

Lotus Major.—A mass selection of leafy plants has been seeded and further increase grown to return 185 lb. of dressed seed. Probably this will be offered for distribution as certified seed.

Alsike Clover, *Suckling Clover*, *Lotus corniculatus*, *Strawberry Clover*, *Crimson Clover*, *Cluster Clover*, *Hop Clover*, *Reverse Clover*.—Samples of each of the above have been received and are under trial at this station.

(2) PLANT BREEDING.

Perennial Rye-grass.

Approximately 13,000 single plants from local and overseas sources are at present being studied, with a view to selection for plant-breeding work. In addition, some 7,230 plants from controlled pollinations are being studied. In the 1937–38 season 124 crosses were made. From these crosses and selfings of the present plants progenies totalling 10,000 plants are to be planted out this autumn.

High-producing Short-rotation Type.—Seed has been sown from two lines in which are present types that may prove suitable for the building-up of a high-producing short-rotation type of rye-grass. Approximately 5,000 single plants are to be planted out.

Low Germination in Perennial Rye-grass.—To obtain information on the inheritance of low germination and the possibility of obtaining a line of perennial rye-grass resistant to the specific fungus, a number of crosses have been made between perennial and Italian rye-grass, and 400 hybrid seeds have been sown. The resulting plants will be planted out as single plants and used for future genetical work. This material will also be used to explore the possibility of obtaining a high-producing short-rotation type of rye-grass.

Italian Rye-grass.

From 8,050 plants obtained by controlled pollination in the 1936–37 season, 305 plants were selected and 228 crosses made. Approximately 16,000 plants from these crosses and selfings are to be planted out.

Sward and Row Tests of Different Types.—Seed has been obtained from two types of Italian rye-grass by isolating together a number of plants of similar type. This seed is to be used for row and plot tests of these types.

White Clover.

A total of 15,120 plants from controlled pollinations are at present planted out. One hundred plants were selected this season and 100 crosses made. The majority of the plants crossed were of Type 2, the object of the work being to produce a type for trial purposes lower in production than, but as persistent as, the pedigree Type 1 line already on the market. In this connection work is also being carried out with hybrids of Type 1 $\times$ plants of the low-producing but persistent Kent type. F_1 plants of type 1 $\times$ Kent have been intra-family crossed, and further F_2 material has also been obtained by crossing Type 1 plants by Kentish. From these crosses 9,000 single plants are to be planted out in the spring.

Type 2 Selection.—A mass selection has been produced by isolating together, under controlled pollination conditions, eleven plants of Type 2. This will be increased and the seed used for trial purposes.

Montgomery Red Clover.

From progenies of former crosses 115 plants were selected this season and 149 crosses made. The progenies from these crosses will be planted out with the progenies obtained next season from crosses of plants to be selected from “original” plant material now being studied in the single-plant plots.

Glasshouse Selection.—Seed has been obtained this season by isolating together eighteen plants selected from the best families obtained from previous crosses. This seed will be increased for pedigree-seed production.

Plot Tests of Various Types.—A supply of seed of six separate types has been obtained by isolating together in cages plants conforming to these types. This seed will be used for plot tests to furnish data on the behaviour of these types under sward conditions.

Early Flowering Red Clover.

Observations are being recorded on a block of 3,720 plants from lines of earlier flowering types than Montgomery red clover. Plants will be selected from this block next spring and incorporated in the breeding programme, with the object of ultimately producing a leafy early flowering pedigree line.

Lotus Major.

Periodic notes are being taken on some 350 single plants obtained by crossing and selfing selected plants. This season a mass selection was made by isolating together eight of the best plants from tiller rows. This seed will be kept for increase when required.

(3) PASTURE SURVEY.

The pasture survey of Hawke's Bay has occupied the greater portion of the time in this work, the survey being carried out fairly continuously during the year. The following survey districts have been completed: Matapiro, Heretaunga, Clive, Maraekakaho, Te Mata, Kidnapper, Ruataniwha, Waipukurau, Oero, Waimaramara, Motuatairaia, Pourerere, Blackhead, Tuatane, Weber.

The following survey districts have been partially completed: Pohui, Maungaharuru, Patoka, Puketapu, Wakarara, Takapau, Porangahau, and Ngaruroro.