ROSEN RYE¹

Heavy Yielding Variety Brought by Russian Student—Farmers Cooperate with Scientists in Keeping Up the Standard

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THE Rosen Rye has a shorter, stiffer straw than is ordinary and yields about twice as many bushels per acre as the old-fashioned common varieties, because the Rosen heads are much larger and better filled. The head is not longer than the common rye, but gains in size and weight through width and density. Rye is four rowed, *i. e.*, two flowers at each joint of the rachis, alternating on the head. In the case of the common varieties only about half of these flowers are fertilized, giving a rough, loose appearance to the head. The kernels of the common rye are small and usually covered by the chaff, while in the Rosen Rye the large kernels project beyond the glumes when ripe. Typical Rosen Rye has less than 30 per cent of its heads, with 10 per cent of the grains missing. The result is that the flowers are generally fertilized on most of the heads. This gives the crop a large, square-headed appearance. In favorable years, nearly complete fertilization may extend to 99 per cent of the heads.

Rye, as will probably be remembered, is open-fertile. This accounts for the irregularity observed in the above description. In the case of autogamons (close-fertile) plants, the crop becomes a mixture of homozygotes which are easily isolated by selection and pure-line breeding. The breeding problem in rye is that of corn in most details.

The first of this rye was planted at M. A. C. (East Lansing), in the fall of 1909. The Michigan Experiment Station was not long in observing the vast superiority of Rosen Rye over all

others, and since it has been introduced among farmers, several have reported yields over fifty bushels per acre.

Developing and maintaining a pure strain of rye is one of the most difficult problems of a plant breeder, for rye, unlike most of the other cereals, such as wheat, oats and barley, cross fertilizes—resembling corn in this characteristic. The Danish people grow their pure seed on an island off the mainland. If we expect to keep our Rosen Rye pure we should grow it a quarter of a mile from common rye.

Rosen Rye was selected and improved from an envelope of Russian Rye, furnished in 1909 by Mr. Rosen, a student from Russia at the Michigan Agricultural College. This variety immediately began to show its outstanding superiority, and after proving its ability to double the yields obtainable with any other variety, it was distributed in a number of counties, and, where kept pure, is continuing to maintain the record established on the Experiment Station plants.

In 1912 a bushel of Rosen Rye was sent to Mr. Carlton Horton of Albion. This was sown on an acre and produced 35 bushels of rye of such quality that not only that crop but those of following years have been used entirely for seed. Now we find 2,000 acres growing in Jackson County, and 3,500 acres in St. Joseph County, with a total for the state of about 15,000 acres.

Unfortunately, due to ordinary threshing practices and the growing of common rye in adjoining fields, only about 5 per cent of this acreage is 99 per cent pure. The other 95 per cent has

¹ A part of this report appeared in the *Extension Series*, published by the Michigan Agricultural College, July, 1917.

ROZEN RYE, GOOD AND BAD

The two heads in the center show a side and edge view of Rosen Rye. The two heads at the left show an edge and side view of common rye. The two heads at the right represent what is known by the inspectors as the off-type. This shows the large kernels of the Rosen and the poor filling of the common. This type results from a cross. (Fig. 15.)

been more or less crossed, and though it is increasing yields five to ten bushels per acre and should be used in preference to common rye, yet it cannot be considered equivalent to pure Rosen Rye.

The farmer who grows common rye knows that fifteen bushels per acre is all he can expect in an average year, with twenty bushels per acre as an exceptionally good yield. Yet the farmers who have had experience with pure Rosen Rye will agree that twenty bushels is a low yield for the variety, and that forty to forty-five bushels per acre yields are not uncommon.

Rye does not belong on every farm, but it is particularly adapted to large areas of the lighter soils of this state. To prevent washing and leaching, these soils should not be permitted to go through the fall and winter without a growing crop of some kind. In nearly

every case, the thirty-five to forty-bushel yields of Rosen Rye have been obtained from fields sown during the first half of September. While it is far from our desire to advocate late sowing of rye, yet this crop can be used to advantage on thousands of Michigan acres to follow crops of corn and beans.

Now that Rosen Rye has asserted its superiority in nearly every rye-producing section and will yield over 300,000 bushels in the state during 1917, it should largely supplant all other varieties after that date, for ordinarily Michigan grows about 300,000 acres of rye; but this year (1917) there will probably be twice or thrice that acreage sown. If this occurs, many will be unable to get even Rosen Rye that is somewhat mixed, but by next year (1918) Michigan will not only be the leading rye-producing state, but she will double the four and a half million yield

A NEW BREED OF RYE. FARMERS COOPERATE WITH SCIENTISTS

Upper photograph shows a field of Rosen Rye. Note the larger heads on shorter straw than is ordinary in common varieties.

Lower photograph: Mr. J. W. Nicolson, Secretary, Michigan Crop Improvement Association, inspecting farmers' grain samples. The farmers, whose fields pass inspection, send a sample and promise the rest of the seed sold under the Association shall be up to this standard. (Fig. 16.)

now credited her, largely through the use of the variety Rosen Rye.

However, we should not neglect all the other factors which enter into the production of a good crop of rye, such as proper use of manure, acid phosphate, and thorough preparation of the seed-bed. For a maximum crop of Rosen Rye, seeding should be done the first half of September at the rate of four to five pecks per acre. October seeding should be made at the rate of six pecks per acre.

Realizing the value of the variety and the necessity for high standards of purity and freedom from weeds, the Michigan Crop Improvement Association has introduced an inspection of this and other pedigreed grains. Any farmer can become a member of this association on payment of the annual dues of

one dollar, but in order to sell his grain under the trademark of the association, he must submit it to inspection by its agents and pay all attendant costs. The requirements to pass inspection include a clause demanding 99% purity of variety, freedom from quack grass, mustard and dodder, and not to exceed one-half of 1% weed seeds. To sum it up, inspected Rosen Rye must be good, pure, and thoroughly re-cleaned seed.

Lists of growers whose Rosen Rye has passed field inspection will be available August 1, 1917, and can be secured on request from J. W. Nicolson, Secretary of Michigan Crop Improvement Association. On receipt of this list, a prospective buyer can get in touch with producers of Rosen Rye.

Further Evidence that "Like Marries Like"

Donald M. Marvin has published in the September number of the *Publications of the American Statistical Association* some new facts confirming the theory that "like tends to mate with like." His chief conclusions are here quoted:

"The presence of a large and increasing number of women in industry raises the question of the possible influence of industry upon marriage selection. Modern social conventions are based upon the presumption that woman is shut away in the home and that man must follow her there if he wishes to see her. In entering industry in such large numbers, women face two new conditions, one negative, the other positive. They leave the home temporarily empty and they create a new social phenomenon of occupational propinquity. This, modified by the various influences of class stratification, financial status, and other forms of group cohesion involved in the present organization of society, tends to differentiate certain groups of men and women for marriage.

"Industrial propinquity extends to the home and to the economic status.

Even class and race lines enforce occupational cohesion. Such stratification and drawing together of certain parts of social groups must react variously upon those involved. It seems possible that friends who marry within their own occupation are not so much guided by similar tastes and backgrounds as they are driven by a new force of industrial propinquity, a force that has developed with the appearance of woman in industry.

"Marriage, a matter of individual choice, if choice exists, obeys the sweeping silent force of propinquity. Women in each occupation are surrounded by the men of the same occupation. Of course they marry these men. This inevitable sequence causes no astonishment.

"Today the most attractive as well as the strongest and most vigorous women are in industry. Their presence has been accepted and the taboo has been removed. The result is that men are now marrying the women whom they meet in their work. The tremendous proportions of this movement are of startling and far-reaching significance.

"The data were derived from the