

GRASSLANDS DIVISION

Director: Mr. E. BRUCE LEVY

STAFF

Recruitment of both professional and technical officers has been below requirements.

Clerical services have been attended to satisfactorily despite staff shortage, but additional assistance is needed to cope with the increased work of both this Division and the Plant Chemistry Laboratory.

PLANT BREEDING

In addition to the synthesis of new strains, further improvement in various characteristics of strains already released into commerce is being continued. The pedigree strains so far produced are being tested at Palmerston North and at the Lincoln and Gore Sub-stations in comparison with the best New Zealand ecotypes.

Recent developments in the plant-improvement programme are:—

Perennial Rye-grass. Compared with the best North Island and South Island ecotypes, the pedigree strain is superior in persistency, sustained leaf-production, and resistance to leaf rust. It is, however, very susceptible to blind-seed disease, and attempts are being made to breed a strain resistant to this disease. Resistance has been shown to be inherited, but the resistant plants located are inferior agronomically to plants of the pedigree strain. By repeated back-crossing of resistant plants to susceptible plants of pedigree origin, further resistant plants have now been obtained which are similar agronomically to the pedigree strain. These plants are now being further tested for resistance, and will be used in attempting to breed a true-breeding resistant strain.

Western Wolths Rye-grass.—A small supply of seed of a pedigree strain has been produced and is being used for trials. The main use of Western Wolths rye-grass is for winter feed, and to be of value it would need to surpass Italian rye-grass in the early period after autumn sowing and maintain at least as high production through to the spring. In a pasture trial at Palmerston North the pedigree strain of Western Wolths has produced, in the first four months after sowing, 25 per cent. more dry matter per acre than Italian rye-grass, the figures being 1,856 lb. and 1,488 lb. respectively. This season the Agronomy Division is carrying out trials at Lincoln and Gore with this strain of Western Wolths in comparison with Italian rye-grass and various green-feed cereals.

Cocksfoot.—A leafy vigorous strain of cocksfoot has now been produced, and this year will be released to the Department of Agriculture for further trial, increase, and distribution under the seed certification system. In pasture trials at Palmerston North carried out over a three-year period this strain produced 20,350 lb. dry matter of cocksfoot per acre, compared with 17,184 lb. from the standard strain. At Lincoln during a two-year period the yields have been 6,720 lb. and 4,722 lb. for the pedigree and standard strain respectively. In seed-production trials carried out last season at Palmerston North, Lincoln, and Gore, the pedigree and standard strains were similar in seed yield.

STRAIN ECOLOGY

Measurement trials at Palmerston North, Lincoln, and Gore continue to show superiority of the Station's nucleus strains over selections produced overseas. In a three-year trial the Division's nucleus white clover has yielded a total of 24,000 lb. of dry matter, as against 19,000 lb. from the best overseas selection; and in the rye-grasses the New Zealand nucleus selection has produced 20,400 lb. dry matter, compared with the best overseas line at 14,400 lb.

Nucleus-seed production.—Sufficient nucleus seed of the more important species is being produced annually to supply stocks for admission into the higher grades of certified seed of perennial rye-grass, Italian rye-grass, short-rotation rye-grass, white clover, cowgrass, and Montgomery red clover. Nucleus timothy seed has been released this year, and a bred strain of Cocksfoot has been increased for release.