MONTANA STATE UNIVERSITY
MONTANA AGRICULTURAL EXPERIMENT STATION

RESULTS OF AGRONOMIC AND WEED SCIENCE RESEARCH CONDUCTED IN SOUTH CENTRAL MONTANA - 2015

Annual Report of the Investigations at and Administration of the
Southern Agricultural Research Center, Huntley, Montana
http://www.sarc.montana.edu/

PROJECT TITLE:

2015 Winter Wheat Preliminary Yield Trial in South Central Montana at Hardin. This research is partially supported by Montana farmers through the Montana Wheat and Barley Committee.

PROJECT LEADERS:

Kent A. McVay, Cropping System Specialist, SARC, Huntley
Qasim A. Khan, Research Associate, SARC, Huntley
Phil L. Bruckner, Winter Wheat Breeder, PSPP, Bozeman
James E. Berg, Winter Wheat Research Associate, PSPP, Bozeman

COOPERATORS:

Shawn Needens, Hardin

OBJECTIVES:

To provide the wheat breeder with a reliable, unbiased and up-to-date source of information that will permit valid comparisons among winter wheat genotypes. This information should help winter wheat breeding program to select genotypes best suited to their particular area and growing conditions.

METHODS:

The 2015 off-station winter wheat preliminary yield trial was established under irrigation at Hardin. The trial contained 14 winter wheat entries including four check varieties and was planted using a randomized complete design with three replications. All entries were seeded at 1.5 million seeds per acre (~90 lb/a). Test plots consisted of a 15-foot, 4-row plots with 12-inch row spacing. All rows of each harvested test plot were trimmed 36 inches and harvested using a plot combine.

Recorded grain yield was adjusted to 13% grain moisture content, and is reported in bushels per acre based on a 60 pound standard bushel weight. Test weight (pounds per bushel) and grain moisture content (percent) were obtained for each plot using a Dickey-john™ GAC 2100 grain analyzer. Grain protein content (percent) was determined by near-infrared reflectance on composited samples across replications, and adjusted to 12% grain moisture content. Plant height was measured in inches from the soil surface to the top of the head, excluding the awns if present. Corresponding calendar dates also are presented. Information pertaining to the specific cultural management of each study site is listed at the bottom of Table 1.

RESULTS:

The 2015 winter wheat test site had below average rain and snow accumulation during winter months except in January. Below-average precipitation throughout the winter months and in early spring resulted in early season drought stress that accelerated wheat growth and caused early maturity. Irrigation later in the spring provided much needed moisture for wheat production although the producer could have better managed irrigation amounts. Winter wheat never recovered from early drought stress which resulted in early harvest. There was no stripe rust noted at this location in 2015.

Winter wheat stand was poor due to dry conditions at planting and poor seedbed that drastically impacted the grain yield at this location. Grain yield averaged 40 bu/ac (Table 1). Yields ranged from 57 bu/a for ‘MT1568’ to 33 bu/a for ‘MT1599’. Test weight values were low under irrigated conditions at Hardin in 2015, averaging only 53.9 lb/bu. All entries possessed test weight values less than 60 lb/bu. Grain protein content averaged 14.3 percent and all entries have grain protein over 13 percent.

Table 1. Performance of 10 experimental and four commercial winter wheat cultivars tested under irrigated conditions at Hardin, Montana during 2015. Cultivars listed alphabetically.

Cultivar	Grain Yield	Test Weight	Grain Moisture	Grain Protein	Plant Height
		- lb/bu -	- % -	- % -	- inches -
Commercial					
CDC Falcon	40.1	53.8	9.4	14.1	31.1
Decade	39.7	53.6	9.8	14.3	29.0
Promontory	39.1	54.9	9.4	13.3	33.6
Yellowstone	35.9	50.9	9.4	14.2	33.7
Experimental					
MT1561	39.7	55.0	9.6	14.6	32.2
MT1562	41.5	54.3	9.1	14.4	31.2
MT1563	53.4	54.4	9.6	14.1	33.9
MT1564	45.2	54.9	9.6	14.2	29.9
MT1565	46.6	53.7	9.4	14.5	29.7
MT1566	46.8	56.3	9.5	14.7	29.1
MT1567	38.5	52.8	9.5	14.8	28.5
MT1568	57.1	53.9	9.3	14.2	34.4
MT1569	52.2	54.9	9.6	13.7	35.6
MT1599	32.5	50.4	9.0	14.9	29.1
Average	43.5	53.9	9.4	14.3	31.5
PLSD (p=0.05)	ns	2.9	ns		ns
CV%	29.2	3.3	3.8		13.0

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 13 percent moisture content.
2/ Grain protein values adjusted to 12 percent grain moisture content.
3/ Lodging severity scores of 0 to 9 represent no lodging to all stems flat on the ground, respectively.
ns Indicates no significant difference between cultivars within a column based on Fisher's protected LSD (p=0.05).

Hardin Winter Wheat preliminary yield trial

Planted:	October 06, 2014
Harvested:	July 20, 2015
Fertility:	100 N lbs/acre in fall + 60 lbs N /acre top dress in spring as 46-0-0
Herbicide:	n/a
Previous crop:	n/a
Irrigation:	Flood
Precipitation:	n/a