

LUCERNE.

Samples of seed that were collected by the late Mr. C. W. Purdie, and others obtained from various sources, have formed the material for study during the past summer. The seed was sown in the nursery and from twenty to one hundred plants of each line transplanted 30 in. apart each way for single-plant studies. There are under observation about 3,600 plants, one-half of which have originated from old stands in Marlborough.

The preliminary work this past summer, and in the coming winter and spring, is to observe type, leaf-density, flowering, recovery after cutting, and winter and early spring growth. Already some 360 plants have been located which are showing promise, but no doubt the number will be materially reduced during the coming winter and early spring. There are two objectives. Firstly, the production of a high-producing, persistent, and leafy strain for hay-production; secondly, the production of a type having the same features, but adapted to stand grazing. In general, the Marlborough types are showing no wide variations; but varieties such as Ladak show every possible extreme, and many prostrate, dense-leaved types are to be found. So also this variation is found in strains which have obviously been crossed with *Medicago falcata*.

BARLEY FOR GREEN FEED.

A small preliminary trial was conducted this past season to determine the value of malting-barleys as against the Cape and Skinless varieties for green feed. The trial was not sown in the spring, but it indicated that Cape and Skinless give a far greater bulk in the first two feedings, and that the malting-barleys in general give feed over a more prolonged period and stand cutting more readily. A more extensive trial in which actual weights will be taken has now been sown, and this should give more reliable data.

Recognition is here accorded to the valuable services rendered by Messrs. R. Thomson and J. H. Claridge, Assistants in Agronomy. The former is specializing in seed-production, and the latter is responsible for the bulk of the work connected with the organization of seed-certification.

AGROSTOLOGY SECTION.

E. BRUCE LEVY, Agrostologist.

The work of the past year has definitely opened up a new avenue for advancement in grassland-production. A milestone on the road of progress has been set up that bids to mark an epoch as important if not more so than that which marks the introduction of top-dressing. The concept of strain and pedigree in herbage plants has given new stimulus and afforded greater vision into the possibilities of permanent pasture. Good strains of herbage plants will cheapen as well as increase production, and will tend to level out and spread better the total yearly grass crop.

As a result of our trials, for New Zealand conditions at least, the best of world types are to be found in New Zealand itself. Supplies of seed of specially valuable strains exist at the moment, and these can be used as a nucleus for the production of our total Dominion requirement, and will serve better than any other strain yet tested as a basis for pedigree-strain building. I refer particularly to the permanent strains of rye-grass, particularly exemplified by the Hawke's Bay type, New Zealand Wild White clover, New Zealand cocksfoot, and New Zealand brown-top (for lawns).

The Hawke's Bay type of rye-grass is the only rye-grass yet tested that conforms definitely to the certification requirements as being fit for mother seed. There is only one white clover that the Department should certify to at the earliest possible date, and that is the New Zealand Wild White clover. The cocksfoot position represents a clear demarcation between New Zealand cocksfoot and Danish. There is no significant difference between Akaroa, Plains, Southland, or any other New Zealand type, and the best selections from plant-breeding stations overseas are essentially of the New Zealand type. With regard to red clover for temporary and short-rotation pasture, nothing has been found to equal the New Zealand Broad Red type. There is in the Montgomery Red clover type distinct hope of working up supplies of a truly permanent red clover, and there is a possibility of our growing Montgomery Red clover seed for export to Great Britain. In New Zealand brown-top the type in general is good and free of red-top. There are from our single-plant studies great possibilities of working up elite strains for playing-greens and in greatly improving the type for hill-country sowings in New Zealand itself.

The year's work at the Plant Research Station has been almost entirely given over to the study of the foregoing species, together with trials of lines of these that enter as a routine in certification. I would again like to affirm my opinion that the application of certification to the sale of seeds of herbage plants is a boon from the research point of view, and it makes the locating and isolating of strain a live potential factor that gives security of continuity for work that otherwise must go for naught in the ordinary channels of trade.

Strain-isolation and pedigree-strain building and the certification of the resultant crops of these must of necessity revolutionize the potentialities of grassland farming.

PERENNIAL RYE-GRASS.

(a) *Certification Trials*.—Approximately one thousand lots of rye-grass 1930 crops were sown out in connection with certification, and duly reported on to the Agronomist in charge of this project. These represented the major portion of the Hawke's Bay and Poverty Bay crop, and certain lines from the South Island sent in with a view to entering certification. Of all lines tested from overseas, none were up to certification standard. The 1931 crop has now in the main been received and the majority of these have been sown out. Approximately one thousand lines of the 1931 crop are under trial.

A difficulty arose in regard to ground for the sowing of these, and as no further ground was available two-thirds of each of last year's plots was ploughed up and prepared as well as was possible. This left one-third of each plot still down of last season's crop, and it is hoped from these to get some information regarding any variations in the type of the certified crops themselves. I consider this testing-on for a few years of all lines certified to as necessary, as affording valuable data upon which to harden up on the standard for certification. Differences at the moment are apparent, and it is hoped to use certain of the better lines for breeding of improved strains as early as possible.