Boron Deficiency in Affected Areas of the State Readily

It may seem odd at first blush that a trace element such as boron, which is present in all things living, could be such a serious problem. This is because boron is a necessity for many plant processes, including chlorophyll formation, protein synthesis, and cell wall synthesis. However, boron deficiency can cause significant damage to crops, particularly in areas with high drainage, heavy nitrogen fertilizer use, and poor soil drainage. It may be aggravated by poor soil drainage and particularly by heavy liming.

Pear and Olive Areas Most Affected

Boron deficiency has been seen in many agricultural crops, but the most affected areas in California seem to be in the two counties of Butte and Placer, which are underlain by granitic rocks. The deficiency in California is more likely to be encountered in the upland areas than in the valleys. It is associated with orchards that have been watered with relatively pure water, which has leached boron from the soil. The deficiency results in a dark-brown or black discoloration of the leaf margins, and the fruit may be small, misshapen, and unmarketable.

Diagnosis of Deficiency

The diagnosis of boron deficiency can be made by examining the leaves and fruit of affected trees. The symptoms include leaf margins that become dark brown or black, and the fruit may be small, misshapen, and unmarketable. The deficiency can be corrected by application of borax to the soil or by spraying the trees with a solution of borax. The amount of borax needed will depend on the specific situation and the type of crop being grown.

Pear and Olive Areas Most Affected

The symptoms of olive and pear are most apparent in the center surrounded by a lighter yellow circular area. Preliminary Test is Simple

Tests conducted in 1941 and 1942 in Butte County demonstrated that several hundred acres of olives in that county might profit by additions of one or two pound applications of borax per tree. Increase in yield of olives obtained in some cases. A similar olive growing area near Ukiah showed an increase in yield of 60 per cent.

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The symptoms of olive and pear are similar in several respects. Yield is reduced, branches die back, much of the fruit drops prematurely—the olive early, and the pear late. Affected fruits which remain on the tree develop characteristic pits which are more numerous at the blossom end. At times some caution is needed in distinguishing these pits from those caused by insect stings.

The olive tree takes on a healthy appearance at the ends of surviving branches. The tip of olive leaves turn first light green, later bright yellow or orange. Severely affected pear fruits may crack but the most distinctive symptom is the pit. If it is cut is made just beneath the skin at the base of the pit, there is seen a dark-brown core in the center surrounded by a light yellow circular area.

Preliminary Test is Simple

Diagnosis should not be considered final until a few trees or branches have been cured. A simple way to make preliminary tests is to bore holes into branches two or more inches above the base of the pit. The holes are then plugged with wooden plugs of the same size. If movement is seen, the next problem is to decide what method of control to use for the rest of the orchard.

Pear and Olive Areas Most Affected

The probable reason for the difference in the upper limit at which borax may be toxic can be seen in the center surrounded by a light yellow circular area. The lower limit at which borax may be toxic can be found on healthy trees outside the affected areas in California seem to be in the two counties.

Pear and Olive Areas Most Affected

January, 1947 CALIFORNIA AGRICULTURE

The above graph of reactors (diseased cattle) and abortions in a dairy herd during the past eleven years, illustrates the beneficial results to be expected from the use of BRUCELLOSIS STEAK vaccine. In 1935 the vaccine was used on all cattle regardless of age. During the following two years, only the calves over four months of age were vaccinated. The incidence of two reactors and five abortions in 1946 is attributed to the purchase of some non-registered stock.

Call vaccination against brucellosis is recommended for all dairy herds under present conditions in California, but adult cattle vaccination only in herds known to be free of the disease.

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