

BETTER BREEDING

Root Generation:

The Breeding Strains plots consisted of some 400 or more lines. Approximately 8000 roots were harvested from these plots and an additional 2000 from field plots. A considerable number of these lines have reached the second to fourth generation of selfing and in many cases are exhibiting a great deal of uniformity in top and root character. There are indications that some lines are tending toward homozygosity of quality as measured by percent sucrose. It is believed that about 150 of these lines could be subjected to a top cross test without further inbreeding in order to weed out the least promising of the lines.

Sugar - Garden Beet Hybrid: (R.F. 1935 Seed No. 520)

The performance of this hybrid has been discussed in another portion of this report. A number of inbred lines were started from bagged plants of the 1937 Rocky Ford Group Seed No. 304. Several of the more promising appear worth continuing.

A number of color lines originating from this same cross are approaching homozygosity for the desired factors. Since color is dominant to white purification of these lines is slow. Some preliminary crosses can now be made with a few of these lines for a study of the inheritance of certain factors.

Seed Generations:

In general good yields of seed of good quality were secured from the isolated singles and groups. This was particularly true of a number of groups involving advanced generations, with and without selection, of the sugar-garden beet hybrid and several crosses of inbred lines.

Bagging:

Two bagging plots were planted in 1938; one on the College Farm at Fort Collins and one on Dale Creek, 38 miles northwest of Fort Collins at an elevation of slightly over 7000 feet. This plan was very advantageous in facilitating the work of bagging since the beets at Fort Collins bloomed about three weeks before those on Dale Creek. However results from the Fort Collins plot were very disappointing; seed was of poor quality and secured from relatively few of the plants. Based on observation of the performance of bagged seed in the 1938 breeding strain plots it is estimated that seed in sufficient quantity was secured from about 10 to 15 percent of the roots in the Fort Collins plot. The seed set in the bags on Dale Creek was on the whole quite satisfactory, being much superior to that of 1937.

Regarding the performance of bagged seed in the 1938 breeding strain plots it was the general rule that where less than 10 to 20 plants were secured of a line it was impossible to judge from the appearance of the tops or roots anything as to the uniformity or quality of the line. There were repeated cases of undoubted outpollination; particularly when the number of bagged seeds was small. A case in point is the progeny of a red mangel. Less than 20 seeds were secured and from these eight plants reached harvest; one of these appeared to be a true self, the remainder were undoubted hybrids with normal sugar beets, sun red foliage sugar beets and red beets. Sun red foliage, red and mangel hybrids were common in the progenies of small amounts of bagged seed.

New Sugar-Red Garden Beet Crosses:

Seed was secured from a number of such crosses using both selected and unselected parent roots. From a study of the progeny it should be possible to determine if the hybrid we now have was a lucky accident or if it can be repeated at will. From the progenies of the selected parent stock it is hoped that a hybrid strain with better percent sucrose will be secured.