

## Beets Cured of Going to Seed

*Plant Physiology*

Sugar beets, mangolds and other root crops whose tendency to go to seed early is as troublesome to the planter as broody hens are to the poultryman who wants eggs, have been cured of their bad habit by the paradoxical method of encouraging them in it. This has been disclosed by a study of the experiments of the late William Bateson, director of the John Innes Horticultural Institution and one of the world's leading students of genetics and evolution.

Sir A. D. Hall, present director, explains that the tendency of beets and similar crops to produce seed during the first year's growth is an expensive waste, for every beet that does it is lost so far as sugar-making or cattle-feeding is concerned. This habit is called "bolting." Sometimes five per cent. or even more of a field of beets will prove bolters.

The cure consisted in exposing prospective seed beets to extreme temptation to bolt, and then selecting the stable individuals that were able to withstand the impulse as the progenitors of the next seed generation. Seeds from the commercial strain to be experimented upon were sown under glass in December or January and the seedlings were

planted out about the middle of April, when another lot of the same seed was sown in the open. Most of the planted out seedlings would bolt but the few which did not would be stored and planted out the following season to produce seed.

The results for Golden Tankard mangold are typical. From seed sown under glass in December, 1915, 25 plants were obtained of which eight were nonbolters. Their seed did not bolt when sown in January, 1918, nor again the next generation. Even so this seed was still not entirely freed from bolters, for when it was tried out more severely still, i. e., sown December 20, 1920, when a year old, it yielded 7 bolters from 737 plants. After this further selection three generations gave no bolters from January sowings, nor any naturally in the open.

Sugar beet was not so readily freed from bolters. A particular strain at the outset gave 70 per cent. bolters under forcing, 63 in the next generation, and 71 per cent. in the second. In the third generation, however, no bolters were obtained from a total of 326 plants.

*Science News-Letter, September 28, 1929*

## Brief Eruptions Spout Much Lava

*Volcanology*

How much lava a volcano can disgorge, even in short-lived eruptions, is indicated by calculations by Dr. Howard A. Powers, of the Hawaiian Volcano Observatory in Hawaii. A cubic box, one and one-sixth miles on each side, would be required to hold the lava that has been left in the inner pit of the Halemaumau volcano in the three brief eruptions that have occurred since 1925. These figures have enabled the volcanologists to predict another eruption this fall.

In the period since 1925 a total of 8,692,000 cubic yards of solidified lava has been left in the pit, filling it to a depth of 210 feet. Actually, Dr. Powers has found, even more lava than this has been given out, but some of it sank back after the eruptions. For instance, the last contribution began last July 25. This eruption brought a total of 136,850,000 cubic feet of molten lava into the pit, but when it subsided, only 97,350,000 cubic feet of the solidified lava remained.

The previous eruptions in the period measured were in July, 1927, which left 85,430,000 cubic feet of lava, and in February, 1929, when 51,900,000 cubic feet additional remained.

From these data, Dr. Thomas A. Jaggar, director of the observatory, has formed the opinion that "the intensity of gas action and the freedom of flowing has increased in 1929, and at the same time the interval between outbreaks has decreased."

Dr. Jaggar has plotted a curve of the outbreaks, and this makes it appear, he said, that "the next inflow of lava should take place some time between now and November, 1929. This expectancy might be interfered with if Mauna Loa should erupt, but that would be an equally satisfactory demonstration that the Hawaiian lava column is alive."

*Science News-Letter, September 28, 1929*

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