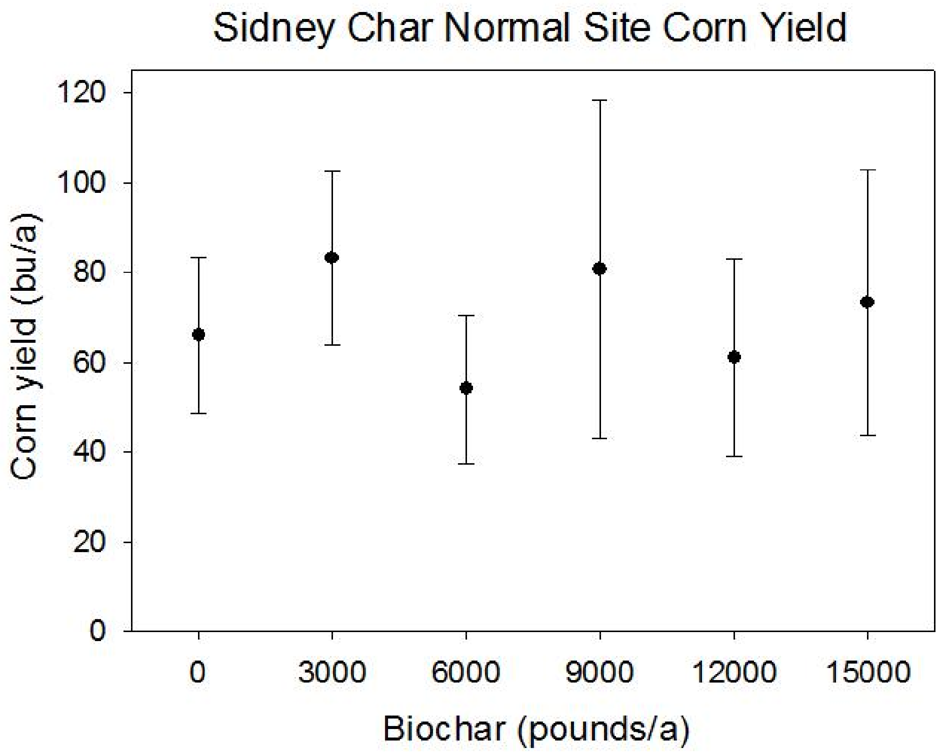


Figure 1. Corn yield by char rates at HPAL degraded-soil site.

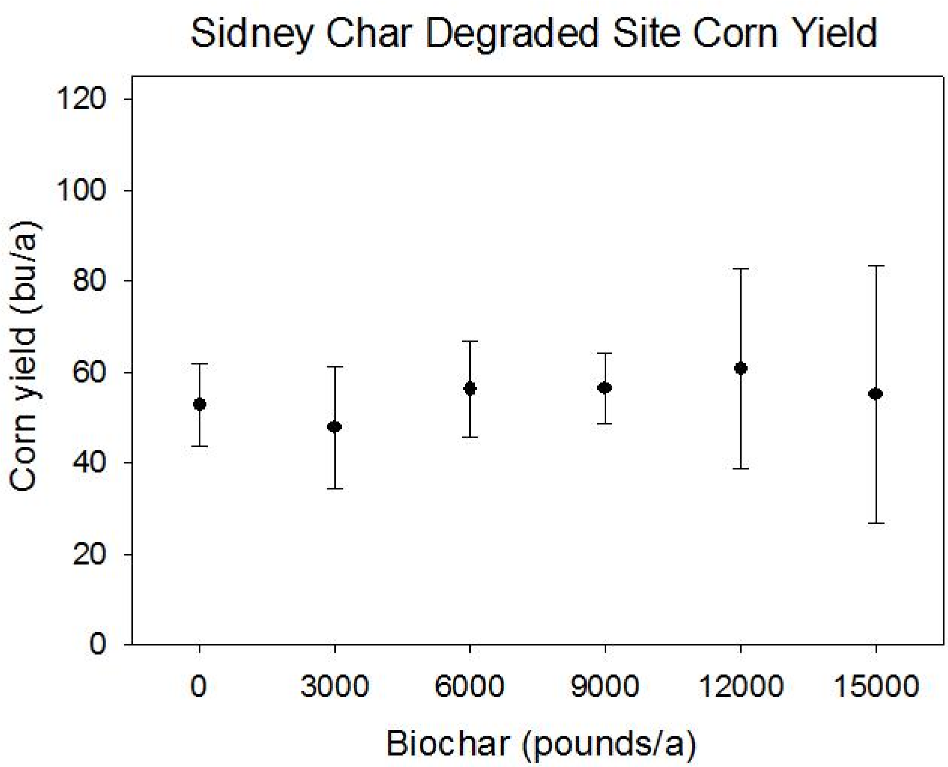


Figure 2. Corn yield by char rates at HPAL normal-soil site.

Fall and Spring Applied Field Pea (*Pisum sativum* L.) Herbicide Evaluation 2016

Dr. Cody Creech, Travis Orrell, James Burford, and Tyler Taylor,
Dryland Cropping Systems Program, Panhandle Research & Extension Center,
University of Nebraska – Lincoln, Scottsbluff, NE

Background Information

Field peas continue to be an important component crop in dryland rotations in the NE Panhandle. Field peas can be grown for use as grain, hay, silage or direct grazing. Especially beneficial because of their nitrogen fixing bacterial nodules, field peas can be incorporated into rotations with wheat and millet.

The canopy field peas form at maturity can effectively shade out many weeds. However, effective early season weed control is important to reduce competition and protect yields. Weeds, such as kochia and Russian thistle, can be problematic if left uncontrolled. Generally, fall-applied, preplant burndown, and post-emergence herbicides applied when the crop less than 2 to 4 inches tall maximize weed control and minimize crop injury. Additionally, pre-harvest applications can also be used as harvest aids.

Methods

A site in field 8 at HPAL with higher than average weed pressure was selected. Plots were 10 ft wide and 30 ft long and were arranged in a randomized complete plot design with three replications. Yellow dry field pea (cv. DS Amir) was planted on April 13th at a rate of 180 pounds per acre with a 15660 John Deere no-till drill into proso millet residue. Applications timings A and B (see table 1) were made with an ATV-mounted spryer set to deliver 15 gallons/acre at three miles per hour and 40 psi with TeeJet AIXR 11002 nozzles on October 25th 2015 and March 22, 2016, respectively. On June 16, 2016 application timing C (Table 1) was made using a similarly calibrated backpack sprayer. Visual control ratings were recorded throughout the growing season. The plots were direct harvested using a Hege 180 plot research combine equipped with a Harvestmaster Classic GrainGage on July 20, 2016, and yield data was recorded.

Results and discussion

The results are summarized in Table 1. All applications of herbicides with residual activity increased yield over the untreated check plots. An overall reduced weed pressure was observed when fall applications were used. The largest relative increases in yield were observed in treatments that included Fall applications of Spartan Elite or Spartan Charge. All of the applications showed excellent control. Though, some were more effective at controlling later emerging weed such as volunteer proso millet. Continued research aims to identify more effective and economical herbicide regimens to be used for the production of dry field peas in the Nebraska Panhandle.

Key Points

Several herbicide regimens can be used to control heavy weed pressure and increase field pea yield in the Nebraska Panhandle. Fall applied herbicides can be an effective method to control early season weed growth and reduce spring labor requirements and time constraints.

`Table 1. Evaluation of Fall and Spring Applied Herbicide in Field Pea 2016 Sidney, NE 2016. Treatment timing A was applied in the fall, B was applied preplant, and C was applied post.

Treatment	Treatment timing	Rate	Cheat Grass	Common Puncture Vine	Marestail	Russian thistle	Yield
			% Control	% Control	% Control	% Control	bu/acre
Untreated			0	0	0	0	17.9
Spartan Charge	A	5.0 fl oz/a	95	78.3	90	90	32.6
2,4-D Ester	A	1 pt/a					
COC	A	1 % v/v					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
Spartan Elite	A	24 fl oz/a	95	90	86.7	86.7	39.6
2,4-D Ester	A	1 pt/a					
COC	A	1 % v/v					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
Authority MTZ	A	14 oz/a	95	88.3	88.3	91.7	26.1
2,4-D Ester	A	1 pt/a					
Prowl H20	A	2.0 pt/a					
COC	A	1 % v/v					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
Anthem Flex	A	3.75 fl oz/a	86.1	96.7	86.7	90	24.4
2,4-D Ester	A	1 pt/a					
COC	A	1 % v/v					
ASSURE II	C	8 fl oz/a					
COC	C	1 % v/v					
Spartan Charge	A	3 fl oz/a	95	95	95	86.7	31.4
2,4-D Ester	A	1 pt/a					
COC	A	1 % v/v					
Spartan Charge	A	5 fl oz/a	95	93.3	91.7	85	32.9
Spartan Elite	B	20 fl oz/a					
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
2,4-D Ester	A	1 pt/a	95	95	93.3	91.7	27.8
COC	A	1 % v/v					
Spartan Elite	C	20 fl oz/a					
Roundup PowerMax	C	32 fl oz/a					
Ammonium Sulfate	C	17 lb/100 gal					
Assure II	B	8 fl oz/a					
COC	B	1 % v/v					
Anthem Flex	B	3.75 fl oz/a	95	90	93.3	83.3	26.7
Roundup PowermMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
Spartan Charge	B	5.0 fl oz/a	93.5	90	93.3	88.3	23.3
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1 % v/v					
Spartan Elite	B	24 fl oz/z	92.2	95	95	88.3	36.1
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1 %v/v					
Optill	B	1.5 oz/a	95	95	91.7	88.3	28.4
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1% v/v					
Sharpen	B	2.0 fl oz/a	95	95	91.7	81.7	29.4
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Assure II	C	8 fl oz/a					
COC	C	1% v/v					
Sharpen	B	2.0 fl oz/a	93.5	95	96.7	91.7	29.4
Roundup PowerMAX	B	32 fl oz/a					
Ammonium sulfate	B	17 lb/100 gal					
Raptor	C	4 fl oz/a					
Basagran	C	8 fl oz/a					
COC	C	1% v/v					
LSD P=.05			7.43	2.59	4.83	6.88	8.31

Beyond Herbicide Applied Fall, Spring and Combination for Feral Rye Control

Dr. Cody Creech, Travis Orrell, Dryland Cropping Systems Program,
Panhandle Research & Extension Center,
University of Nebraska – Lincoln, Scottsbluff, NE

Objective

The objective of this study was to evaluate the efficacy of Beyond at different timings and combined for feral rye control in two-gene Clearfield wheat for feral rye control.

Methods

The experimental design was a randomized complete block with four replications. Feral rye seeds were broadcast by hand immediately prior to wheat seeding. The Clearfield wheat cultivar 'Brawl CL Plus' was seeded at a seeding rate of 60 pounds/acre. Plots were 10 feet wide by 30 feet long. Herbicide treatments were applied with an ATV-mounted sprayer set to deliver 15 gallons/acre at 3 miles/hour and 40 psi. Fall treatments were made on October 19, 2015 and spring treatments were made on April 11, 2016 when rye plants had numerous tillers. Feral rye pressure was moderate to heavy. Winter wheat at the time of the spring application had 4 to 5 tillers and an extended leaf height of 4 to 8 inches and was jointed just above the ground surface. UAN was applied at 10% v/v along with MSO concentrate at 1% v/v to all treatments. The study was located on an Alliance silt loam soil with 1.6% organic matter content and a pH of 6.5.

Results and discussion

The results are summarized in Table 1. Typically what we have seen over the years is feral rye control is best achieved with an appropriately timed fall applications. These results support that assertion when looking at the fall compared to the spring timing. Greater control was achieved when using both fall and spring applied Beyond applications. However, such an approach might only be economical when supported by higher wheat prices. Grain yields were not adjusted for foreign material or dockage. The allowable percent of foreign material for US No. 1 and No. 2 wheat is 0.4 and 0.7%, respectively. Foreign material levels of greater than 5% result in grain being classed as feed grain, which is often not accepted at grain elevators.

Key Points

- Feral rye is best controlled in the fall.
- When wheat prices can support it, a second application in the spring can increase feral rye control and wheat yield.

Table 1. Evaluation of fall and spring applied Beyond herbicide in winter wheat near Sidney, NE. Beyond was applied at 4 fl oz/acre for all treatments except the spring only which was applied at 5 fl oz.

Treatment	% Control	% FM	Dockage	Yield (bu/a)
Untreated	0	56.1 a	1.91 a	34.2 b
Fall	76 b	02.7 c	0.52 c	69.8 a
Spring	42 c	13.9 b	1.06 b	41.5 b
Fall/Spring	83 a	00.6 c	0.50 c	77.9 a

Efficacy of Including a Grazed Cool-Season Annual Forage in a Dryland Crop Rotation

Mitchell B. Stephenson, Cody Creech, Karla Jenkins, Bijesh Maharjan
Panhandle Research and Extension Center, University of Nebraska - Lincoln, Scottsbluff, NE

Objective
The objective of this study will be to evaluate the efficacy of including a cool-season annual forage for grazing as an alternative to field peas or fallow in a wheat, sunflower, millet, field pea crop rotation.

Introduction
Cool-season annual forages can provide an alternative option to crop and livestock producers to shorten the fallow period within dryland cropping systems. Previous research at the High Plains Ag Lab has shown that these forages can provide similar amounts of forage as neighboring pasture lands, but with improved forage diet quality early in the growing season. While research has shown better yields in the following wheat crop a summer fallow compared to cover crops in a no-till system, more research is needed to evaluate how including an annual forage and grazing animals in the system influences nutrient cycling, available soil moisture, and economics compared to fallowing or utilizing a separate crop in place of the fallow.

Methods
A 30 acre crop field will be divided into three, 10 acre replicate pastures. A mixture of Oats “Rockford”, Pea “4010”, and Forage Collards “Impact” will be used in the forage mix. Five yearling steers will be grazed on each of the pastures beginning in early June. Based on previous research, it is estimated that enough forage will be available for 5 to 6 weeks of grazing. Steers will be weighed prior to turnout and again at the conclusion of grazing on the pastures. A comparison group of steers will be grazed simultaneously on nearby crested wheatgrass pastures.

Within each of the pastures, three small 60’ x 60’ areas will be fenced out and either treated as fallow, planted with field peas, or hayed annual forage mixture. These areas will be used as comparisons to the grazing treatment. Neutron tubes will be used to measure water availability to multiple depths within each of the treatments. Soil samples will also be taken to evaluate nutrient differences and soil compaction will be evaluated within each of the treatments. Wheat will be planted in all the treated areas in the August following the treatments and production will be evaluated in the following year. See Figure 1 for a diagram of the study area.

Outcome
The overall goal of this research is to provide producers information on what options might fit best into their operations. Additionally, production data on dryland crop options other than fallow may provide greater insight into what crop may provide the best returns based on current market prices of wheat, field peas, hay, and grazing lease rates.

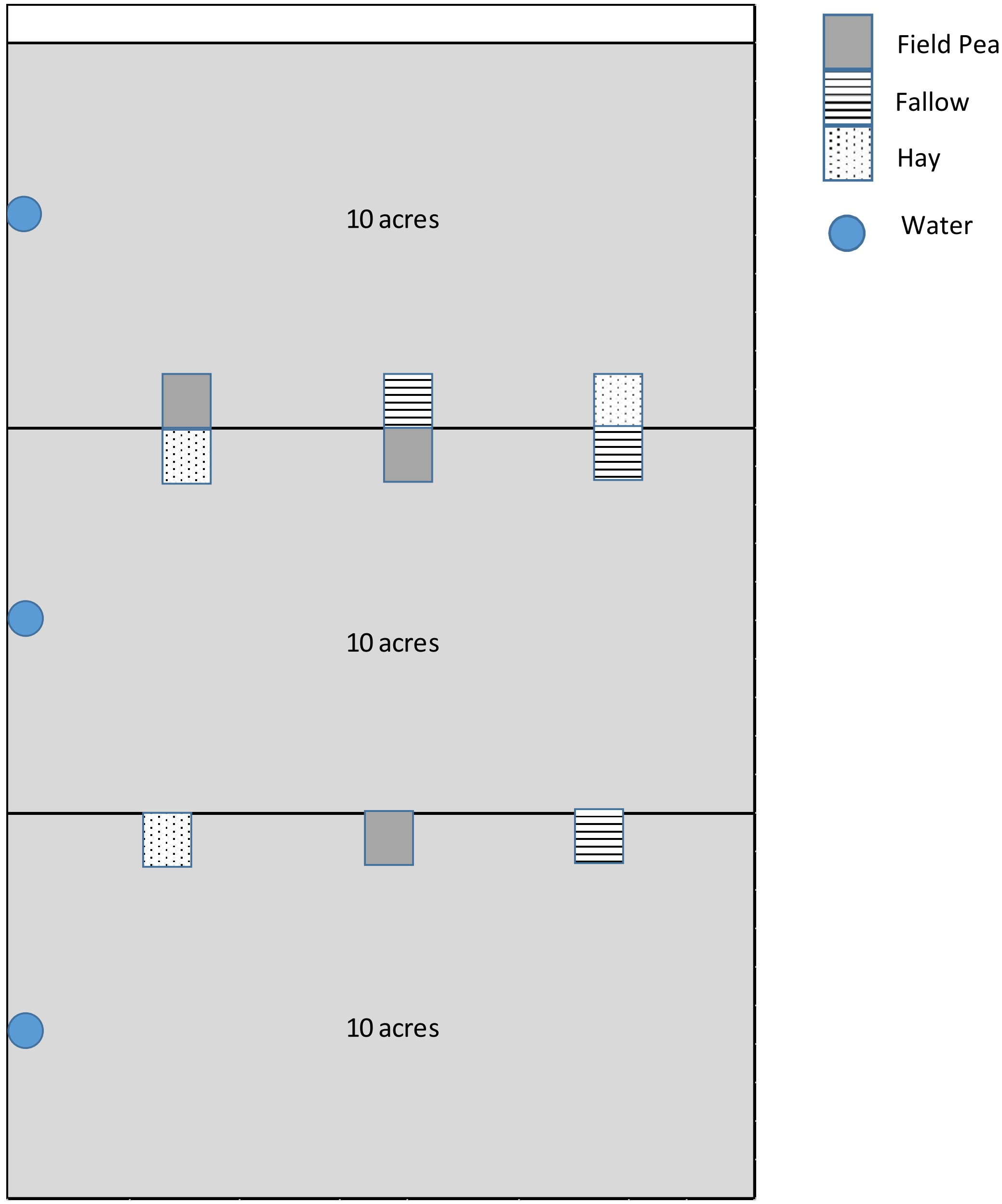


Figure 1. Diagram of the study field with 3 grazed pastures

Field Pea Variety Testing in the Panhandle

Dr. Dipak Santra, Alternative Crops Specialist, Vernon Florke, Research Technician III, Allison Rickey, Research Technician II
UNL Panhandle Research and Extension Center, Scottsbluff, NE 69361

Field pea variety trial locations in the Panhandle included Scotts Bluff County irrigated, Scotts Bluff County rainfed, Cheyenne County rainfed, Lincoln County rainfed, and Perkins County rainfed. Sixteen to twenty-one varieties were planted at each site, depending on preferences of the seed companies. The past 4 years of results can be found on the UNL Crop Watch website. (http://cropwatch.unl.edu/varietytest)

Methods

Optill herbicide was applied to all locations as a pre-emergence. Row spacing was ten inches. Seeding rates for rainfed were 350k live seeds per acre and irrigated seeding rates were 435k live seeds per acre. Seeding rates were adjusted for germination percentages for each individual variety. 2016 Cheyenne County trial was planted on April 13 and harvested July 22.

Nebraska Pea Variety Test - 2016: Cheynne Co.Rainfed

Planting Date: April 13, 2016 **Harvest Date:** July 22, 2016

Brand	Variety	Yield rank	Yield (lbs/a)	Yield (*bu/a)	test weight (lbs/bu)	1000 seeds weight (g)	Seeds/ lb	Seed Protein (%)	Flowering start (DAP**)	Flowering end (DAP)	Flowering period (days)	Physiological maturity (DAP)	Plant height at harvest (inch)	Lodging %
Great Northern	Bridger	1	2098	35	61	218	2081	23	63	73	10	94	14	60
Pulse USA	Durwood	2	1672	28	61	223	2032	24	64	72	8	88	17	39
Meridian	Jetset	3	1630	27	61	232	1955	23	64	71	7	88	16	38
Pulse USA	Mystique	4	1548	26	60	234	1943	24	65	75	9	86	14	58
Great Northern	Spider	5	1499	25	61	226	2007	24	65	73	7	86	15	50
Great Northern	Salamanca	6	1469	24	61	229	1985	23	64	70	6	93	18	43
Meridian	CDC Amarillo	7	1456	24	61	227	2000	24	68	73	5	84	17	31
Legume Logic	Hyline	8	1451	24	61	218	2086	23	64	72	8	88	15	40
Pulse USA	Abarth	9	1437	24	59	246	1842	23	63	72	9	91	17	53
Great Northern	Navarro	10	1414	24	61	243	1867	23	60	73	13	88	12	78
Meridian	AAC Carver	11	1359	23	62	224	2025	23	66	74	8	87	17	38
Pulse USA	SW Midas	12	1346	22	59	213	2130	22	65	74	8	88	16	58
Meridian	AC Earlystar	13	1332	22	61	212	2140	22	64	73	9	91	13	55
Pulse USA	Nette 2010	14	1281	21	62	224	2023	23	61	70	9	93	12	53
Pulse USA	Korando	15	1215	20	60	238	1908	24	61	72	11	94	14	58
Meridian	CDC Saffron	16	1093	18	61	220	2067	23	65	71	6	91	13	70
Pulse USA	DS-Admiral	17	954	16	61	232	1959	23	65	72	7	88	17	16
Average of all entries			**1426**	**24**	**60**	**227**	**1998**	**23**	**64**	**72**	**8**	**89**	**15**	**49**
Difference required for significance at 5%			**596**	**10**	**1**	**9**	**72**	**1**	**1**	**2**	**2**	**3**	**4**	**30**

*1 bu = 60 lbs **DAP = Days After Planting

Trial summary:

1 Trial location: UNL's High Plains Ag. Lab (near Sidney, NE) in Cheyenne Co.
2 Trial was planted on no-till ground on proso millet stubble
3 Herbicide: 1.5 oz/ac optill 24 oz roundup pre plant
4 Seeding rate: 350,000 live seeds/acre
5 Seeds were inoculated with granular pea inoculum at the time of planting
6 Plot: 5 ft x 25 ft with 10" inches row-spacing
7 Total precipitation during the growing period: 5.81 inches
8 Post-planting spray (e.g. herbicides, fungicides): None
9 Yield loss (10-15%) and significant lodging were from planter plugging on 3 of 6 rows and winds at time of maturity

Research Update on Field Peas for Growing and Finishing Cattle

Karla H. Jenkins, Cow/Calf Specialist
Panhandle Research and Extension Center
University of Nebraska – Lincoln, Scottsbluff, NE

- Objective of the first study was to evaluate the impact of feeding field peas as a pasture supplement as well as in the finishing diet on performance and carcass characteristics
- 114 steers in year 1 and 114 heifers in year 2 were fed 1) no supplement, 2) field peas, or 3) a mixture of corn and solubles and urea (to be equivalent to field peas in degradable protein)
- In the finishing phase cattle were fed dry rolled corn based diets with or without 20% field peas on a dry matter basis
- Cattle fed the corn mixture gained the most followed by the peas and then the control while grazing
- There were no interactions between growing and finishing treatments
- The control cattle gained the most during the finishing phase
- The cattle fed the corn treatment had a tendency to have the heaviest carcasses
- There were not significant effects of feeding field peas during finishing on performance or carcass characteristics
- Minimal changes were noted in meat tenderness, shelf life, and fatty acid profile
- Field peas can be added in growing and finishing diets with no negative impacts

Table 1. Effect of corn and pea supplementation on performance of growing calves

					P-value		
Treatment[1]	Control	Corn	Peas	SED[2]	Treatment	Year	Interaction
Initial BW, lb	656	654	654	3.44	0.84	0.10	0.91
Ending BW, lb	836[c]	910[a]	879[b]	9.50	<0.01	0.14	0.62
ADG, lb/d	1.36[c]	1.96[a]	1.72[b]	0.08	<0.01	0.14	0.34

[abc] Within a row, means without a common superscript differ.
[1] Treatments: Cattle grazed either without supplement or supplemented at 0.5% of body weight with either dry rolled corn or field peas.
[2] Due to unbalanced cattle numbers in pastures across years, standard error of the difference is being reported.

Table 2. Effect of field peas on performance in finishing diets

Finishing trt[1]	No peas			Peas			*P*-value			
Growing trt[2]	Control	Corn	Peas	Control	Corn	Peas	SED[8]	Growing	Finishing	Interaction
Initial BW, lb[3]	846	906	873	824	912	889	14.59	<0.01	0.97	0.18
Final BW, lb[4]	1369	1396	1378	1371	1413	1371	23.43	0.07	0.74	0.77
ADG, lb[5]	4.20	3.89	4.07	4.37	4.03	3.81	0.15	<0.01	0.84	0.10
DMI, lb	29.4	29.2	28.7	29.8	29.5	29.4	0.63	0.39	0.19	0.88
F:G, lb:lb	6.99[ab]	7.41[c]	7.04[ab]	6.75[a]	7.30[bc]	7.57[c]	-	-	0.60	0.03
Carcass Performance										
HCW, lb	862	880	868	864	890	864	14.77	0.07	0.73	0.77
12th Rib fat, in.	0.53	0.58	0.56	0.57	0.55	0.59	0.04	0.68	0.61	0.36
Ribeye area, in^2	14.1	13.7	13.8	13.4	13.9	13.6	0.35	0.89	0.18	0.20
Marbling[6]	486	504	499	525	493	482	29.04	0.75	0.81	0.31
Calculated YG[7]	3.10	3.41	3.25	3.40	3.29	3.43	0.19	0.69	0.27	0.26

[abcd] Within a row, means without a common superscript differ.

[1] Finishing Treatment: Cattle with peas in the diet had 20% of the dry matter of the diet as peas (by displacing dry rolled corn). The "No Peas" diet still included that 20% as dry rolled corn.

[2] Growing Treatment: Cattle were grazed for 142 days either without supplement or supplemented at 0.5% of body weight with either dry rolled corn or field peas depending on assigned treatment.

[3]Initial BW: Values differ across treatments because cattle were carried over from the growing phase to evaluate effect of growing treatment in the finishing phase.

[4] Final BW: Calculated as HCW ÷ 0.63

[5]ADG: Results in the finishing phase were affected by growing treatment.

[6] Marbling: 400 = Slight[00] : 500 = Small[00]

[7]Calculated Yield Grade: 2.50 + (2.5 × 12th Rib Fat, in.) – (0.32 × REA, in^2) + (0.2 × 2.5) + (0.0038 × HCW, lb)

[8] Due to unbalanced cattle numbers in pastures across years, standard error of the difference is being reported.

- Objective of the second study is to establish a feeding value of field peas relative to distillers grains as a protein supplement for grazing cattle
- First year of the study has been completed with 114 heifers grazing crested wheatgrass
- Cattle fed distillers grains at 0.4 or 0.8% BW had similar gains with limited replication but had greater gains than cattle fed 0.4 or 0.8% BW field peas which were similar (Table 3)
- Will require two years of data to have enough statistical power to do the study
- Using the established relative value, a sensitivity analysis will be developed to help determine what price should be paid for field peas at any given price of distillers grains

Table 3. Performance of grazing steers supplemented field peas or dried distillers at 0.4% or 0.8% body weight

	DDGS		Field Peas			
	4%	8%	4%	8%	SEM	P-Value
Initial Weight, lb	649	646	649	645	51.8	0.946
Interim Weight, lb	829	816	813	800	48.2	0.282
Ending Weight, lb	946^{bc}	963^{c}	915^{ab}	895^{a}	42.4	<0.001
Total Gain, lb	296^{b}	317^{b}	266^{a}	250^{a}	13.5	<0.001
ADG, lb	2.43^{b}	2.60^{b}	2.18^{a}	2.05^{a}	0.11	<0.001

High Plains Ag Lab (HPAL) Field Day

Tuesday, June 14, 2016, Sidney, NE

8:00 am:	Welcome and Loading
8:30 am:	Pea variety testing (Dr. Dipak Santra)
8:50 am:	Weed management in pea (Dr. Cody Creech)
9:15 am:	Forage and grazing (Dr. Karla Jenkins)
9:30 am:	**Break**
9:45 am:	Wheat stem sawfly update (Susan Harvey)
10:00 am:	Rust and other fungal disease in wheat (Dr. Stephen Wegulo)
10:15 am:	Wheat breeding and variety testing (Dr. Stephen Baenziger)
11:30 am:	**Lunch**

University of Nebraska Lincoln

High Plains Ag Lab
10756 Rd 32 N
Sidney, Nebraska