SUGAR BEET SEED BY-PRODUCTS

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With the beginning of beet seed growing in New Mexico, it was found that one of the expense items in beet seed recleaning was the disposal of the refuse, or screenings, as they are called. Before we reached a very large production, this item was not alarming, but, with increased production, the cost of disposal increased rapidly. In the beginning, we had to haul all refuse out and dump it. Finally we were able to interest several farmers in using this refuse on their land. It did show some results as a fertilizer, but the objection to this practice was having volunteer beets with which to contend. Within a year's time, we realized that, even, if we could continue this practice, the farmers were not willing to take our total production of refuse. In Arizona we ran into much the same condition and only the farmers who had alkali land would take a part of the screenings, if hauled to them.

In 1936 we put a cleaning plant in the Pecos Valley and it was our contention, at that time, that the screenings could be utilized as a feed. A large number of sheep are pastured and fed there, and, we had an opportunity to test out the screenings as a sheep feed. We used the screenings with pasture feeding by putting the screenings in windrows throughout the fields in order to make feed available at all times. An accurate check of results could not be obtained on this method of feeding, but by the time lambs were put in feed lots, a gain of 24 pounds per head had been made, and, the feeder, making an estimate of the value received, maintained that this method reduced his feed bill 25 percent. The analysis of the screenings was: Moisture 6.3%; Ash 6.34%; Crude Protein 7.86%; Crude Fat 3.83%; Fiber 38.56%; Nitrogen Free Extract 36.57%.

In the Phoenix experiments screenings were used as a cattle feed. Two pens of eleven head each were fed for 70 days with the same ration, except that in one pen screenings replaced barley. At the end of the first 45 days both pens showed practically the same gain. The final results for the 70-day feeding showed a net gain per day of 2.376 pounds with screenings, and 2.942 pounds with barley. Figuring our screenings at $2.50 a ton and barley at $35.00 a ton, the cost per pound gain on screenings was $.06896 against a cost of $.07919 for the barley ration. Taking into consideration the amount of screenings fed, in comparison to barley, the screenings are equal to 45.2 percent of the value of barley in a mixed ration. It will also run 40 to 50 percent of the value of hegari. This would indicate that screenings, after processing, should be $15.80 a ton in comparison with present market prices of barley and hegari.

Screenings put through a hammer mill with 1/8" screen will absorb 18% molasses and not ball or cake. This is satisfactory as a cheap feed but carries a low protein content. In the mixed feed we wanted to bring our protein analysis up to make it marketable for dairy herds. Use was made of screenings, hegari, cotton seed meal, molasses, essential minerals and salt, with a guaranteed analysis of: Crude Protein not less than 14%; Crude Fat not less than 2.25%; Crude Fiber not more than 20%; Nitrogen Free Extract 40%.

An improved feed was made of cottonseed meal, alfalfa seed, alfalfa

meal, ground maize, screenings, molasses and kelp meal with guaranteed analysis of crude protein not less than 15%; Crude Fat not less than 2.5%; Crude Fiber not more than 9%; Nitrogen Free Extract 54%. All of these feeds have proved very satisfactory and a market has been established for the use of screenings as a dairy cattle mix. We find it difficult to maintain a guaranteed analysis on account of the variation in the analysis of screenings.

In several feed lots that were feeding hegari ensilage, cotton seed cake and meal, ground alfalfa, ground barley straw and barley, we could mix 1/3 ground screenings, ground alfalfa, ground barley straw and cotton seed meal in the feed with hegari ensilage and increase the amount fed from 15 to 20 pounds with an average increase in gain of .3 pounds per day. Reports coming back from the packing houses claim these cattle dress out above the average.

A GREENHOUSE METHOD FOR TESTING CURLY TOP RESISTANCE IN SUGAR BEETS

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Boxes 22½ inches long by 5½ inches wide and 4 3/4 or 6 3/4 inches deep were found desirable in testing the curly top resistance in sugar beets. Twelve plants per box were used in most tests. They were planted in pairs and the number of strains used in any trial was such that one strain did not always occur at the same position in the box.

Numerous curly top resistance tests gave very uniform and comparable results. The data were also found to agree with similar data secured in field trials. Reliable data were secured as to relative susceptibility to infection, period of incubation, resistance to injury, and death of diseased plants. The grouping of plants according to severity of symptoms gives important information as to degree of resistance which has been attained and uniformity of reaction among individual plants.

(Note: This subject is discussed in detail in Phytopathology Vol. 27, pp. 773-779, 1937.)

GREENHOUSE PURPOSES AND METHODS

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Greenhouse work in connection with a breeding program with sugar beets is believed valuable chiefly because of the greater intimacy which the investigator can have with his material. Speeding up the number of reproductive generations in a single year may also be important, but since this can be done by overwintering stecklings in the field it is too expensive to utilize for this purpose greenhouse space needed for more important work.

One of the greenhouse procedures which may be mentioned is the clonal