

## PLANT INTRODUCTION

Further grass and legume seeds have been received for trial on the tussock-grassland experimental areas. A number of the species already under trial have shown promise, and the best of these will be further propagated in the coming season. Seed of local indigenous and naturalized species has been collected for spring trials, including several strains of blue-grass (*Agropyron scabrans*). Several varieties of broom-corn have grown well and will shortly be ready for harvesting. Species of roses selected for high vitamin content in hips have grown well but have not yet flowered.

## FIBRE PLANTS

(a) *Phormium*.—Large samples of the varieties 56 and 301 have been sent to a manufacturing firm for trial. The variety 56 proved highly satisfactory for cordage and binder-twine, while 301 was not so outstanding. A report of the Plantation Manager, Moutoa, and the phormium experimentalist indicate that of the other varieties, 313 and 301 are likely to be useful cordage sorts, and SS and 37 for general purposes. Research on "yellow leaf" is being continued and experimental plots laid down.

(b) *Linen Flax*.—The experimentalist, in collaboration with the Soil Survey Division, has reported on the last season's work. An analysis of the fibres of crops grown in the Geraldine district was made, with a view to ascertaining any correlations between soil types and fibre yield and quality. Unfortunately, the 1944 season was abnormal and results cannot be safely compared with the previous one. The points investigated were: (1) bundle shape; (2) evenness of fibres within the bundles; (3) fibre shape, lamination, wall thickness; (4) fibre size, number of fibres per unit area of stem; (5) percentage of poor fibres. From the assessment of these points a quality index was obtained. Other factors were studied but not included in the index. A tentative grouping resulted as follows—group 1 (good linen-flax soils): Orari silt loam (quality index, 12); Taiko silt loam, leached phase (quality index, 14). Group 2 (medium linen-flax soils): Waitohi silt loam (quality index, 17). Group 3 (soils unsuitable for linen flax): Orari silt loam, sandy phase (only one crop); Orari silt loam, moderately shallow phase (quality index, 17), Waitohi silt loam, poorly drained phase (quality index, 20). A detailed report is being prepared for publication.

## SEAWEED UTILIZATION

(a) *Agar*.—The industry is now well established, and the Botany Division is concerned with the raw material, and the maintenance of an adequate supply of suitable seaweeds without permanent depletion of the beds where they grow. Lists received from the Internal Marketing Division were analysed and show that nearly 95 tons of dry seaweed was purchased in 1944, as against 70 tons in 1943. As before, most weed was received in the autumn months. This year more than half the total came from North Auckland, about one-quarter from Bay of Plenty (this had previously been the most important source of supply), and about one-sixth from the East Cape district. In each small locality the yield seems to show a particularly high peak in the second autumn, followed by smaller quantities in the third. This indicates that the beds need time to recover, and that it would be unwise to encourage closer picking by raising the price, lowering the standard of cleaning required, or otherwise. Inspection of typical beds in all the principal areas confirmed this view.

Rate of consumption of weed at the factory is now approaching rate of collection, and the output of agar is showing a corresponding increase. The manufacturing firm is constantly improving its plant and its technique, and greater yields should be won as experience increases, provided the weed received is reasonably clean.

A notably high gel strength is apparently characteristic of *Pterocladia* agar. Its practical significance is that 1 part by weight of New Zealand agar goes as far as 1.6 parts, at least, of Japanese, and in some commercial uses can replace 4 parts of Japanese.

The New Zealand product is of very good colour and is being used for most, if not all, of the purposes for which imported agar was previously needed. A considerable quantity has already been exported.

A paper on New Zealand seaweed for agar-manufacture was published in the *Journal of Science and Technology*, and there is in the press an account of the New Zealand representatives of the genus *Pterocladia*, which includes our important agar seaweeds.

(b) *General Survey of Seaweed Resources*.—New stretches of coast were examined in North Auckland (West Coast), Bay of Plenty, East Cape district, Hawke's Bay, Cook Strait, North Otago, South Southland, and Stewart Island. In the North this work was fitted in with agar business, and in the South was incidental to a review of the carrageen situation, with an eye especially to post-war prospects for this crop.

The algal herbarium has been increased by some two thousand sheets, and the Dominion Museum, Auckland Museum, and Canterbury College collections have been extensively consulted. Exchange with overseas workers has brought useful help with specimens and literature.

Consignments of seaweeds from island territories have been identified and tests made for possible economic uses. Many local inquiries have been dealt with.

## WEED INVESTIGATIONS

(a) *Nassella Tussock*.—Grassing experiments on unploughable hill country in North Canterbury were laid down, and a further series with additional species is arranged for. Further field-work on distribution was undertaken. A detailed bulletin covering all phases of the problem has been published.

(b) *Kangaroo-grass*.—Experiments on the possibility of control by means of spring burns were made in co-operation with the Marlborough Sheepowners' Federation.

(c) *Gorse*.—The gorse areas on Banks Peninsula were examined and reported on, and suggestions concerning control made. Work on seed-germination in the field and laboratory was continued, and mapping of the gorse areas about Wellington is proceeding.

(d) *Vacated American Military Camps*.—American camps in the Auckland-Pukekohe area, and the Whenuapai Aerodrome also, were examined. While no further imported weeds had established, it