

RESCUE WHEAT

By

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Rescue is a beardless hard red spring wheat variety, bred and selected for resistance to sawfly. It is from a cross of Apex x S-6 15 made at the Dominion Experimental Station, Swift Current, Saskatchewan. In sawfly infested areas Rescue has shown good resistance to sawfly damage. The fly, a wasp-like insect, apparently deposits its eggs as freely on plants of Rescue as on other wheats, but after hatching many of the young larvae die before reaching the base of the pithy stem where they over-winter. As a result very few of the Rescue plants are cut and break over as is the case with the commonly grown varieties when they are infested. Harvesting, therefore, can be more convenient and sometimes more efficient than with other varieties which when infested may break over badly after reaching maturity.

How Well Does Rescue Yield?

Some indication of what one may expect from growing Rescue in the sawfly area of the State can be noted from tests and observations made in northwestern North Dakota during the last three years. How Rescue yields have compared with other varieties is set forth in the accompanying table. In these tests all grain was harvested with the binder, about as soon as mature and before there was much stem breaking, hence the loss from being unable to salvage the crop was not a factor in these comparisons. With moisture conditions mostly favorable, crop growth in each of the years was above average.

How Rescue has compared in yield and test weight with other varieties grown in the Northwestern part of the State, 1945 to 1947.

	Av. yield per acre-bushels			Weighted av. 8 sta. years	In % of Thatcher yield	Av. wt. per bu. lbs.
	Williston 1945-47	Minot 1945-47	Dickinson 1946-47			
Thatcher	30.0	27.8	21.3	27.0	100	59.1
Pilot	28.2	26.9	20.7	25.8	96	58.0
Vesta	28.2	27.6	19.3	25.7	95	59.8
Mida	28.6	30.4	21.2	27.4	101	61.3
Cadet	28.6	28.6	21.5	26.8	99	57.8
Rescue	25.4	25.6	22.6	24.8	92	58.6

Tests at Williston

During the three years at Williston, Rescue yields have averaged 25.4 bushels; Thatcher, under similar conditions, 30.0 bushels, Pilot 28.2 and Mida 28.6 bushels per acre. This shows Rescue yields averaging about 15% below Thatcher and 11% below Mida. In none of the three years did Rescue equal the other varieties in yield. It should be pointed out that while sawfly infestation was very common in this section of the State, in no year was there a heavy infestation in these plots.

Tests at Minot

In the Minot trials, during the same three years, sawfly infestation was more general. In one of the years, 1946, Rescue returned a better yield than Thatcher, Pilot and Mida, but less than these varieties in the other two years. For the 3 years Rescue averaged 25.6 bushels per acre against 27.8 for Thatcher, 26.9 for Pilot and 30.4 bushels for Mida. Expressing these yield differences in percent the Rescue averaged 8% below Thatcher and about 16% below Mida.

Tests at Dickinson

Tests cover only 2 years at Dickinson, but in these trials Rescue, in relation to other varieties, yielded more satisfactorily than at Williston or Minot. For the average of the 8 comparisons at the three stations, Rescue averaged 8% less than Thatcher and 9 percent below Mida. These differences are slightly smaller but of about the same order as reported from Montana and Saskatchewan, where Rescue has been observed for a somewhat longer time and is considered as averaging from 10 to 15% lower yield than the more common varieties.

Characters Other Than Yield

Rescue has some resistance to stem rust, but its rust reaction has not been observed in a bad rust year. Similarly its performance has not been observed in a drought year. Rescue is very susceptible to leaf rust, and lacks resistance to covered smut. In time of maturity, Rescue ripens later than Thatcher or Mida, comparing more with Pilot in this respect. Rescue grows slightly taller, has a rather weak straw, a larger, brighter red kernel than Thatcher, and is more resistant to bleaching. In weight per bushel Rescue averages about the same or slightly lower than Thatcher.

One of the important questions about Rescue, not yet conclusively answered, is its relative milling and baking value. Limited comparisons to date have shown the variety to have certain deficiencies. The flour yield and protein content is average but not high. The quality of the protein and baking strength, as measured by the loaf volume, classes it as fair but distinctly below Thatcher. The flour is very low in water absorption, a factor regarded as unfavorable in a good bread flour. Similarly the dough characteristics and mixing requirements are not normal and the baked loaf has a tendency to a grayish yellow crumb color. Considering these factors it is felt that if Rescue should come into general use in northwestern North Dakota it would tend to lower the high level of quality generally associated with wheat now produced in that section. In Canada Rescue is accepted on the market, but cannot be graded higher than No. 3. Further and more conclusive information on the milling and baking properties of Rescue should be available when the tests on the 1947 crop are completed.

Some Things to Consider

Farmers in the sawfly area concerned with what kind of crops and varieties to grow, and how to manage their fields in order to hold down possible losses from sawfly damage will want to consider the following factors:

1. *Growing present varieties.* Early harvest of infested fields, using a swather and pick-up combine (or binder) rather than direct combining. Many growers report they find this very effective in holding down the harvesting loss, thus lessening the urgent need for growing some other crop or special variety. Some others have found that pick-up guards and special reel attachments are helpful in salvaging badly broken down grain.

2. *Swathing adds to the cost of harvesting.* In fields where there are small rocks there is a hazard in the use of the combine pick-up attachment especially when the stubble is short, thin or broken so that the swath does not lie well off the ground. Bearded wheats pick up better than beardless ones.

3. *Sawfly larvae live over the winter in infested stubble.* Wheat following wheat, or wheat adjacent to stubble from last years sawfly infested crop, will be exposed to a greater population of flies during the egg laying season, than if wheat followed some resistant crop or fallow. Avoid wheat after wheat, if possible.

4. *The larvae can be killed by drying out.* Some reduction in population therefore can be expected from very shallow surface tillage soon after harvest—tillage which lifts and exposes the stubble to thorough drying. Plowing has not been found effective.

5. *Oats and flax are not attacked by sawfly.* Winter rye and most barley varieties are fairly resistant and durums generally quite resistant. Of the hard red spring varieties now available only Rescue, with its more pithy stem, has a fair degree of resistance.

6. *Are the gains from growing Rescue sufficient to offset its probable lower capacity for yield and its less desirable milling and baking qualities?* The answer to this seemingly will depend upon a number of factors—these varying with each farm. For the present it seems the most likely use for Rescue is strictly as an emergency variety and on farms (a) where the shift to some resistant crop is not practical, (b) where the likelihood of a heavy infestation is great, and stands are likely to break over early, (c) on farms lacking in harvesting equipment and power to permit timely harvest, or in fields where operating a combine pick-up may not be desirable.

Considerable seed of Rescue is now available, most of this in southern Saskatchewan and northeastern Montana. The North Dakota Experiment Station has under its control the increase of about 100 acres of Rescue sown in 1947. This will be available for distribution and further increase, if that seems desirable after the completion of a study of this year's milling and baking tests.