

potassic manures in previous years. The results show clearly the beneficial effect from the use of large amounts of potassic fertilizers. Lime appears to have had some effect in reducing "hard-core," but sulphur had no effect.

The highly beneficial effect of potassic manures in reducing "hard-core" was confirmed in at least two other experiments conducted in the grounds of the Institute. It is interesting to note that the best result was obtained when the standard fertilizer was supplemented with extra nitrogen in addition to extra potash.

A summary of the results of investigations on the incidence of "hard-core" shows :

- (1) Nelson clay loam, used extensively for tomato culture, is more prone to high incidence of "hard-core" than many other Nelson soils.
- (2) Great reduction in the amount of "hard-core" results from the use of chloropierin and D-D on this soil.
- (3) Great reduction in "hard-core" is associated with heavy potassic manuring of tomatoes.
- (4) Lime treatment of Nelson clay loam appears to be beneficial, but sulphur is ineffective in reducing "hard-core."
- (5) Organic fertilizers such as sheep manure and cocoa-bean husks are beneficial in reducing "hard-core."
- (6) The use of extra nitrogen with heavy potassic manuring on Nelson clay loam gives greatest reduction in "hard-core."

(See also Plant Diseases Division, page 49, and Canterbury Agricultural College, page 81, reports on tomato diseases.)

UNIVERSITY COLLEGES

Grants were made by the Department to Canterbury and Massey Agricultural Colleges and to Canterbury University College.

CANTERBURY AGRICULTURAL COLLEGE

ANIMAL HUSBANDRY

Professor I. E. COOP

Pig-breeding.—The addition of the Johnston Large White strain to the existing "Lincoln Red" pigs reached the second generation. The original difficulty of extension of black spots again appeared but is expected to become restricted in the next generation. Pigs from the new strain continued to fare well in "bacon carcass" competitions.

Sheep-dipping Trials.—The trials have been continued, but the projected tests against shoulder blow-fly strike have lapsed because no strike occurred in Canterbury during the season.

Sheep-breeding: Progeny Testing.—In progeny tests on Corriedale sheep, the first was completed, the second was in progress, and the third commenced. Progeny testing in Romney and Corriedale stud flocks was continued. Data for the study of factors, other than inheritance, affecting fleece-production were completed, and studies of the inheritance of breed type, prolificacy, and growth rate were continued. The growth and development study of Corriedale sheep was completed, and the breeding performance of the two groups (high plane and low plane of nutrition) was studied.

Ruminant Digestion Studies.—The toxicity of cyanogenetic glucosides to sheep was measured, and a paper on the completed work was prepared. The study of the effect of starvation and of the recovery from starvation as measured by microfloral activity