

of the weaknesses or disadvantages of cocksfoot, some of which are of general application, while others are connected with environmental conditions.

#### DISADVANTAGES OF COCKSFOOT.

Broadly expressed, cocksfoot possesses two grave disadvantages: these are its tussocky growth-form and its almost complete stoppage of growth during the winter. Both these characteristics render it unsuitable for sowing down as a pure pasture, and, in fact, nearly all its defects can be primarily traced to one or other of these characters. Apart from these real disadvantages there are others more or less erroneously attributed to this grass that have hindered it from attaining an even more important position than it at present occupies in New Zealand grassland. One of the main defects commonly attributed to cocksfoot is that it is extremely slow in reaching maturity, and that the herbage produced is insignificant until after from two or more years from sowing. It is therefore considered quite unsuitable for short-rotation pastures such as characterize the grassland of the cropping-areas of the South Island. There is a certain amount of truth in this contention, but in many cases it is based on irrational sowing and management rather than on any natural slow development of the grass.

So far as growth-form is concerned cocksfoot belongs to the tussock-forming grasses as distinguished from the mat-formers. Under grazed conditions, however, the tussock form is more or less avoided by the plants being kept eaten down fairly close to the ground. Again, the tussock form can be largely stopped provided a very close growth of plants is secured. In the first case, where the tussocky nature of the grass is inhibited by close grazing, great damage is often done by many of the shoots being pulled up, especially in the winter. It is commonly said that cocksfoot is very deep-rooted, but this does not alter the fact that portions of each heavily grazed-down tuft can be more readily pulled up than is the case with almost any other grass. Where the tussock-growth form is avoided by the production of excessive numbers of plants, or, in other words, by very heavy seeding, the bulk of herbage produced is very seriously affected. This is especially true on soils of moderate or low fertility and on dry soils generally.

With regard to the poor winter growth of cocksfoot, this is characteristic of it in all parts of New Zealand; but there is, of course, a far more extended dormant period in the South Island than there is in the North. It is probably due to its poor winter and early spring growth that cocksfoot is unpopular in many dairying districts in the North Island where very early calving is practised. Its excellent growth, however, during the summer, when the growth from rye-grass is low, makes cocksfoot quite one of the best of grasses for milk-production, especially on soils that suffer from any extended summer drought. This fact is now being generally recognized, and in consequence cocksfoot is often the main grass used in dairying-pasture mixtures.

#### EMPLOYMENT OF COCKSFOOT.

Cocksfoot can be said to be used in all long-rotation and permanent pasture mixtures except on those soils—such as the richer portions of the Heretaunga Plains—where perennial rye-grass is truly permanent,