

CUCUMBERS, MELONS, ETC.

Cucumber mosaic has been prevalent during the past season on cucumbers, melons, marrows, &c., especially in the Gisborne district. In experiments the virus has been transmitted artificially to all these crops and to tobacco and blue lupin, producing in the latter symptoms closely resembling those of "sore-shin."

LAWN-GRASS DISEASES.

Experiments on the control of "brown-patch" of lawns have been completed and the results published.

MOULD FUNGI IN INDUSTRY.

The study of mould fungi responsible for deterioration and spoilage of food-stuffs, textiles, &c., has been continued, and much information acquired on the conditions which govern their occurrence and on means for checking their appearance. Experiments in conjunction with the Public Works Department have demonstrated a practicable method for the prevention of mould damage to tent-calico which should result in very substantial savings to this and other tent-using departments.

Free use of the expert advice available has been made by various industrial concerns faced with troubles due to moulds.

MISCELLANEOUS.

The supply of pure cultures of the lucerne nodule organism is an important and profitable branch of the Section's duties. During the present season sufficient cultures have been supplied to the farmers of New Zealand to inoculate 122,000 pounds of lucerne seed. The use of similar inoculum for other leguminous plants, notably red and white clovers, lupins, soya beans, peas, &c., has been the subject of field trials, in collaboration with the Fields Division, with conflicting results. Further investigations are under way to determine the reason why the favourable results obtained with lucerne, and at times with the other crops mentioned, should in many cases fail to appear.

Preliminary work on the technique of biological analysis of soils is in progress with a view to evolving a standardized method for use in collaboration with the physical and chemical sides of soil survey projects.

Large collections and artificial cultures of the commoner fungi occurring on grasses and cereals have been made for use by the Veterinary Division in animal toxicity tests.

More than two hundred specimens of diseased plants have been received at the Laboratory during the year and the senders advised as to their nature and methods for control.

The outstanding piece of work accomplished by members of the section during the year has been the publication by Dr. G. H. Cunningham of the book "Plant Protection by the aid of Therapeutants." This work covers, in condensed form, the whole of the world's knowledge on the subject, and represents a fund of accurate information of incalculable value to users, traders, and manufacturers of the therapeutants used in all forms of plant protection.

SEED-TESTING SECTION.

N. R. Foy, Seed Analyst.

TESTING SERVICES.

Purity and Germination Testing.—For the year ending December, 1935, 15,309 seed samples were received for testing, this number representing an increase of three hundred samples on the total for the previous year. As for former years the bulk of this work is done for the seed trade, 12,228 samples representing commercial lines of seed. The general standard of quality shown by the tests is generally very good and judging from the demand for scrupulously accurate and consistent results, a very complete reliance on purity and germination by the New Zealand seed trade is evident.

Various departmental activities, mainly investigational, accounted for 3,081 samples. Altogether, the purity and germination work necessitated a total of 23,960 triplicate and duplicate tests.

Ultra-violet Light Examination of Perennial Rye-grass.—A total of 1,525 samples were received for this examination, and of this number 773 were made on samples of certified seed for the Department's own information in respect of the production areas; 142 for other official activities; 319 for the purposes of the "Commercial" class of certified rye-grass; and 291 on behalf of the seed trade for determination as to classification as perennial and as a preliminary to possible entry as commercial certified.

Certified Seed—Purity Inspection.—A total of 2,512 machine-dressed samples of certified seed were examined for analytical purity and of this number, 45 or 1.8 per cent. were rejected as having failed to conform to the required purity standards for machine-dressed seed.

Certified Commercial Perennial Rye-grass.—Officially drawn samples representing 290 lines or 76,156 bushels of seed were submitted for examination by ultra-violet light to determine their eligibility for certification, and 196 lines representing 51,113 bushels were accepted as having qualified for certification.

Examination of Australian Wheat and Barley.—A total of 88 samples of imported wheat and barley drawn by the Department's Port Inspectors were examined for the presence of skeleton-weed, *Chondrilla juncea*. All samples were found to be completely free of the weed.

Examination of Samples for Farmers.—Approximately two hundred samples representing purchases and stored seed were received from farmers, either prior to sowing, or more frequently subsequently to crop failure. All such samples are reported upon completely with an estimate as to the market valuation.

State Seed-purchasing.—For the year ending March, 1936, purchases of seed to the value of £21,745 were authorized. The selection of the approved lines is based on unit value, and it is estimated that the present system of purchasing has resulted in very considerable savings. The State's business is keenly sought, and very competitive quotations are received. Some hundreds of individual lines of grass and clover, and root-crop seed have been considered during the year, 1,656 lines representing 330 tons of seed being selected.

RESEARCH.

Germination of Algerian Oats.—The germination of newly-harvested Algerian oats was made the subject of further extensive investigation. The causes of the frequent failure of autumn-sown oat crops where new season's seed is used were established and means of avoiding these losses have been devised. As an outcome of this work samples of new season's oats are now tested for germination under two conditions of temperature. At 5 deg. to 10 deg. C. the percentage of live seed is determined, while at 20 deg. to 30 deg. C. the stage reached in after-ripening is gauged and the probable field germination is estimated, for which service the appreciation of the seed trade has been expressed.