

19

4.9/16

1926 *Phytopathology* 16:1009-1010

Jagger, Ivan

PHYTOPATHOLOGICAL NOTES

Powdery Mildew of Muskmelons in the Imperial Valley of California in 1925.—A large and increasing acreage of early muskmelons (usually known in the West and South as cantaloupes) is grown in the Imperial Valley of California. For 1925 it is estimated that there were 30,000 acres, from which 5,100,000 crates, or 15,000 cars, were shipped to market. The climate of the Valley is extremely arid, with an average annual rainfall of about three inches and a very high percentage of sunshine. Before 1925 there had been no complaint of injury to melon foliage by the numerous fungi and bacteria which attack the foliage in moister climates, and apparently no record of the occurrence of a single organism parasitic on the leaves.

About May 10, 1925, when harvesting was just beginning, local growers and shippers became disturbed over the appearance of powdery mildew, which had apparently never before been observed on muskmelon in the Valley. At that time there were in several of the earlier fields small isolated spots, one to three feet in diameter, where practically all the leaves were dead and drooping, with leaves, petioles, and stems literally covered with the characteristic white to grey powdery growth of mildew. For some distance from the spots isolated, leaves showed young, actively growing mildew. The disease spread rapidly, and by June 6 a high percentage of the older leaves in many of the earlier fields had been killed, giving to the fields a dead-brown appearance. Invariably there was no foliage injury and little or no mildew to be found until melons began to ripen, but in practically every field in the Valley mildew appeared at about that stage and developed rapidly thereafter. The first or main set of melons was not materially reduced in quantity, although it is probable that quality was affected, particularly in the case of later pickings, when many of the older leaves had been killed. By the time the first set of fruits had been harvested the foliage was reduced so much that later set fruits failed to mature. The first set normally makes up a large percentage of the crop in Imperial Valley, and it is generally agreed that the reduction in yield amounted to only about 15 per cent for the whole Valley. It is possible that reduction in quality was of fully as great importance, although neither data nor estimates are obtainable.

Several varieties of muskmelons, including the Honey Dew and other members of the Casaba group, are grown in the Valley, and all were injured by mildew. Various fungicides in both dust and liquid form were applied by the county agent and by several growers, but little or no control of the

mildew was obtained. Failure of the fungicides may have resulted largely or wholly from faulty application, as the mildew was well established before the first applications were made and the machines were not of the most efficient types. Dusting with sulphur was out of the question, as either alone or mixed with hydrated lime it burned the foliage so severely that it was more destructive than the mildew.

At first it seemed that the outbreak might be the result of a rather unusual season, as favorable weather in March and April brought the crop to harvest ten days earlier than ever before, and there were several cool, cloudy days, rather unusual for that season of the year, at the time mildew was first observed. During June, however, sunny weather, high temperature, and low humidity in fully normal degree were the rule. Mildew spread rapidly from the time of its appearance until the end of the harvest in mid-July, with no indications of being influenced by changes in weather. It is probable, therefore, that the fungus was introduced in 1925. The fact that Imperial Valley is surrounded by mountains and desert, with specialized desert vegetation, would account for the absence of the fungus previous to this time.

Perithecia of the fungus have not been found. Consequently it has been impossible definitely to classify it, although *Erysiphe cichoracearum* DeC. usually is found on cucurbits. Failure to find perithecia raises the question of the ability of the parasite to live over to the next crop. In addition to the possibility that perithecia occur rarely, the fungus may be able to persist in vegetative form. Mildew occurred on volunteer melon plants throughout the summer and fall of 1925. Frosts during December and January usually kill all unprotected plants, but on December 30, under the protection of a hedgerow, volunteer plants were found with a few living leaves covered with mildew. Planting of the next crop began early in December under oiled-paper frost protectors, and on December 30 the seedlings showed one or two leaves each, although no mildew was found on them.

The probability of powdery mildew attacking the Imperial Valley melon crop in destructive form each season henceforth is strongly suggested. It is possible, however, that the outbreak of 1925 was of sporadic nature, resulting from some unusual factor or combination of factors, and that nothing similar will occur again for many years.¹—IVAN C. JAGGER, Office of Vegetable and Forage Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.

¹ In 1926 mildew appeared earlier in the season and was decidedly more destructive, reducing the yield for Imperial Valley from an average of 160 crates per acre to an average of 110 crates.