Chapter 11. In: Burgess R.E., Brock J.L., editors. *Using Herbage Cultivars.*
Grassland Research and Practice Series No. 3, New Zealand Grassland Association, Palmerston North.

Chapter 11

Some factors affecting the rate of adoption of new herbage cultivars

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INTRODUCTION

Between 1973 and 1983 the number of certified grasses and legumes (excluding lucerne) available to the New Zealand farmer increased from 21 to 37 (Table 11.1), with a further 5 added to the New Zealand National List during 1984/85. Clearly the high rate at which new cultivars are being released is continuing. Lucerne has followed a similar pattern with 10 cultivars now available compared with only 3 in 1970.

Table **11.1** Herbage cultivars (excluding lucerne) available to New Zealand farmers.

	Available before 1973	Added since 1973
Ryegrasses	Ruanui	
Perennial	S.23	Nui
	Vigor R.v.P.	Ellett
Hybrid		
	Manawa	
	Ariki	
Italian		
	Paroa	Moata
Cocksfoot		
	Apanui	Saborto
		Wana
		Kara
Timothy		
	Kahu	S51
Tall fescue		
	S.170	Roa
Phalaris		
	Australian	Maru
White clover		
	Huia	Pitau
		Tahora
Red clover		
	Hamua (cowgrass)	Pawera
	Turoa (Mont)	
Others		
	Southland crested dogstail	Maku lotus
	2 strawberry clovers	Matua prairie grass
		Raki paspalum
	4 sub clovers	Basyn Yorkshire fog

Another major trend is shown by the increasing number of new cultivars developed for particular regions and/or soils e.g. Maku lotus and Basyn Yorkshire fog for low fertility soils; Maru phalaris and Roa tall fescue for dryland soils and pest tolerance; Tahora white clover for moist hill country and Matua prairie grass and Pitau white clover for rotationally grazed pastures on high fertility soils.

The selection and successful utilisation of the appropriate species and cultivars for pasture sowings from this large range poses major problems for researchers and advisers, let alone farmers. In addition, as most mixtures usually contain up to 5-6 species and/or cultivars the range of possible combinations could be as high as 4 million. There is no doubt that much seed of dubious quality and of quite inappropriate agronomic value is sown on New Zealand farms. Uncertified mixtures called variously 'bush-burn', 'station-mix' or 'rye-clover' appear to form a very high percentage of clover sowings in some districts (Table 11.2), although the figures are exaggerated in major urban areas because this seed is often included in mixtures for recreational areas and road verges.

Table 11.2 Proportion of legume seed sales of one major New Zealand seed company in uncertified mixtures (bushburn) (% by weight).

District	Percentage %
Whangarei, Auckland	82*
Hamilton, Te Kuiti, Taumarunui, Rotorua	59*
Gisborne, Hastings, Dannevirke, Masterton	43
Taihape, Feilding, Wanganui, Hawera, Wellington	46'
Nelson, Blenheim, Greymouth	40
Christchurch, Ashburton, Timaru, Oamaru	3
Alexandra	4
Gore, Dunedin, Invercargill, Tapanui	6

*Amenity sales form a significant proportion of this value.

The much lower figures in South Island districts adjacent to the major seed growing areas suggest that farmers in these areas may be more aware of the importance of seed quality. However, even if the seed

buyer is more enlightened he still has the problem of choosing and obtaining the right species and cultivar, sown at the correct seed rate for the particular situation. In 1981 a dairy company in the North Island was selling the mixture shown in Table 11.3. Four of the components are unsuitable or out-of-date cultivars for dairy farming in the 1980's, while the seed rates for white clover and red clover are far too low for the sown cultivar to make an effective contribution.

Table 11.3 One dairy company's seeds mixture (1981) with recommended sowing rate expressed in kg/acre.

*Ruanui ryegrass	7
Manawa ryegrass	3
Apanui cocksfoot	2
*N.Z. timothy	1
*Huia white clover	1
*Montgomery red clover	1
	15 kg/acre

*Unsuitable cultivar or species

The rate of pasture reseeding by New Zealand farmers is low. One survey covering 1977-81 for central New Zealand suggested that farmers were renovating or renewing only 4-6% of their existing pasture. Figures for actual seed sales are difficult to obtain, but differences between the quantities of certified seed produced and that exported can give a rough guide. Calculations for 1974-83 suggest that white clover was being sown on 400,000 ha or 4-5% of our total grassland area each year. Both these sets of data cover a period when 942,000 ha of new land ws being developed as a result of various land development encouragement schemes. Therefore, the long term mean for annual reseeding is probably nearer to the 3% figure recorded in 1961. When it is realised that a large proportion of the herbage seed used in New Zealand is sown in Canterbury largely because pastures are renewed as part of a cropping rotation, it is clear that most farmers and presumably their advisers remain unconvinced about the economic value of renewing permanent pastures. The national increase in the cropping area which could occur over the next few years may raise the demand for herbage seed, but increasing the very low total demand in permanent pasture areas will have a much more profound effect on the rate of adoption of new herbage cultivars.

SEED PRODUCTION STATISTICS AND RATES OF ADOPTION

The adoption rate of any new cultivar will first depend on the successful production of seed of the appropriate price and quality. In the case of the most recently released ryegrasses in New Zealand, all showed a very rapid growth in certified seed production with at least a 100-200 fold increase 3 years after release (Fig. 11 .1).

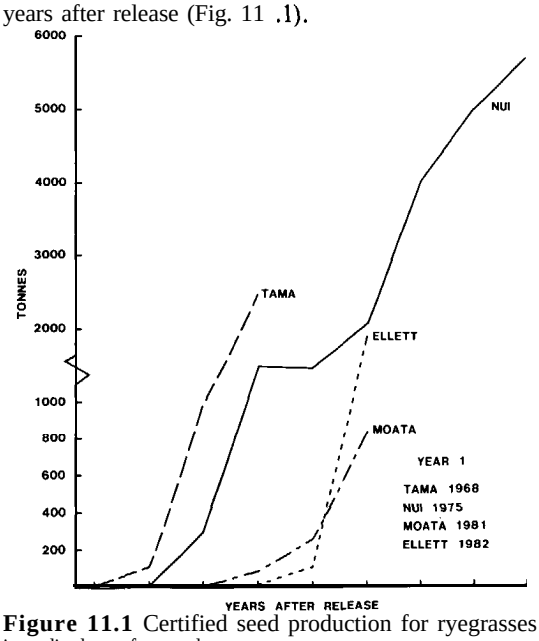

Figure 11.1 Certified seed production for ryegrasses immediately after release.

In these terms both Tama and Moata became the dominant annual ryegrass cultivar 3 years after release, while Nui was the dominant perennial ryegrass 5 years after release, a rare achievement for any commodity. Although seed of all these cultivars has been exported, sometimes in substantial amounts, this has not materially changed their dominance of the local consumer market shortly after commercial release. For example, in a survey carried out in central New Zealand in 1981, 53% of dairy and sheep farmers used Nui perennial ryegrass, 9% Ruanui and 5% Ariki.

The situation with recently released herbage cultivars other than ryegrasses is different (Figure 11.2). The rate of increase in seed production has been very slow in all cases, while there are also considerable fluctuations between years. In the case of Matua, there have been a series of peaks and troughs with each succeeding peak reaching a higher level of production. As entries for certification of Matua in 1984/85 were almost twice those in 1983184 it appears that the current upswing in this cultivar is continuing. However, given the apparent 'boom' and 'bust' cycle that has occurred in the past, a further decline is likely as the market becomes over-supplied and prices again fall.

Since the release of Matua 12 years ago retail prices have ranged from $1.80-$4.80/kg. These variations benefit no one in the long run, and must also slow down the rate of adoption of the cultivar.

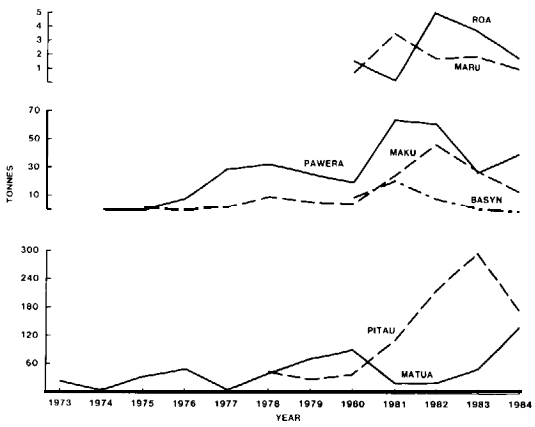

Figure 11.2 Certified seed production for 7 cultivars after release.

Encouragingly, the long term usage trend is upward and Matua appears to be ripe for the development of a market plan which matches both future demand, encouraged by suitable promotion, and contract grown seed production. It is an indictment of past policies, that a plant, which has been viewed very favourably by dairy farmers for a number of years (in 1981 17% were using the cultivar and 27% intended doing so), for which a number of excellent commercial scale demonstrations and farm case studies with sheep and dairy enterprises have been reported, and where overseas trials over 5 years have consistently rated Matua as an outstanding grass, has not made a bigger impact on the seeds industry and farming. Other specific factors that may have worked against the adoption of the cultivar will be considered below.

Both Pawera and Maku have followed the same general trends as Matua but some additional points must be considered. Demand for Maku was stimulated in the late 1970's and early 1980's by increased oversowings as a result of land development encouragement schemes. Since then seed production has fallen rapidly to less than one-third of the 1982 figures and entries for 1984/85 are 50% down on 1983/84. As expected, retail prices have reflected these changes in demand, varying from $5-$7 up to $30/kg. The current low level of seed production and predicted increase in demand, particularly from forestry interests, has raised the current price to $10-11/kg and this will inevitably lead to Maku again moving up the supply curve (Fig. 11.2).

Pawera differs from Maku and Matua in that there were already two older cultivars Hamua and Turoa on the market, whereas with the other species only uncertified local prairie grass and imported lotus were available to compete with the bred material. In fact the seed production curve for Pawera very closely follows those for Hamua and Turoa (Fig. 11.3). The export market also has an important influence on these overall trends, although it is not a significant factor yet with Matua and Maku (Fig. 11.3). The main overseas demand is for the early flowering ('double cut') red clovers such as Hamua. Given the complicating factors of carryover of seed stocks, it appears that in the period 1972-83 over 80% of the red clover seed exported was Hamua and this represented 60-70% of the total Hamua seed produced. The remainder of exports are largely Turoa although Pawera is increasing in importance (7-8% by value in 1982/84). Accurate figures for internal seeds use are very difficult to obtain, but a long term analysis of seed production and exports (1972-83) suggests that during this period approximately 1200 tonnes of Turoa and 800 tonnes of Hamua were used for pasture sowings within the country (see aiso Fig. i i .3). The increase in the seed production of Pawera since 1980 (Fig. 11.3) and its small exports suggest that it is now the most important of the three cultivars for local use. This is confirmed by the fact that certification entries for Pawera in 1984/85 were, for the first time, ahead of Turoa. As the price of Pawera has generally been 2-3 times that of the other cultivars and is again very high ($12-$13 in the North Island), and recommended seed rates for this tetraploid are greater (largely ignored in practice), its local market leadership 10 years after release, without any commercial promotion, is an impressive tribute to the quality of the cultivar.

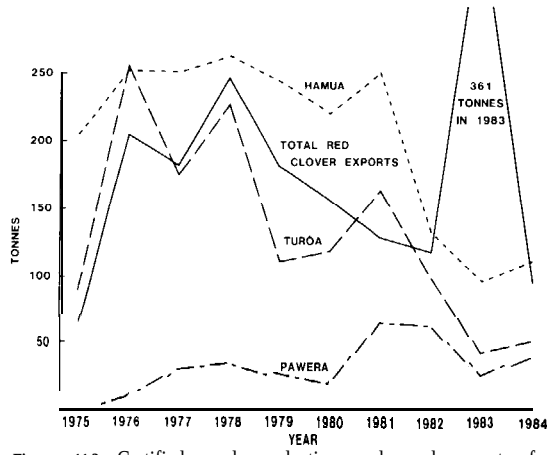

Figure 11.3 Certified seed production and seed exports for red clover.

The export market also has a very significant effect on white clover seed production. 80% of Huia seed is exported (1975-84) and quantities have risen 4 to 5-fold in the last decade, reaching over 4000

tonnes in 1980. Certified permanent pasture white clover is also an important component (SO-60% of production is exported), contributing 16% (range 5-40%) of white clover exports in this period. Differences between production and exports suggest that 600-700 tonnes of Huia and 400-500 tonnes of permanent pasture were being used annually for internal pasture sowings over the past decade. Since Pitau was released, about one-third of its total seed production has been exported (306 tonnes) leaving approximately 110 tonnes/year for local sowings (1980-84). This represents around 10% of the total but at least 15% of the internal Huia market. Pitau seed production has been 'dragged' up by the export boom in white clover seed (Fig. 11.2). However, there have been significant divergencies which are well shown in the areas entered for certification in 1984/85 which were 21% down for Huia and 9% up for Pitau compared with 1983/84. If the current pattern of exports of the two cultivars continues these areas suggest that Pitau is approaching 20% of the Huia market within New Zealand (assuming seed yields/ha are similar). Given that Pitau is a regionally adapted cultivar suitable for rotational grazing, its potential area of use may only be 1.5 million ha (Table 11.5). If long term rates of pasture renewal of around 3-4% continue, the local limit for seed of the cultivar will be only 150-200 tonnes/year. Thus in local market terms, the cultivar appears to be close to achieving this level 7 years after release. However, there are also several reasons why this level can be increased. The performance of Pitau in cooler regions such as Southland appears better than earlier research suggested; the adoption of rotational grazing on hill country suggests that Pitau could have a greater role here, particularly in the North Island, and the phasing out of permanent pasture certification for white clover will offer places in the market for named cultivars.

Seed production figures for Roa tall fescue and Maru phalaris are too low to derive meaningful trends. Current retail prices for these cultivars are very high ($10-$12/kg in the North Island).

Basyn Yorkshire fog has gone through one cycle of increase and decline and has encountered severe seed production problems in the past two years (I.H. Coad pers. comm.). Entries for 1984/85 showed a marked increase so a recovery can be expected.

Wana cocksfoot was not included in Figure 11.1 because it was released only in 1982. However, seed production increased from 20 tonnes in 1983 to 32 tonnes in 1984 and area entries for certification rose from 62 ha in 1983/84 to 472 ha in 1984/5. This was accompanied by a decline of 101 ha to 720 ha in Apanui, the other main cocksfoot cultivar. This rate of increase is comparable with that of the ryegrasses, and if continued is likely to make Wana the leading cocksfoot cultivar for local pasture sowings by 1986, 4 years after release.

Table 11.4 Percentage occurrence of species sown in pastures (% occurrence in mixtures).

	Southern North Island 1968	Central New Zealand (South Auckland to Canterbury) 1981
Ryegrass	100	98
White clover	99	ns
Cocksfoot	54	57
Red clover	73	ns
Timothy	20	27
Subterranean clover	20	ns
Prairie grass	0	17
Lotus	5	ns

ns = not surveyed

FACTORS AFFECTING RATE OF ADOPTION

Familiarity and reputation

Fast rate of adoption. A common feature of the cultivars adopted rapidly and/or obtaining a major share of the market is that they all belong to species already well known and widely used in pasture mixtures in New Zealand i.e. ryegrasses, cocksfoot, red and white clover (Table 11.4). Although the results in Table 11.4 are limited in their coverage of New Zealand they show for grasses at least that, with

Table 11.5 Potential use and seed requirements for some new cultivars.

	Area for sowing (million ha)	Seed required (tonnes)	Area required for seed production (ha)	Assumed seed yield (kg/ha)
Pitau white clover	1.5	4500	9000	500
Tahora white clover	3.0	9000	18000	500
Pawera red clover	1.5	7500	37500	200
Maku lotus	1.5	4500	22500	200
Matua prairie grass	1.0	30000	30000	1000
Wana cocksfoot	4.0	12000	24000	500
Roa tall fescue	0.5	1250	2500	500
Maru phalaris	0.5	500	1000	500

the exception of prairie grass, there have been few recent changes in choice of species for pasture mixtures. However, within *Lolium* there has been a change, with a considerable replacement of the hybrid ryegrass Manawa, by perennials such as Nui and Ellett.

Obviously a new cultivar within one of the traditionally used species groups has great advantages, because not only does a market for the species already exist, but factors such as seed production technology, seed rates, establishment, mixtures and grazing are perceived as being understood, at least in theory, if not always in practice, by advisers, farmers and seed sellers.

Medium ***rate ofadoption.*** It is difficult to isolate a single major factor in the slower uptake of Pawera and Pitau amongst the traditional species. As was indicated above the export market for seed of these species is important, and choice of cultivar by seed growers and seed firms will clearly be influenced by the fact that a traditional overseas market exists for the older cultivars such as Huia and Hamua. Exports of the newer cultivars always takes some time to develop because of requirements for long term testing and listing in many countries before imports are allowed.

The relative ease of seed production of early flowering types of red clover such as Hamua, which often produce 2-3 times the seed yield of late flowering types such as Turoa, is also an important factor. Pawera is a late flowering cultivar and also a tetraploid, so that long-tongued bumble bees are required for adequate pollination and high seed yields. Average commercial yields have been low despite the fact that a well pubhcised management package has produced excellent results, some growers, particularly in the Marlborough region, regularly achieving 300-400 kg/ha. Financial returns to growers have generally been very good even for moderate yields, so it would appear that a well targeted extension effort on this aspect is required to ensure that all growers and seed firms understand the requirements.

The considerable publicity given to possible oestrogenic effects of Pawera on sheep fertility may have reduced the uptake of the cultivar, since this type of 'bad news' about a new product appears to have an inherent tendency to swamp the 'good news'. Examples of similar situations with other cultivars will be given below, but there is no reason to believe that Pawera offers greater dangers to sheep than Hamua and Turoa which have been used for 30-40 years. The simple precautions outlined by T.S. Ch'ang (1963) appear to be well known and understood by sheep farmers and I am not aware of any commercial farmer who has indicted Pawera as being responsible for a long term decline in sheep fertility. In fact the addition of some Pawera in the diet is generally regarded as a very important additive in obtaining appropriate ewe liveweights at tupping. However, it is incumbent on researchers, advisers and the seed trade to ensure that the farmer receives balanced information, containing, if possible, carefully observed practical and commercial on-farm experiences as part of the extension package.

Slow rate of adoption. These cultivars all represent novel species for most New Zealand farmers, advisers and seed firms, and have been used only sporadically and in very small quantities in the past. Thus the task of 'selling' this material to these groups, who are familiar only with a market dominated by ryegrass and white and red clover, is likely to prove difficult. Although considerable information on these cultivars has been published in research journals, at conferences and in the agricultural press, large scale demonstrations on commercial units and on-farm experiences are probably more important in increasing the rate of adoption of the cultivars. A range of such case studies with Matua at Massey University, Flock House and on farms have been widely reported in the agricultural press, but are rare with Maku, Roa and Maru. They have been influential in encouraging the use of Matua and overcoming perceived problems of establishment, management and persistency which were well publicised in an extremely negative article in 1979. Similar large scale trials and demonstrations with Roa and Maru, in particular, are required in order to provide credible on farm information on the usefulness of these cultivars as adjuncts or alternatives to ryegrass in many drought and insect attack prone areas.

Both Roa and Maru have a reputation for causing animal health problems. In particular many farmers have spent a considerable part of their working lives attempting to remove 'wild' tall fescue from their properties because of its extreme unacceptability to stock and ability to produce 'tall fescue toxicosis' if grazed. This syndrome is still quite widespread in Northland but is not produced by Roa probably because of an absence of endophyte in this bred cultivar.

Occasional cases of phalaris poisoning (sudden death) have occurred on pure seed stands of Maru, particularly during periods of rapid regrowth after autumn rains. This unusual and specific situation can be avoided if stock are closely watched and grazed for only short periods on fresh phalaris regrowth at this time of year. Pastures generally become safe during April but this will depend on the time of year

the drought breaks. A chronic form of phalaris staggers has also been recorded on Maru/white clover swards in Hawke's Bay, but as most Maru pastures will be diluted with mixtures of other grasses it is unlikely that these animal health problems pose a real threat on farms. Certainly they have not limited the use of phalaris in huge areas of temperate Australia and good liveweight gains and milk production have been obtained on Maru in several regions of New Zealand. However, the perceptions of farmers and widely reported 'problems' with phalaris have slowed the adoption rate of the cultivar. Once again it must be concluded that large scale demonstrations and examples of commercial use on farms are essential if the cultivar (and species) is to fill its rightful place in regions where drought and insect pests are continuing problems.

Seed production

As with Pawera (see above) low commercial seed yields and resultant high seed prices in both Roa and Maku have restricted farmer use of these cultivars. Good technical information has been widely available for some years, but Maku in particular represents a new dimension for the herbage seeds industry because it must be treated largely as a specialised seed crop grown as a single species with very limited opportunities for grazing. Costs are also higher, so that good seed yields of 300-400 kg/ha are essential if the enterprise is to be profitable. Climatic factors such as low summer temperatures and soil moisture stress during the critical pod development phase can also reduce seed yields markedly, but the recent experiences of good commercial growers suggest that most of the technical problems are now overcome. However, because of the nature of the enterprise, it is unlikely that Maku seed will ever be produced profitably at less than twice the price of white clover.

Although good seed yields of 500-800 kg/ha have been obtained on research areas and some farms, average commercial yields of Roa have been very disappointing at 100-200 kg/ha. Unfortunately many seed crops have been grown in drought prone areas with light soils which suit the cultivar for agronomic use on the farm, but do not favour seed production. Crops grown on heavier soil have generally produced higher seed yields. Also untimely dressings of nitrogen fertiliser and also possibly water have often produced excellent vegetative crops with very few flowering tillers. Although these mistakes could probably have been avoided by following more closely recommendations for seed production, there is certainly a need for more research information on the effect of the timing of nitrogen and water applications and their interaction with tiller dynamics and seed production in Roa tall fescue.

Research information and agronomic deficiencies

Mixtures. The almost complete domination of New Zealand pasture sowings by ryegrass means that cultivars such as Matua and Roa are regarded as deficient in some way because they are not compatible with perennial ryegrass. Although it has been recommended that perennial ryegrass should not be included in mixtures with these cultivars, there is not enough research information describing how and why such combinations are unsuitable, particularly in different regions of the country. Conversely, there is virtually no published information available on combinations of these cultivars with grasses other than perennial ryegrass. Also, despite the fact that Maru phalaris is generally recommended as part of a mixture with perennial ryegrass, there is very little New Zealand information on which to base this advice.

Establishment rates. One of the major attributes of ryegrass (and its attraction to farmers) is its ability to establish quickly over a wide range of regions, climates and sowing conditions. On cultivated seed beds in early autumn Matua and Maru are almost comparable with ryegrass but the rate of establishment of Matua is much more severely reduced by falling temperatures in late autumn (April) than that of ryegrass. Roa, Maku (and Wana) are slow to establish from autumn sowings but spring sowings of Roa on cultivated seed beds are often comparable with those of perennial ryegrass in Taranaki, Taupo and Canterbury. Therefore a simple change in a traditional cultural practice — 83% of farmers sow pasture seeds in autumn regardless of region on farm type — may remove an apparent problem in the adoption of tall fesuce. Maku also establishes much faster from spring sowings.

However, the problem of slow establishment is much more severe when grasses are oversown on uncultivated seedbeds in hill country. Even with ryegrass, establishment rates in those situations are very low and widespread failures are likely with cultivars such as Wana and Roa using traditional procedures. As these cultivars have considerable potential, particularly in dry hill country, it is very important that research on improved establishment techniques is carried out. Also plant breeders and geneticists must continue to search for plant material which will improve the overall establishment characteristics of these species.

The large, awned seed of Matua has caused considerable difficulties with drilling, so that despite many ingenious techniques, including a special agitator attachment to some drills, most Matua is probably broadcast through oscillating type fertiliser spreaders at fairly high seed rates of 35-40 kg/ha. Attempts to breed a shorter awn have had slight success (W. Rumba11 pers. comm.), but successful techniques for burning it off are patented and when they become generally available in New Zealand should greatly facilitate the use of Matua.

Grazing management. It is often stated that the requirements for grazing management of some of the new cultivars (particularly the non-traditional species) are too specialised and impractical for the commercial farmer. This rather old fashioned view not only overlooks the ingenuity of the pastoral farmer, but also does not recognise that concepts such as feed budgeting, controlled grazing systems and computers have revolutionised on farm grazing management in the past 5 years. Certainly the siightly longer rotations required for Matua prairie grass than perennial ryegrass have not posed insuperable problems for many dairy farmers. If the farmer can see clear advantages in the use of a new cultivar there is no doubt he will use the necessary management strategies to ensure success e.g. lucerne.

Other requirements. In general there is a considerable amount of agronomic and plant and animal production information available on most of the cultivars discussed above. However, many of these plant evaluations and, in particular, animal trials are very short term. There are very few long term, large scale system comparisons of animal production from contrasting cultivars, species or mixtures in New Zealand. In particular, I am aware of only one study of this type comparing old pastures with new pastures containing recently released cultivars. Obviously this sort of information is extremely important if new cultivars are to be adopted. In addition this information will provide objective data on the value of pasture renewal which is currently very low (about 3%). A number of research groups in the country are currently planning evaluations of this type, but it would be naive to suggest that resources are available (or necessary) to handle any more than a small proportion of the new plant material in this way. However,, the greater use of on-farm trials, evaluations and demonstrations, as discussed earlier, can help to fill this gap.

The ability to produce economic seed yields is fundamental to the successful commercial development of any cultivar. Thus, a continued research and extension emphasis on techniques for increasing seed yields particularly on harvesting the seed that is produced, i.e. reducing losses, is essential.

There is little information available on what particular factors influence a farmer in his decision to adopt a new cultivar. One survey showed 50-70% of the factors assisting farmers in their selection of past and future seed requirements were derived from previous experience or discussion with other farmers. Extension advice from MAF and stock and station agents rated only 17-24%. This was rather surprising as 90% of farmers purchased their seed from seed merchants who also blended the mixtures. Another survey on farmers' sources of information suggested that television was largely used for news, weather and entertainment. Most information for decision making was derived from advisers, consultants and agents. It would be surprising if the marketers of certain animal drenches, several liquid fertilisers, and even Ellett ryegrass, who all use expensive television time for advertising, would agree with the farmers' own perceptions of their information sources in this survey. However, it is obvious that market research is essential if we are to understand more fully all the factors affecting the rate of uptake of new cultivars.

Finally it appears that there is an alarming and regrettable ignorance about the role and value of pasture plants throughout the agricultural industry. A comment from a former President of the New Zealand Grassland Association that 'my only knowledge of grass is that animals sometimes eat it' illustrates a widely held attitude. This lack of understanding must put a strong block on the uptake of new plant material and will only be overcome by much improved training in the plant sciences, particularly for advisers and seed sellers.

THE FUTURE

A policy change in the marketing of Grasslands cultivars could profoundly affect the rate of adoption of new cultivars in the future. All new releases will be marketed and promoted by individual companies through an agency agreement with DSIR. In the past all cultivars have been publicly available for anybody to market but strong promotion of any one cultivar by one firm benefited all seed sellers rather than the individual company doing the promotion. It will be interesting to see if adoption rates for new cultivars improve over the next few years with marketing and promotion by individual companies, although it is difficult to see how uptake of the ryegrasses could improve much over previous rates (Fig. 11.1). Hopefully dramatic effects will be seen in non-traditional species and cultivars such as Matua, Maku, Maru and Roa which are currently sown on less than 1-3% of their considerable

potential within New Zealand (Table 11.5).

However, the real challenge to the herbage seeds industry is to enlarge and diversify the internal (and external) demand for our New Zealand cultivars. The long term annual production of certified seed and areas of pasture renewed are virtually static, while exports of herbage seeds as a proportion of total exports have fallen. The new cultivars released in the past 10 years have not increased the total market but simply replaced older cultivars, e.g. Moata replaced Tama and Paroa; Nui replaced Ruanui. Thus the real measure of the success of the new marketing scheme for Grasslands cultivars will be whether the herbage seeds sector can utilise this wealth of novel and diverse genetic material, and turn the industry into a major growth area for the benefit of the whole of New Zealand grassland agriculture.

SUMMARY

1. The number of certified grasses and legumes available to New Zealand farmers has doubled to over 40 in the last decade.
2. There has been a marked increase in regionally adapted and more specialised cultivars.
3. The rates of adoption of new cultivars of traditional species such as ryegrass and cocksfoot has been extremely fast with new lines dominating the market 3-5 years after release.
4. The rates of adoption of cultivars of non-traditional species such as Matua prairie grass, Maku lotus, Roa tall fescue and Maru phalaris have been extremely slow reaching less than 1-3% of their estimated potential 5-12 years after release.
5. The ability to produce economic seed yields is fundamental to the successful commercialisation of any new cultivar.
6. Extension information for seed growers has been inadequate with Pawera red clover and Maku lotus, while further research is required on seed production of Roa tall fescue.
7. It is going to be difficult for the seeds industry to break the overwhelming dominance of ryegrass.
8. A much greater use of on-farm trials, evaluations and commercial scale demonstrations in different regions is required to improve the adoption rate of non-traditional species, as proved with Matua prairie grass.
9. A limited number of long term systems trials measuring animal production from pastures containing new and old cultivars and the benefits of pasture renovation are required.
10. Information on the attitudes of farmers to new cultivars is very limited and market research is essential.
11. Lack of research information on the successful establishment of the non-traditional cultivars, particularly in hill country oversowing, and their performance in mixtures has delayed their adoption in farming.
12. The agenting of Grasslands cultivars to individual seeds companies provides an opportunity to increase adoption rates, particularly of the non-traditional species, through improved marketing and promotion.
13. The herbage seeds industry in New Zealand has been static for a number of years. Production of certified seed, areas of pastures renewed annually and seed exports have shown no growth.
14. The challenge to the industry is to enlarge and diversify the internal (and external) demand for New Zealand bred cultivars by utilising the wealth of genetic material which is now available.
15. This is unlikely to occur unless advisers and seed sellers are better trained in the plant sciences.

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