

PLANT BREEDERS' RIGHTS AND THE ACCEPTABLE CULTIVAR SCHEME — A REVIEW

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INTRODUCTION

The passing of the Plant Varieties Act in 1973 has important implications for New Zealand plant breeders, agronomists and commercial seed firms. In particular, it recognises that a plant breeder may be rewarded for his time and money in producing a new cultivar, thus providing an impetus for the development of private plant breeding. Traditionally, the breeding and release of new cultivars of most crop and pasture species in New Zealand has been the responsibility of D.S.I.R. (MacEwan, 1977). Are we going to see this increasingly taken over by the private sector in the future?

Some countries have had some form of protective law for many years; for example, Holland commenced a scheme about 25 years ago. Today, private breeders produce nearly all the new plant cultivars and Government breeders produce new varieties only if private industry does not pay sufficient attention to the species concerned. Government breeders concentrate almost entirely on basic breeding research eg. on breeding methods, on polyploidy, on research for resistance, collecting genetic resources, and so on. The outcome of this work is turned over to the private sector for incorporation into their programmes.

In England and U.S.A. plant breeding by Government-controlled institutions still retains its importance, but private plant breeding has increased rapidly in recent years with a relative decrease in the output of public breeders. There is no doubt that breeding of new varieties is now a very competitive business in these countries.

Possible Effects in New Zealand:

The record of the D.S.I.R. plant breeders in New Zealand is very good indeed and their work has made rapid advances in the last 20 years. For example, cultivars have recently been released for specific regions eg. Takahe wheat for Southland, Nui ryegrass for dry districts — or specific new processing requirements eg. vining peas, processed potatoes. Similar advances have also occurred in North America, Western Europe and Australia with the consequence that there is now strong and increasing competition for our exports of herbage seeds. In comparison with locally-bred cultivars New Zealand herbage types tend to lack winter hardiness and drought tolerance and are more susceptible to some diseases (Lancashire, 1975). In addition they are used mainly for conservation in Europe whereas they were bred in New Zealand for grazing. On the other hand, most overseas herbage cultivars are inferior to locally-bred types under New Zealand conditions. For

example, Rumball & Armstrong (1974) found that in 2359 seasonal comparisons of ryegrasses, virtually all of them favoured the New Zealand cultivars.

In the next few years I would envisage that private plant breeders will play a complimentary role to D.S.I.R. breeders. The seed market in New Zealand is small compared with that of Western Europe and U.S.A. and seed firms will need good market research before they embark on large scale breeding programmes. At present the most important crop where cultivars are supplied by private breeders is maize. Elsewhere, seed firms are mainly involved in introducing and testing overseas cultivars where there is no local alternative e.g. bacterial wilt resistant Saranac lucerne from U.S.A., or where they are thought to be superior agronomically to locally-bred cultivars e.g. Hassan barley from Holland.

It is difficult to envisage that plant breeding by D.S.I.R. will be rapidly replaced by private sector breeding. Seed firms are likely to make a much greater impact by enlarging their production of overseas plant varieties for re-export. New Zealand has a much more favourable seed-producing climate than Britain or Holland and, being in the Southern Hemisphere, can be used by overseas seed firms to produce a second generation in one year. This offers the brightest prospect for expansion of New Zealand's seed trade (Shillito, 1977).

The Acceptable Crop Cultivar Scheme

Acceptable crop cultivar schemes in Europe (Ritchie, 1977) and in New Zealand (Thaine, 1977) have already been described. New Zealand is adopting a scheme used in Britain and other European countries, which involves 2 — 3 years of official testing of a new cultivar before it is placed on a national list. Britain is fortunate that testing for both National and Recommended Lists is carried out by the N.I.A.B. which is an independent organisation with many years experience. In New Zealand it would seem that this job will be undertaken by the Ministry of Agriculture and Fisheries (Douglas *et al.*, 1977). The alternative approach, as suggested by Yates (1977) is to adopt the American system and allow the private sector, i.e. the breeder and the farmer to assess and declare the product quality. This has its disadvantages. The British system is far more objective than the U.S.A. system and provides rather more control over new varieties.

At present, the organisation and high cost of the testing is a major deterrent to the introduction of the system in New Zealand. It is imperative that trial sites are located in areas which are representative of the

major climatic or farming zones, and that strict rules are drawn up as to the conduct of the trials. In this respect it is important that both D.S.I.R. and private material is introduced at similar stages of development so that there is no undue delay in testing of privately-bred varieties.

A cultivar must display superior performance in some character of importance before it is added to the New Zealand acceptable cultivar list. The decision is made by a three-man committee – two representatives from the M.A.F. and one from D.S.I.R. I am concerned at the narrow representation on this committee, including only Government plant breeders and agronomists. Some years ago, the release of new crop cultivars was decided by a Field Crop Committee, consisting of D.S.I.R., M.A.F., University and Commercial representatives. I consider it essential that any committee which decides on cultivar lists should be much more widely based than at present, and should have an independent chairman.

According to Wright (1977) an advantage gained from the introduction of plant breeders rights will be the greater number of cultivars available for the farmers to choose from. However, decision making will be harder than at present unless we follow Britain and produce a Recommended list as well as a National list of acceptable cultivars. In Britain, the Recommended list is the basis for selection by farmers and contains only a third of the varieties on the National list.

CONCLUSION

We are on the threshold of considerable changes in the Seed Industry of New Zealand. Careful planning of new procedures and close co-operation of Government and Private institutions are essential if we are to take full advantage of opportunities given by the Plant Varieties Act.

REFERENCES

- Douglas, J.A. Waller, J.E. and Dyson, C.B. 1977. A basis for crop cultivar evaluation. Proceedings, Agronomy Society of N.Z. 7: 103-106.
- Lancashire, J.A. 1975. Evaluation of N.Z. herbage cultivars overseas. Proceedings N.Z. Grassland Association 37: 66-82.
- McEwan, J.M. 1977. Plant breeders' rights: the viewpoint of a Government-employed plant breeder. Proceedings, Agronomy Society of N.Z. 7: 111-112.
- Ritchie, I.M. 1977. National and recommended lists and associated procedures in Britain and Europe. Proceedings, Agronomy Society of N.Z. 7: 99-102.
- Rumball, W. and Armstrong, C.S. 1974. The performance of overseas ryegrass cultivars in New Zealand. Proceedings N.Z. Grassland Association. 36: 97-104.
- Shillito, N.L. 1977. Seed re-export. The Press, August 12.
- Thaine, P. 1977. The acceptable crop cultivar scheme in New Zealand. Proceedings, Agronomy Society of N.Z. 7: 95-96.
- Wright, N.Q. 1977. Farmers assessment of plant breeders' rights and the acceptable crop cultivar scheme. Proceedings, Agronomy Society of N.Z. 7: 113-114.
- Yates, P.S. 1977. The mandatory accepted cultivar list for agricultural seeds in N.Z. and its relationship to plant breeding and agricultural progress. Proceedings, Agronomy Society of N.Z. 7: 107-110