Chapter XXI

THE DIVIDENDS OF POTATO RESEARCH TO THE RED RIVER VALLEY

The thousands of dollars spent by the Experiment Stations annually in the potato growing states and other thousands spent by the United States Department of Agriculture for potato research may seem to the consumer a needless expenditure of money, but to the potato grower, he knows that the findings in potato research has saved this essential food product. The “Potato Famines” in Ireland of the last century proved how a single disease (late blight of potatoes), if left uncontrolled, could wipe out a crop which was the mainstay in the diet of a people. The “trial and error” method of research in this important crop began in Ireland where it was discovered that potatoes on the highlands suffered less from the disease than the potatoes on the low humid bog lands. It was not until about the turn of the century that scientists isolated this fungous disease and later found that its growth could be stopped and the disease controlled through the use of a copper sulphate spray called Bordeaux mixture (first used in Bordeaux, France, to control grape diseases).

The coming of the late blight of the potato to our eastern states started what may be called the first phase of potato research, namely, Potato Disease Control Programs. Scientist had to do first the obvious thing—“save the crop”. Other diseases of the foliage and tubers demanded attention such as Early Blight, Potato Scab, Rhizoctonia, Black Leg Rot and others. In addition to the copper compounds used wet or dry, to control the leaf diseases, formaldehyde and corrosive sublimate (mercuric chloride), came into use for the control of potato scab and black scurf (rhizoctonia). It was soon found that by heating the formaldehyde and by adding hydrochloric acid to the corrosive sublimate that surface tension was broken on the tuber surface and that the liquid treatments became more effective. Since those pioneering methods of disease control were used, the leading chemical companies, in cooperation with the experiment stations, have perfected many chemicals even more effective in potato disease control work. Concurrently, with development of the spraying program at the turn of the century, came the first phase of the potato variety development program, the fore-runner of the potato breeding program. New varieties came from the selection of promising seedlings grown from seed from potato seed balls. Of a large number of varieties that made their appearance before the turn of the century the Early Ohio, Early Rose, Beauty of Hebron and others of the early and mid-season varieties were most popular in Minnesota with the Early Ohio most popular in the Red River Valley. The Burbank, Rural New Yorker, Carmen No. 1, etc., were good examples of the seedling selections which were late in season.
The second phase in potato research came with the development of the science of genetics, beginning some fifty years ago. This basic research in plant breeding sought potato breeding stocks with resistance to fungous and virus diseases, desirable dates of maturity, good tuber type and skin color. The Minnesota Experiment Station was the first mid-west station to pioneer in potato breeding. The most extensive potato breeding work in the early years was done in the state of Maine. During the past thirty years practically all of the major potato producing states have done extensive work in producing new disease free varieties and strains of potatoes. New varieties of potatoes with varying degrees of resistance to the major diseases have now replaced most of the old standard varieties. The Pontiac has replaced the famous Red River Ohio, and only the Irish Cobbler of the old standards remains on the planting list. New varieties are now being grown for specific uses such as baking, potato chips, French fries, etc. In Europe, special varieties are for industrial uses such as starch and livestock feeding. Starch and potato flour factories in the Red River Valley today are using the new commercial varieties that are grown here, the flour, chip and to some extent, the French fry manufacturers are depending chiefly on the white potato varieties.

The writer started the potato experimental work at the Northwest Experiment Station at Crookston in 1912 and through the years conducted extensive experiments in disease control by spraying and seed treatment, soil preparation, fertilizer tests, and cultural practices, and collaborated with the central Minnesota Station in the potato breeding project. With the identification of new virus and fungus diseases and insect pests, the Experiment Stations have a continuing job for the plant breeders. The importance of the physical and chemical properties of the soils for potato production is being given a new look by the soil specialists.

In addition to the Experiment Stations of North Dakota and Minnesota, the Red River Valley is fortunate in having the Potato Research Center which has headquarters at East Grand Forks. This research center is unique in that it is an institution owned and directed by Red River Valley Potato Growers of North Dakota and Minnesota. A brief description of this research center is included in this history.

Potato Research at the Minnesota Experiment Station began in the Department of Horticulture more than fifty years ago under the direction of Professor A. R. Kohler. As the science of Genetics developed Dr. F. A. Krantz was assigned to the potato breeding work. A site along the North Shore, at Castle Danger was selected where conditions were favorable for the flowering and setting seed of many potato varieties. The potato crossing work was done in the fields until more recent years when the hybridizing was transferred to greenhouses. Upon the death of Dr. Krantz, his successor Dr. Florien T. Lauer and his associate, Dr. O. C. Turnquist, are continuing the work.
THE RED RIVER VALLEY POTATO RESEARCH CENTER
AT EAST GRAND FORKS, MINNESOTA

By Lyle Currie, Secretary
Red River Valley Potato Growers Association

The Red River Valley Potato Research Center was established in 1948. Owned by the Red River Valley Potato Growers Association, the Research Center, a cooperative effort of the United States Department of Agriculture, University of Minnesota, North Dakota College of Agriculture, and the grower's association, is dedicated to the improvement in the production, handling, storage and marketing of potatoes. Built at a cost of $150,000.00, the Research Center consists of an office building containing office space, chemistry and cooking laboratories, a large potato storage house and engineering laboratory.

In addition to the Research Center, a 480 acre research farm, located 8 miles southwest of Grand Forks, in North Dakota, is owned by the Association. Here scientists test new varieties, insecticides, fungicides, fertilizers, soil management methods, etc., all toward the production of higher quality potatoes. The farm is also a laboratory on which new equipment and new methods are tested. The farm produces potatoes for use in storage, handling and shipping studies, throughout the winter. The fields provide the ideal place to try out new equipment for planting, harvesting and handling, as well as tests on dusting, spacing, improving maturity, and so forth.

Trials do not end with the storage of a crop as further work may include grading, shipping, cooking tests and processing. All together the Research Center offers the opportunity for testing, all to provide a better product through the elimination of waste and improvement of quality.

U. S. D. A. personnel stationed at the Research Center include Storage and Farm Machinery specialists, Industrial Engineers, Horticulturists, University of Minnesota and North Dakota State University personnel who cooperate in work from their respective stations. The Research Center is also the headquarters of the Red River Valley Growers Association staff.

The Potato Field Day at the Potato Research Farm annually attracts hundreds of potato growers from the Red River Valley of Minnesota and North Dakota. New varieties from all potato Experiment Stations are tested for yield, marketing and processing qualities. Approximately one thousand new seedling selections from the Minnesota and North Dakota Stations are tested annually and are dug for viewing on Field Day. Extensive field tests are made of fertilizers, fungicidal and insecticide materials, seed treating compounds, soil and cultural tests.