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Spring Wheat Varieties For Northern Idaho

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Spring wheat accounted for 38,440,000 bushels (51.8 percent) of Idaho's 1979 production on 635,000 acres. At \$4.00 per bushel, the gross return was \$153,760,000. The average spring wheat yield per acre in Idaho was 62 bushels, the highest in the U.S. Colorado, the next closest state, was 10 percent lower than Idaho's per acre yield. Adapted varieties account for much of this production record.

A grower should choose varieties with high yield capacity, disease resistance and good grain quality. New varieties that have these or a combination of these desirable characteristics should be considered.

Yield Capacity

The single most important feature of any wheat variety is a high yield capacity over a wide range of cultural and environmental conditions. Climatic conditions can vary greatly from year to year. A variety that performs best over a wide range of production environments is the one that will usually produce best from one year to the next.

The coordinated standard entree yield trials in the western U.S. offer the best available performance data over the different environments found in the participating states of Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah and Washington. Each year new entrees are placed in replicated tests to compare their yield to Federation, a longtime standard.

The data in Table 1 were based on the relative yield to Federation. To compare the performance of the varieties, read down column 1 and across to the variety in question. For example, Fieldwin (column 1) out yielded Dirkwin (column 7) by 6.4 bushels per

acre. Owens (column 1) on variety capacity alone yielded 2.8 bushels more than Fieldwin (column 5). these values are relative because many factors such as fertility, moisture and disease will affect the actual yield in a farm field.

Disease Reactions

The presence or absence of a specific disease in an area will influence a variety's production capacity. The major diseases of spring wheat in Idaho are stripe rust, mildew, ergot and leaf rust. Table 2 summarizes the data for each variety.

- **Stripe Rust** — Caused by the fungus *Puccinia striiformis* West, stripe rust damage is generally confined to northern Idaho. However, losses have been known to occur in the Magic Valley and eastern Idaho areas. The infections are generally carried over on winter wheat varieties that are susceptible in the seedling stage. In stripe rust areas, varieties to select from are Borah, Creston, Dirkwin, McKay, Owens, Twin, Urquie, Wampum and Waverly.

- **Mildew** — Powdery mildew (caused by the fungus *Erysiphe graminis* f. sp. *tritici*) infects all aerial portions of the plant and is most prevalent on the upper surface of the lower leaves. The symptoms can appear anytime after emergence. The disease develops on susceptible varieties under heavy nitrogen fertilization, high humidity and cool temperatures. Environments in northern Idaho where there are heavy dews at night provide the conditions for mildew infections. Dirkwin, McKay and Wampum are considered the best adapted varieties for these conditions.

Table 1. Relative bushels per acre yield difference between spring wheat varieties in the western states.

	Owens	McKay	Sterling	Fieldwin	Waverly	Dirkwin	Creston	Fielder	Twin	Urquie	Borah	Wampum	Sawtell
Owens	-	1.4	1.8	2.8	6.6	9.2	10.4	15.6	15.8	17.2	17.7	22.1	22.8
McKay	-	-	0.4	1.4	5.2	7.8	9.0	14.2	14.4	15.8	16.3	20.7	21.4
Sterling	-	-	-	1.0	4.8	7.4	8.6	13.8	14.0	15.4	15.9	20.3	21.0
Fieldwin	-	-	-	-	3.8	6.4	7.6	12.8	13.0	14.4	14.9	19.3	20.0
Waverly	-	-	-	-	-	2.6	3.8	9.0	9.2	10.6	11.1	15.5	16.2
Dirkwin	-	-	-	-	-	-	1.2	6.4	6.6	8.0	8.5	12.9	13.6
Creston	-	-	-	-	-	-	-	5.2	5.4	6.8	7.3	11.7	12.4
Fielder	-	-	-	-	-	-	-	-	0.2	1.6	2.1	6.5	7.2
Twin	-	-	-	-	-	-	-	-	-	1.4	1.9	6.3	7.0
Urquie	-	-	-	-	-	-	-	-	-	-	0.5	4.9	5.6
Borah	-	-	-	-	-	-	-	-	-	-	-	4.4	5.1
Wampum	-	-	-	-	-	-	-	-	-	-	-	-	0.7
Sawtell	-	-	-	-	-	-	-	-	-	-	-	-	-
Years tested	2	2	1	7	2	3	2	6	3	2	9	3	3
No. trials	32	32	20	130	32	53	37	136	75	44	29	53	61

Table 2. Disease, agronomic and milling quality of spring wheat varieties.

	Originator	Release year	Class	Glume	Awn	Height	Maturity	Straw ¹	Test wt. ¹	Protein ¹	Milling ¹	Mildew	Leaf rust	Stripe rust	Ergot
Owens	AR-UI	1981	SWS	White	Awned	Semidwarf	Mid-season	7	8	7	S	MR	R	MS	
McKay	AR-UI	1981	HRS	White	Awned	Semidwarf	Mid-late	8	8	7	9	MR	R	R	MS
Sterling	AR-UI	1980	SWS	White	Awned	Semidwarf	Early-mid	7	8	7	MS	MR	S	R	
Fieldwin	AR-UI	1976	SWS	White	Awned	Mid-tall	Mid-season	7	8	7	MS	MR	S	R	
Waverly	WSU	1981	SWS	White	Awned	Semidwarf	Mid-season	7	7	7	S	MR	MR	-	
Dirkwin	AR-UI	1977	SWS	White	Awnless	Mid-tall	Mid-season	6	6	6	MR	MR	R	S	
Creston	AR-UI	1980	SWS	White	Awnless	Semidwarf	Mid-season	7	8	7	-	S	R	MR	
Fielder	AR-UI	1974	SWS	White	Awned	Mid-tall	Mid-season	7	8	8	MR	MR	S	R	
Twin	AR-UI	1971	SWS	White	Awnless	Semidwarf	Mid-season	6	6	6	VS	MS	VR	-	
Urquie	WSU	1975	SWS	White	Awned	Semidwarf	Late-mid	7	9	9	MS	S	MR	R	
Borah	AR-UI	1974	HRS	White	Awned	Semidwarf	Early-mid	6	8	8	8	MS	MR	MR	S
Wampum	WSU	1978	HRS	Tan	Awned	Mid-tall	Mid-season	8	8	8	8	MR	MR	R	MS
Sawtell	AR-UI	1975	HRS	White	Awned	Semidwarf	Mid-season	5	8	6	8	MS	S	S	-

¹1 = low or poor; 10 = high or good.

• **Ergot** — Caused by the fungus *Claviceps purpurea* (Fr) Tulo, Hippocrates knew and mentioned ergot in 400 B.C. as a grain to "further child-birth." The fungus is indigenous to grasses in temperate areas. The sclerotia (the hard, purple-black, horn-like structures up to four times larger than the seed) are viable in soil and stored grain for approximately one year. The disease is favored by wet, cool weather that accompanies and prolongs the flowering period. Areas that had native grass vegetation in northern Idaho have problems with ergot. Varieties to consider in these areas include Fielder, Fieldwin, Sterling and Urquie. Do not plant Borah or Dirkwin in these areas.

• **Leaf Rust** — Leaf rust is a disease that develops later in the season than stripe rust and is favored by warmer temperatures. The disease (caused by the fungus *Puccinia recondita* f. sp. *tritici*) is more severe on spring wheat than winter wheat which generally matures before leaf rust develops. Wheat

breeders have transferred adequate resistance to both hard red and soft white wheat varieties. These include Borah, Dirkwin, Fielder, Fieldwin, McKay, Owens, Sterling, Wampum and Waverly.

Grain Quality

A variety will not be released from a breeding program unless it has acceptable quality. However, some varieties have better milling and baking properties than others. Those with the best milling and baking quality are McKay in the hard red spring and Urquie in the soft white spring classes. Dirkwin and Twin are considered the poorest of soft white spring wheat.

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