



RANGER and FRANKLIN

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Dwarf Smut-Resistant Winter Wheats

For Southern Idaho

UNIVERSITY OF IDAHO

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Ranger (CI 15316)² and Franklin (CI 15317) are dwarf smut resistant hard red winter wheats released for planting in the dryland areas of southern Idaho where dwarf smut is a problem. Their weak straw and inability to yield higher than Wanser and McCall will probably limit their usefulness to the dwarf smut problem-areas of southern Idaho.

Development

Ranger was selected from a cross of Warrior//Kiowa/PI 178383 made at the Aberdeen Branch of the Idaho Agricultural Experiment Station in 1963. Seed from a single F₄ line which showed resistance to common smut and stripe rust in the 1967 smut nursery was placed in preliminary yield trials at Aberdeen and Tetonina in the fall of 1967. From 1968 through 1971 Ranger was tested for yield in two or more dryland nurseries in southern Idaho and was in dwarf smut nurseries located in Franklin County for the same period. It was in the 1970 and 1971 Western Regional Hard Red Winter Wheat Nursery.

Franklin was selected from the cross of Cheyenne* 2/PI 178383 made at the Aberdeen Branch Experiment Station in 1962. Plants from the single F₅ line resulting in Franklin showed stripe rust and smut resistance in the 1967 smut nursery and this new variety was first planted in the yield nurseries at Aberdeen and Tetonina in the fall of 1967. It was in Idaho yield nurseries at two or more locations through 1971. Franklin was entered in the 1971 Western Regional Hard Red Winter Wheat Nursery.

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Description

Ranger is a brown-glumed, awned wheat of medium height and maturity. It has moderately weak straw, moderately weak coleoptiles, emerges rather slowly, and is somewhat lacking in seedling vigor. It is very resistant to stripe rust and has shown less than 5 percent dwarf smut in the same trials as commercial varieties which had more than 50 percent infected plants.

Franklin is an awned, white-glumed wheat of medium maturity. It is a tall variety with medium strength straw. It has lodging characteristics similar to those of Tendoy. Franklin has exhibited average emergence characteristics and seedling vigor. Heads of Franklin thresh easily and on rare occasions shatter lightly. The variety is resistant to the prevalent races of stripe rust and dwarf smut found in Idaho. Franklin has never had more than a 2 percent infection of dwarf smut.

Agronomic and disease data obtained on Ranger, Franklin, and the commercial varieties grown in yield and disease trials for one to three years are given in Table 1.

Yield and Test Weight

Franklin and Ranger were superior to all other commercial varieties in average yield in tests grown at 3 stations in 1971 (Table 1). Ranger performed very well in the nurseries grown at 3 stations for 3 years. It ranked second for yield among the varieties tested. Franklin was superior to Tendoy in the Tetonina 3-year average.

Ranger produces grain with a high test weight, whereas the average test weight of grain from Franklin is approximately 1 pound per bushel lower than that from Tendoy.

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²CI refers to the accession number assigned by the Plant Science Research Division, ARS-USDA.

Quality

The milling and baking properties of Ranger and Franklin are satisfactory and the use of these new varieties as replacements for Cache should result in a marked improvement in quality.

Sources of Seed

Foundation seed of Ranger and Franklin was released to registered seed growers in Idaho in 1971. Certified seed should be available in quantity following the 1973 harvest. Breeder seed will be maintained by the Tetonia Branch Experiment Station.

Summary

Ranger has a higher test weight and is more resistant to shattering than Franklin. Franklin is more resistant to dwarf smut, and has better emergence characteristics and seedling vigor than Ranger. The two varieties are

similar in yield. Although Franklin may eventually prove a better variety than Ranger, release of both varieties rather than just Franklin will make seed of dwarf smut resistant varieties available to all farmers at least one year earlier.

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Table 1. Agronomic and disease data obtained on winter wheat varieties grown for 1 and 3 years.

Variety	Stripe ¹ rust, Aberdeen	Dwarf smut, Preston	Lodging, Aberdeen	1971 Date Headed		Plant height		3-Station Average ²	
				Aberdeen	Tetonia	Aberdeen	Tetonia	Test weight	Yield
						inches		lb./bu.	bu./acre
Tendoy	MR	26	80	6/17	7/ 9	48	27	61.9	37.2
Wanser	MR	33	30	14	10	46	26	61.5	37.2
McCall	MR	33	30	18	10	46	25	61.8	35.7
Itana 65	R	26	80	18	10	50	24	61.9	35.7
Ranger	VR	3	90	12	6	44	29	62.1	40.4
Franklin	VR	1	80	17	7	50	32	61.1	40.5
Ark	VR	12	90	17	6	49	31	61.7	37.6
Bridger	MR	20	70	15	7	50	27	62.1	36.1

1969-1971 (3-Year Average)

Variety	Test Weight (lb./bu.)				Yield (bu./acre)			
	Tetonia	Heglar	Preston	Average	Tetonia	Heglar	Preston	Average
Tendoy	59.7	63.1	61.5	61.4	35.4	39.0	39.3	37.9
Wanser	60.5	62.4	60.7	61.2	41.3	39.4	39.2	40.0
McCall	59.4	63.2	61.0	61.2	38.1	40.1	38.2	38.8
Itana 65	60.3	63.4	61.5	61.7	36.8	38.4	37.9	37.7
Ranger	60.4	63.3	61.1	61.6	42.0	37.8	38.8	39.5
Bridger	60.7	64.0	61.6	62.1	39.3	38.6	38.6	38.8
Tendoy ³	60.1				39.7			
Franklin ³	58.9				41.4			

¹ VR=very resistant; R=resistant; MR=moderately resistant.

² Stations used: Tetonia, Heglar, and Preston.

³ Years used in the average: 1968, 1969, 1971.

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