

# Breeding for Rust Resistance in Tropical Africa

By J. R. Waldron<sup>1</sup>

Breeding of improved varieties of wheat has been an important activity at North Dakota Agricultural Experiment Station for many years. The fruits of this work have been development of many new varieties of durum and common wheat, nearly all showing resistance to rust. This work has now received added impetus because of the appearance of the new rust race, 15B.

Breeding activities at our own experiment station are united with the work at the experiment stations of other states, the U. S. Department of Agriculture, and Canada to develop a broad and unified program to subdue this vigorous foe. Present seeding plans are for extensive trials of wheat from various parental lines and of diverse geographical origin. Immediate source of seed to be used in the 1951 nurseries is from the southwest federal irrigation station at Brawley, California, where increases have been made this past winter of selections presumably carrying at least some resistance to 15B.

Among the hundreds of selections increased at Brawley there are many with strange hybrid origins, indicating that the wheat regions of the world have been combed to find possible resistance material. From a single page of hybrids under trial where 46 are listed, no less than 27 of these are indicated as having originated in Kenya Colony in Central Africa, with respect to one parent entering the hybrid.

This fact is of particular interest to the writer of this note for just recently he has received a long story clipped from the East African Standard of Nairobi, capital of Kenya Colony, sent him by his son, Fred R. Waldron, a geologist in Uganda, adjacent to Kenya Colony. The problem of the wheat breeder in Kenya Colony, according to their senior plant breeder, H. C. Thorpe, is identical with our own, the development of wheats resistant to stem rust. Indeed, three kinds of rust are common there, yellow rust in addition to our own stem and leaf rusts. As our own new race of rust, 15B, is not mentioned as occurring there, it is evidently accidental that a few of the Kenya hybrids this past winter have shown real resistance to race 15B under greenhouse conditions.

It has been found that race 15B arises from the barberry plant, from the crossing of two races of rust neither of which is so vicious as 15B. This working of the two sexes of rust inside of the barberry plant to produce a rust child different from either rust parent is a novel idea but it is a fact to be accepted. Those breeding for rust resistance in tropical Africa do not have to contend with the bar-

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berry plant in producing new races of stem rust but they do have a 12-months growing season which adds to their troubles. If some of the selections of Kenya Colony can be of benefit in our own breeding program why may not some of our own breeding benefit those wheat growers in far off Africa in aiding with their rust troubles?

The answer to this question is that perhaps we can. Only a few days ago a request came from the Director of Agriculture, C. C. Webster, of the experiment station at Nairobi that there be sent to their senior breeder, mentioned above, small samples of our hybrids mentioned in the annual report of this station, Bulletin 365, for them to use in breeding for resistance to leaf rust. It is a pleasure to comply with this request and already these have gone forward. It may be one or more of these selections, used as a parent, will later result in the production of a better wheat variety in a distant part of the world.

### FOOD CONCENTRATES

Proteins, pre-digested to form the amino acids which the human body must get in its food, may now be given by needle injections at a moderate cost to sick persons unable to eat.

Nutrients thus shot into the bloodstream are processed to correspond exactly to food taken by mouth and are ready immediately to begin the task of nourishing and repairing the body.

Needle feeding has been known for some time, and has been used with success but the cost has been prohibitive. It is used where persons are near death from starvation, or some disease that may prevent eating.

A simple method of mass-producing amino acids, eight of which are required by the body, has been announced by Dr. Jesse P. Greenstein, biochemist of the National Cancer Institute. The method, he told the American Chemical Society at Atlantic City, produces the acids in a safe, pure form that won't cause bad reaction or shock. It can make them by the pounds, instead of fractions of ounces as by present methods.

One of these food concentrates, methionine, which has been selling at \$6.50 a gram (1/28th of an ounce), will be produced for 30 cents a gram. A human needs several grams a day.

Research will also benefit, Dr. Greenstein said. The different amino acids can be tested for their effect on growth, and to learn how much each one is needed in health and in sickness. They may also aid in chemical studies of cancer.

The chemical society also was told at Atlantic City that a red dye, formed during the growth of a giant bacteria, offers hope of controlling desert fever, a highly infectious fungus disease, which resembles tuberculosis and is widespread in the Southwest.

The red dye checked the spread of the disease in rabbits, and trials at Birmingham Veterans Administration Hospital, Van Nuys, Calif., have indicated it will clear up infections in the human body although the extent of its effectiveness has not been determined. (JB)

### MORE ARTIFICIALLY BRED COWS

More than four million dairy cows in nearly half a million U. S. herds now are in artificial breeding associations, and one cow out of six in the U. S. will probably be bred artificially in 1951. For statistical details on the associations, herds, bulls and cows, state by state and U. S. totals, write T. Swann Harding, office of information, Department of Agriculture, Washington 25, D. C.