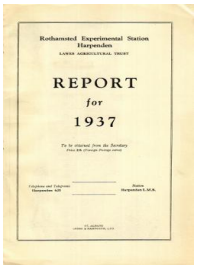
ROTHAMSTED RESEARCH

Report for 1937

Full Table of Content



Apicultural Problems

Rothamsted Research

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LV. M. A. WATSON. "*Field Experiments on the Control of Aphis-transmitted Virus Diseases of* Hyoscyamus Niger." Annals of Applied Biology, 1937, Vol. XXIV, pp. 557-573.

Aphis-infestation of the first year's growth of *Hyoscyamus* (grown as a biennial crop) was reduced by spraying with nicotine and soft soap for the first eight or nine weeks. The greatest effect was obtained by spraying at weekly intervals. The percentage of infection was lower on the sprayed than on the unsprayed plots. The first cropping in the first year showed no effect on yield as the result of the treatment; but in the second year a 30 per cent. increase of yield was obtained.

APICULTURAL PROBLEMS

(Sections for Bee Investigations and Biochemistry, and Bacteriology Department)

LVI. H. L. A. TARR. "*Studies on European Foul Brood of Bees. III. Further Experiments on the Production of the Disease.*" Annals of Applied Biology, 1937, Vol. XXIV, pp. 614-626.

Evidence is submitted which supports the theory that European Foul Brood is a single disease caused by *Bacillus pluton* White. The course of the disease can be modified by introducing cultures of certain secondary invading bacteria into colonies of bees infected with *B. pluton*. A certain "mass inoculum" of *B. pluton* organisms is required to induce the disease in healthy colonies. The causal organism is present in a virulent form in the rectal ampullae of young bees in affected colonies; but does not appear to exist elsewhere in the bee, or to multiply in its intestinal tract. It appears as if *B. pluton* is a strict parasite which will only multiply in the intestines of young larvae.

LVII. H. L. A. TARR. "*Studies on American Foul Brood of Bees. I. The Relative Pathogenicity of Vegetative Cells and Endospores of* Bacillus Larvae *for the Brood of the Bee.*" Annals of Applied Biology, 1937, Vol. XXIV, pp. 377-384.

Vegetative cells of *Bacillus larvae* have not produced American Foul Brood in healthy nuclei of bees even when a dose almost three thousand times greater than an inoculum of spores of the organism capable of causing the disease has been sprayed over the developing brood. A very much smaller inoculum of spores of *Bacillus larvae* is effective in producing American Foul Brood when the developing larvae of healthy nuclei are sprayed directly with them, than when the spores are fed in syrup to the bees.

LVIII. H. L. A. TARR. "*Addled Brood of Bees.*" Annals of Applied Biology, 1937, Vol. XXIV, pp. 369-376.

It is shown that "Addled Brood" of bees is not of an infectious nature but is produced by a defective queen and can be cured by re-queening.

LIX. C. R. MARSHALL and A. G. NORMAN. "*The Analysis of Mixtures of Glucose and Fructose with Special Reference to Honey.*" The Analyst, 1938, Vol. LXIII, pp. 315-323.

A procedure for the direct determination of glucose and fructose in mixtures is described, involving hypoiodite oxidation for glucose followed by a micro-copper reduction method for fructose. The behaviour of these sugars in a mixture is not precisely that of the sum of the individual components taken separately. No constant correction can be applied for fructose oxidised by the hypoiodite. From the analysis of known mixtures equations have been derived for amounts of glucose and fructose within the limits of 0.08-0.04 g. of each. The presence of small amounts of sucrose is without effect. Examples of the application of this method to some typical honeys are given.

LX. HUGH NICOL. "*A Test of Gas Tightness of Honey Jars.*" The Bee World, 1937, Vol. XVIII, pp. 103-105.

Some standard metal-capped glass containers for honey were tested by putting the closed containers in an atmosphere containing ammonia and watching for change of colour of a faintly acid indicator solution inside the honey-jars. No jar was found to be gas-tight. Hence, when fermentation occurs in storage the cause may possibly be due to absorption of atmospheric moisture through imperfect closures.

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