

**The 94th
ANNUAL REPORT
of
INVESTIGATIONS AND ADMINISTRATION
at the
CENTRAL AGRICULTURAL RESEARCH CENTER
MONTANA AGRICULTURAL EXPERIMENT STATION
Moccasin, Montana
2002**

Department of Research Center Mission Statement

The mission of the Research Centers is to serve the specific needs of the clientele in local production areas and the broader needs of Montana agriculture in general through applied research directed to the problems and impacts of agricultural production.

New knowledge generated by Agricultural Research Center programs benefits Montana agriculture and the scientific community at local, state and national levels. This knowledge is disseminated to the agricultural industry in Montana through publications and teaching to improve the economic status and quality of life of its citizens. Research information also reaches the scientific community through publication in professional journals and presentations at professional meetings, thereby enhancing and promoting the individual professional development of faculty members. Faculty appointments are predominantly research-oriented, with limited opportunities for traditional academic teaching activities.

MAES Mission Statement

The Montana State University Agricultural Experiment Station's mission as established in 1893 by the state statute is "to conduct and promote studies, scientific investigations and experiments relating to agriculture, natural resources and rural life, and to diffuse information thereby acquired among the people of Montana." Thus, the research centers fulfill the agricultural research component of Montana State University's federal Land Grant University mission of teaching, research and extension.

This report contains information gathered by the Central Agricultural Research Center of the Montana Agricultural Experiment Station.

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TABLE OF CONTENTS

Section 1	Table of Contents
Section 2	General Summary
Section 3	Foundation Seed Summary
Section 4	Climatic Report
Section 5	Cereal Production Research
Section 6	Forage Production Research
Section 7	Specialty Seed Crops Research
Section 8	Sustainable Pest Management

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NOT FOR PUBLICATION

2002 General Activities

This section briefly describes some of the non-research activities of the Central Agricultural Research Center (CARC) and provides a crop year recap.

The biggest CARC events of the 2002 crop year were the hiring of Dr. Chengqi Chen as cropping systems agronomist, continuation of the drought through the early summer, severe hail on August 20, purchase of a Kincaid 8XP Massey seed combine, and the initiation of construction of a new office in early spring.

The 2002 crop year weather (September 2000 - August 2001) was a continuation of the weather conditions experienced in the 1998 through 2001 crops years. Unusually cool weather through the spring help conserve scarce soil moisture. Precipitation levels remained below average through June (see Table 1 page W1). However, above average precipitation in July and August put the 2002 crop year precipitation above the long-term average crop year. Unfortunately, some of that precipitation came as severe hail on August 20th and destroyed the CARC on-station spring wheat nurseries and crops. The drought conditions were much more severe in the southern portion of Judith Basin and Fergus counties. The area south and east of the Snowy Mountains experienced severe drought through growing season and into the fall.

In spite of the dry spring conditions, fallow and re-crop yields were fair to good for winter and spring cereals and cereals harvested as forages. Pea and lentils had excellent growth. However, the above average precipitation and cool temperatures accentuated the indeterminate growth habit and made pulse crop harvest very difficult. Much of the peas and lentils shattered as we were prepared to desiccate the pulse crops. No-till cropping methods are proving to be a very positive factor in moisture conservation and stand establishment in these dry years. Perennial forage yields were poor.

Physical Plant: Hail on August accentuated the need for new shingles on the office and exasperated the problem of the poor roofing job Big Sky Roofing did on the horse barn and dairy barn in 1995. It severely chipped the paint on the office, dairy and horse barns, trailer house, and trim of the tin pole shed. East Plains Construction started work on the new office building on August 19, 2002. Initial work went fast, but there were delays for rafters and other items. As of December 31, office construction was near complete with an early February anticipated completion date. Gordon Whirry of Great Falls was the project architect.

Equipment: The purchase of Kincaid 8XP Massey Ferguson Seed/Research Combine was made possible with a combination of funding from the MAES Director (acct 911503 - \$81,800), MAES Director special (acct 427064 - \$4,311), and Foundation seed (acct 936069 - \$18,106). A pneumatic grain delivery from the threshing point to grain storage tank was a special adaptation specified to minimize cleaning time between seed lots. This was specified over a chain and bucket conveyer. This proved to be poorly designed as the seed bridged where it fed into the pneumatic system. The combine was returned to the factory for re-fabrication of this component. Cropping system start up purchases: pH concentration meter (\$1,219), Data logger (\$689.50), weather station (\$2,162), sample chamber hygrometer (\$1,928), dew point microvolt meter (\$2,607), Canon Powershot G2 camera (\$827), sample scale (\$810), Centrifugal Centrifuge (\$620), WRST ACTN shaker (\$1,062), modulated chlorophyll fluorometer (\$5,995), and soil seed screens (\$183). A neutron soil moisture probe was also loaned to CARC by the OSU Ag Experiment Station.

Supportive efforts: Greg Johnson's (MSU entomology department) Sustainable Pest Management project (SPM) continued to utilize space in the CARC Dairy barn for an office. The SPM utilizes the CARC JD 5400 tractor, 345 DT Kubota tractor, 3-pt cultivator, offset disk, double disk drill, 1 T pickup, and goose-neck trailer. Dave Weaver's (Ent. Dept.) stored grain pest management project utilizes two 2500 bu bins. Perry Miller (Dept of Land Resources) cooperated on fall seeded pulse crop studies.

Field Days and Tours: CARC forage tour on June 20, 2002 – 115 registered, NCIS Adjusters Training held June 24, 2002 - 98 registered, afternoon Crops Day on July 9, 2002 – 47 registered (*we figure about double the # reg. attended as we can count 45 in one picture of a single trailer*), State Hail adjusters held July 24, 2002 - 10 registered.

Foundation Seed: Foundation seed of Haybet barley, McNeal spring wheat (10 bu/a after hail), Big Sky winter wheat and 300 lbs of Toni winter lentil were produced. Some Otana oat was harvested prior to the hail. Lucile emmer, Monico oat, SK3P spring spelt, and two winter triticale lines were lost to hail. Foundation seed stock

program continues to have some struggles with how to operate in the absence of an extension field crops agronomist running the program. The quarter time manager is not working well.

Crops: Lentils (Indian Head for green manure seed and Vantage grain lentils), winter and spring field peas, yellow mustard, spring emmer, and Indian ricegrass were produced on field scale along with the traditional wheat, barley and alfalfa. The ricegrass was sold to Amazing Grains at \$ 3.00 a pound. In general, yields were good considering the dry conditions through the spring.

Personnel: Dr. Chengci Chen, CARC Cropping Systems Research Agronomist, started his MAES employment tenure March 1, 2002. Gail Sharp, Cereals Res. Assoc., resigned June 1 to pursue a career with Western Plant Breeders at Bozeman. Cereals RA position eliminated due to budget constraints.

Personnel 2002

Montana Agricultural Experiment Station Administration

Sharron Quisenberry	(1999)	MAES Director
Mal Westcott	(1994)	Research Center Department Head
Sheron McIlhattan	(2000)	Budget & Fiscal Director (resigned)
Connie Shelhammer	(2002)	Budget & Fiscal Director

Central Agricultural Research Center Staff

David Wichman	(1985)	Superintendent & Agronomist
Chengci Chen	(2002)	Cropping Systems Agronomist
Karnes Neill	(1997)	Research Associate
Gail Sharp	(2000)	Research Associate (resigned)
Joe Vavrovsky	(1979)	Ag Research Specialist
Lorrie Linhart	(1996)	Administrative Assistant (Part-time)

Department of Entomology Stationed at CARC

K.C. Kirpach	(1999)	Ag Research Specialist
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2002 CARC Seasonal Employees

Cyndee Braaten	Sandy Mathis	Corina Dahlhausen
Sally Dahlhausen	Stanley Dostal	Darin Metcalfe
Cody Swanson	Kari Wichman	Josh Eastman
Becky Braaten	Ray Valentine	Leann Fox
Garrett Kirpach	Jason Loose	

CARC ADVISORY COMMITTEE MEMBERS 2002

Name`	Community	Occupation	Year Appointed (term#)	Term Expires
Dave Bergum	Winifred	Farmer	1999 (2)	2005
Claude Bronec	Denton	Farmer	1999 (2)	2005 VP 02
		Alt. State MAES	2003	
Tom Butcher	Lewistown	Rancher	2002 (1)	2005
Bud Colby	Harlowton	Farmer	1997 (2)	2004
Shawn Erickson	Moore	Ag Consultant	2002 (1)	2005
Kirby Granger	Highwood	Farmer	2001 (1)	2004
Steve Grove	Moccasin	Farmer	2000 (1)	2003
Bob Grubb	Coffee Creek	Farmer	2002 (1)	2005

2002 FIELD GUIDE

SW1	WINTER WHEAT	JUDITH
SW2	ALFALFA	CENEX 640
SW3-N	PERENNIAL FORAGE NURSERIES	
SW3-S	BARLEY / CEREAL FORAGE	H-3
SW3-E	FALLOW	
SW4-W	EMMER	LUCILLE
SW4-center	PERENNIAL FORAGE NURSERIES	
SW4-E	FALLOW	
SW5	CHEM FALLOW	
SW6-N	WINTER WHEAT	JUDITH
SW6-S	OATS	OTANA
SW7-N	FALLOW	
SW7-S	FALLOW	
SW8	HAY BARLEY/WINTER WHEAT/SAFFLOWER NURSERY	HAYBET / BIG SKY
SW9-N	PEA & LENTIL NURSERIES	
SW9-S	HAY BARLEY / BARLEY	HAYBET / VALIER
SW10	WINTER WHEAT	JUDITH
<hr/>		
NW1	BARLEY	VALIER
NW2	BARLEY	VALIER
NW3	YELLOW MUSTARD	AC PENNANT
NW4	ALFALFA	
NW4-S	ALFALFA	
NW5-S	BARLEY	VALIER
NW5-N	ALFALFA	
NW6	ALFALFA	
NW6-S	ALFALFA	
NW7	FALLOW	
NW8	CEREAL NURSERIES	
NW9	ALFALFA	
NW10	ALFALFA	
NW11	ALFALFA & ALFALFA SULFUR TRIALS	
NW12	OATS	OTANA
<hr/>		
NT1	FALLOW / WEST GREEN MANURE LENTILS	
NT2	BARLEY	H3
NT3	FALLOW	
NT4-N	WINTER WHEAT	BIG SKY
NT4-S	INDIAN RICEGRASS	
NT5	FALLOW	
NT6	SPRING WHEAT	MCNEAL
NT7	LENTILS / PEAS / CANOLA (north end)	
NT8	HAY BARLEY	HAYBET
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NE1-W	WINTER WHEAT	JUDITH
NE1-E	WINTER WHEAT	JUDITH
NE2-W	WINTER WHEAT	JUDITH
NE2-E	WINTER WHEAT	JUDITH
NE3-W	WINTER WHEAT	JUDITH
NE3-E	WINTER WHEAT	JUDITH
NE4-W	WINTER WHEAT	JUDITH
NE4-E	WINTER WHEAT	JUDITH
NE5-W	WINTER WHEAT	JUDITH
NE5-E	WINTER WHEAT	JUDITH
NE6-W	WINTER WHEAT	JUDITH
NE6-E	WINTER WHEAT	JUDITH
NE7	LENTILS / LUPINES	
NE8-E	YELLOW MUSTARD	AC PENNANT
NE8-W	YELLOW MUSTARD	AC PENNANT

NE9-W	LENTILS / PEAS	VANTAGE
NE9-E	LENTILS / PEAS	VANTAGE/AUSTRIAN
POP		
NE10-W	FALLOW	NO TILL
NE10-E	FALLOW	TILLED
NE11-W	YELLOW MUSTARD	AC PENNANT
NE11-E	YELLOW MUSTARD	AC PENNANT
NE12-W	BARLEY	VALIER
NE12-E	BARLEY	VALIER
NE13	LUPINES / PEAS / LENTILS	
NE14	BARLEY	VALIER

SE1	FALLOW	NO TILL
SE2	FALLOW	NO TILL
SE3	A-N OATS / WINTER TRITICALE	ABSP9-2
	A-S SORGHUM / VARIETY NURSERY	
	B SPRING WHEAT / VARIETY NURSERY	HILINE
	C YELLOW MUSTARD / CANOLA NURSERY	AC PENNANT
	D BARLEY / VARIETY NURSERY	VALIER
	E WINTER WHEAT / VARIETY NURSERY	TIBER
	F BARLEY	VALIER
	G LENTILS / SPRING PULSE VARIETY	VANTAGE
	H LENTILS / WINTER PULSE	TONI
SE4-W	HAY BARLEY	HAYBET
SE4-E	HAY BARLEY	HAYBET
SE5-N	OATS	ABSP9-2
SE5-S	HAY BARLEY (hayed)	HAYBET
SE6-N	FALLOW	
SE6-S	FALLOW	
SE7-N	OATS	ABSP9-2
SE7-S	HAY BARLEY	HAYBET
SE8-N	FALLOW	
SE8-S	CHEM FALLOW / CANOLA TRIALS	
SE9	HAY BARLEY	HAYBET
SE10	CRESTED WHEAT GRASS	
SE11	A CHEM FALLOW	
	B BARLEY	VALIER
	C SPRING WHEAT	HILINE
	D CHEM FALLOW	
SE12	A SPELT / CEREAL FORAGE	SK3P
	B WINTER WHEAT	JUDITH
	C WINTER WHEAT	JUDITH
	D BARLEY / CEREAL FORAGE (hayed)	VALIER
SE13	LUPINES VARIETY TRIAL	

2002 Foundation Seed Production and Sales CARC

	Sales	Production
	-----Bu-----	-----Bu-----
<u>Winter Wheat</u>		
Big Sky	---	520 bu.
Erhardt	9.5	---
Judith	---	---
NuSky	---	---
Promontory	---	---
Rampart	248	---
Tiber	10	---
Vanguard	74	---
<u>Spring Wheat</u>		
Fortuna	102	---
Hi-Line	---	---
McNeal	504	150 bu.
MT9420	---	---
Scholar	---	---
	-----Lbs-----	-----Lbs-----
<u>Barley</u>		
Chinook	---	---
Haybet	23,700 lbs.	24,360 lbs.
Horsford	---	---
Gallatin	---	---
Lewis	2,500 lbs.	---
Valier	---	---
<u>Oats</u>		
Otana	27,000 lbs.	778 lbs.
Rio Grande	---	---
<u>Spring Emmer</u>		
Lucile	1,000 lbs.	---
<u>Triticale</u>		
Sunland	200 lbs.	---
<u>Winter Spelt</u>		
Frank	---	---