

It should be pointed out that, although drenching with cobalt has been tried experimentally, it is not a practical method of control of bush sickness, as the labour involved is irksome and impossible when numbers of sheep have to be kept in health. The training of sheep and cattle to take limonite licks of high cobalt content is, as yet, the only practical means of controlling the mortality.

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BIENNIAL CROPPING OF APPLES.

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In the fruit industry to-day it is widely recognized that a high level in production is desirable. Furthermore, it is also realized that fluctuations in crop totals from year to year have a decided detrimental effect upon the stability of markets, and finally upon the grower's net return. In consequence it is the endeavour of most orchardists to secure consistent rather than spasmodic crops.

Biennial cropping, by which is meant the tendency of a fruit-tree to bear a heavy crop every alternate year and light crops in the intervening years, is probably the greatest factor against securing consistent crops.

Many varieties of apples, principally those which are spur bearers, are affected by biennial cropping. This habit may first be brought about by any factor, natural or otherwise, which causes an exceptionally heavy crop in any year. Once the natural balance has become upset the cycle of biennial cropping quickly becomes established, and careful treatment is required to correct the trouble and again bring about average annual crops.

To understand corrective treatment better a grasp of the causes underlying the cycle of biennial crops is desirable.

When the tree carries an exceptionally heavy crop, one which is beyond its normal capacity, the phenomenal demand made by the growing fruit seriously depletes the elaborated sap-supply, and results in the semi-starvation of the developing fruit-buds. Consequent upon this semi-starvation, the majority of the fruit-buds remain undeveloped and fail to produce fruit the following season.

During the season of the light crop the surplus of elaborated sap produces excessive bud-development, with a consequent heavy crop the following season, and so the cycle continues.

The apparent limiting factor is that of elaborated sap. This may be caused by a lack of an adequate and available food-supply to the roots, or by insufficient leafage to elaborate the available sap, or by both of these. The spur-bearing varieties, apparently because of their sparse leafage, are more prone to be thrown out of balance by a heavy crop.

In a previous article on this subject entitled "Biennial Bearing in Apple-trees" (this *Journal*, Vol. 44, No. 17, pp. 38-41), the writer discussed methods of overcoming the biennial-cropping habit, and the following