

COCKSFOOT.

(a) *Type-determination and Certification Trials*.—One hundred and fifteen lots sown last autumn in rows and twenty-seven lots sown broadcast last spring. These have been noted and an interim report as to type submitted to Agronomist. The Danish lines and most European lines from various plant-breeding stations showed marked winter dormancy and much leaf-burn. The New Zealand type is outstanding, and the best selections of research stations in Great Britain are definitely of the New Zealand type. No district in New Zealand appears to produce a superior type to any other, but there is undoubted scope for selection and improvement in any one line from any one district. The presence of rye-grass of a poor type in some Plains lines of cocksfoot reduces the real value per pound of those lines.

(b) *Broadcast Trials*.—Those sown in spring, 1928, have been ploughed up. In these trials cocksfoot stood mowing better than rye-grass but grew best under haying. The New Zealand cocksfoot persisted infinitely better than Danish, and made more late autumn and winter growth. Neither of the two lines from the Welsh Plant Breeding Station, Bc. 1629 and Bc. 1163, proved superior to New Zealand cocksfoot. Possibly in these the foliage was finer-leaved and somewhat denser at the crown, but production was low compared with ordinary New Zealand. A sample of cocksfoot from Lincoln College, C. 23, has been tried out in comparison with New Zealand ordinary and Danish. C. 23 is slightly superior to ordinary New Zealand.

(c) *Elite-strain Work*.—Two acres and a half of cocksfoot ex Aberystwyth Plant Breeding Station (Bc. 1163, Aber.) were sown in the spring at Flock House, Bulls, for seed-production on behalf of Aberystwyth Station. No crop was produced this autumn, but there is a good take and the area looks well. The area has been twice grazed off with sheep.

BROWN-TOP.

Type-determination and Certification Trials.—Two hundred and twenty-nine lines were sown out and reported on in connection with certification as to type and whether these were free of red-top.

Single-plant Study.—Two thousand single plants, representing sixty lines, have been under careful observation and extraordinary varieties in type are shown. Two very distinct types of brown-top are harvested commercially: No. 1, the normal type from the wetter and colder second-class country of Southland, Waipu, and foothills of Canterbury; No. 2, a type from the poorer and drier arable areas of Canterbury particularly. Dr. Allan has this type under study. It is obviously of species rank. For hill-country work this type, No. 2, is of no value, and clearly should not enter certification as genuine brown-top (*Agrostis tenuis*). As a lawn-grass the merits of type No. 2 against genuine brown-top have not been sufficiently studied. The broadcast trials now under lawn conditions should give good information on this point.

Broadcast Trials.—Those sown in 1928 have been ploughed up. Competition of white clover and Yorkshire fog on this country (which is above the fertility scale for brown-top) almost completely wiped the brown-top out in a two and a half years' duration of this trial. Red-top, creeping-bent, Cocos bent, true brown-top, and No. 2 type were included in this trial. Creeping-bent and Cocos bent are one and the same—*Agrostis stolonifera*. Neither formed a good lawn-sward. Red-top went out in twelve months and at no time produced a lawn-sward. Both forms of brown-top produced good lawn-swards, but the true brown-top was the better colour. There is, however, to date insufficient evidence to show that we should exclude the No. 2 type from certification for export purposes, but recommendations in the meantime have gone to the trade to blend Canterbury lines rather than send straight lines, particularly from the drier and arable belt.

The 229 lines now sown out in field 8 are on a poor and drier soil-type. These are being treated as lawns and are being differentially manured as for lawns, and the weed and clover competition is being destroyed by spraying with arsenic pentoxide. The trial includes red-top, creeping-bent, true brown-top, and No. 2 type. To my mind determination of good lawn forms is important for the building-up of a sound export in fine lawn-seeds. The value of a good herbage-type of true brown-top for the wetter hill country throughout New Zealand is considerable. Steps should be taken to prevent the No. 2 type from being sold as brown-top for regrassing of hill country.

YORKSHIRE FOG.

One thousand single plants and ninety-seven lines collected from all over New Zealand are under trial. There is sufficient evidence to warrant going further into Yorkshire fog from a herbage-type point of view. A good deal of preliminary testing-out of growth-form, freedom from wooliness, and dead bottom, palatability, rust-resistance, persistency, &c., is necessary.

TIMOTHY.

Twenty-six lines under trial sown autumn, 1930, from Germany, Scotland, Sweden, Norway, Russia, United States of America, Aberystwyth, and New Zealand. There is some fairly marked variation, but the grass as a whole has given very disappointing results in our trial grounds. For New Zealand conditions, excepting perhaps in country too wet for rye-grass, I am of the opinion that the value of Timothy is overrated.

Elite-strain Work.—Three-quarters of an acre for seed-production ex Aberystwyth pedigree-stock seed has been sown at Flock House, Bulls, for seed-production on behalf of Aberystwyth. Good establishment was secured, but here, again, compared with cocksfoot alongside, Timothy is making a poor showing. The broadcast trials sown 1928 have been ploughed up.

FINE-LEAVED FESCUE.

Sixteen lines under trial sown autumn, 1930, from Germany, Aberystwyth, Scotland, Norway, Austria, and Southland: The German forms are all fairly coarse-leaved of *Festuca duriuscula* type (hard fescue). Aberystwyth line is a fine leaved *Festuca rubra* (red fescue) type, and has in this trial, and under broadcast trial sown in 1928, proved superior to New Zealand *Festuca rubra* var. *fallax* (Chewings fescue).

Elite-strain Work.—Three-quarters of an acre for seed-production ex Aberystwyth pedigree stock has been sown at Flock House, Bulls, for seed-production. This has established well and made good growth, but no seed was produced this year.

GROWING-ON OF ELITE STRAINS.

It will be noted that any work so far attempted in this has been done at Flock House, Bulls. This was made possible through an offer to donate ground and to provide certain labour by the managing trustee (Mr. T. R. Lees) and through the co-operation of the Principal (Colonel Powles). Our thanks are due to both these gentlemen. A suitable growing-on station equipped with suitable harvesting and threshing machinery is essential to the satisfactory prosecution of elite-strain building.