

TESTING AND APPROVAL OF SUGARBEET VARIETIES BY THE WESTERN SUGAR
COMPANY/GROWER RESEARCH COMMITTEE

1. The purpose of testing is to assure that the best varieties will be available for both the grower and the processor. Seed companies work within the following guidelines to develop varieties that will fit our area markets.

a. The total of recoverable sugar per acre and recoverable sugar per ton must be at least 200%. To gain full approval a variety must produce at least 100% of the three year average of approved varieties in recoverable sugar per ton. In addition, any amount over 100% of recoverable sugar per ton may be credited to the percentage of recoverable sugar per acre, but in no case shall the percentage of recoverable sugar per acre, be less than 95% of the approved varieties. Our growers feel a real need to move towards higher quality each year but want to retain a good sugar per acre basis.

b. In addition adequate disease resistance must be present in varieties approved for growing in areas where disease is a general problem.

c. Approval will be on an annual basis. The three year average performance of the approved varieties will be examined each year. At this time, inferior varieties will be eliminated, and acceptable varieties will be granted approval for one more year.

CRITERIA FOR ACCEPTING A VARIETY FOR TESTING

1. Each variety must be a genetic monogerm and have a letter from the originator indicating in which country it is grown. This is to assure that a wild sugarbeet is not introduced into the area.

2. Performance data will accompany the seed from trials conducted in an area for which it is intended to be used.

3. If after 3 years of testing, the variety meets with the approval, the sponsor should have a quantity available to plant at least 500 acres.

CRITERIA FOR APPROVAL OF A VARIETY

1. A certificate stating the country of origin of the seed and where the seed stock is grown shall be supplied to the committee.

2. The experimental field design will be committee reviewed so that the most accurate data possible will be obtained.

3. Harvest results will be evaluated by the committee and the data shall include

- a. recoverable sugar per acre
- b. recoverable sugar per ton
- c. yield of roots per acre
- d. sucrose percentage of beets
- e. laboratory thin juice purity
- f. disease resistance
- g. bolting resistance
- h. cold resistance (if available)
- i. row width and average number of plants per acre

WESTERN SUGAR COMPANY BEET GROWING AREA IS DIVIDED INTO THREE DISTINCT AREAS OF VARIETY ADAPTATION.

Area A is defined as being in Nebraska and Colorado.

Area D includes the Yellowstone and Big Horn river drainage of Montana.

Area C consists of the Clark's Fork valley of Montana and all of the Lovell, Wyoming factory district.

TESTING AND APPROVAL IS SEPARATE FOR EACH AREA.

Area A requires a moderate resistance to cercospora.

Area C requires a moderate resistance to curly top.

All areas have some need for rhizoctonia resistance.

Disease nurseries such as those for cercospora, rhizoctonia, and curly top, can and do indicate particular variety weaknesses and strengths. This is of great value to a grower who needs disease resistance.

This data coupled with data from official trials which provide an independent, unbiased comparison of varieties can give a grower a very good guide towards what seed to buy for his particular needs.

Our committee has a special area for extra disease resistance for special problems within an area. From the official trial data we have learned that most of these special varieties will be lower in tonnage or sugar or both in the absence of disease. If the

disease is present, however, some of these special varieties can be more profitable.

All of our areas of diseases resistance are important to us but I would like to address curly top.

In 1989 the D area came down with a serious case of curly top. This was an area that hadn't known curly top for over 50 years. This was also an area that had some of the best sugar and tonnage varieties now available in the Western Sugar area.

PRESENT COLOR SLIDES FROM DISEASED AREA

The problem was brought before the research committee to find an answer. Curly top experts were invited to view the area and the committee was offered an number of suggestions. Area farmers were contacted and many had different opinions as some had been hit seriously and others had escaped with very little damage. Western Ag. staff were consulted and with all the information the committee could acquire, it came to a conclusion.

Because the vector of curly top, the sugar beet leafhopper, becomes active in warmer weather, early planting of sugar beets can help in controlling the disease. Good plant canopy reduces leafhopper activity because of the shade. They like bare, warm ground next to a food source.

Early beets usually have fewer problems with curly top but those without any resistance can still become infected at any time. Because Montana's D area had almost no varieties with curly top resistance, it was recommended that all beets planted after April 25th be C area curly top resistant varieties. To be even safer it was suggested that a few 2 row strips of a non resistant variety be planted throughout the area as checks to measure the severity of the disease.

Nearly every farmer who suffered serious damage in 1989 planted resistant varieties in 1990. The resistant varieties did very well in Montana. The non-resistant varieties had quite a bit of damage. The check strips showed 80% damage with many being completely dead.

It is the recommendation of the committee to follow the same procedures in 1991. If the disease continues in the D area it may mean a policy change.

The C area has been monitoring sugar beet leafhoppers for the last four years hoping to discover a method of leafhopper control that might allow less resistant varieties to be used. We've discovered a great deal, but that goal may or may not be realized.

HOW MUCH RESISTANCE IS NEEDED?

This last December the seed companies asked just what degree of resistance we wanted in our resistant varieties.

Our research committee spent a great deal of time discussing this as we wanted to be as fair as possible to the farmers, the sugar company, and the seed companies.

There are some very good varieties that are being tested that look very inviting but with rather low resistance. Growers have cautioned us from personal experience and observation to see how varieties, now approved, are doing. With grower help it was established that the approved varieties are within the range of needed resistance. Less resistance could be asking for a wreck.

We have established a formula that should address the level of resistance needed and have sent it to the seed companies.

The committee rules, hopefully, will provide seed suppliers with clear goals for variety development so they can create newer, better varieties which will help everyone in all our categories of disease, yield, sugar, and quality needs.