

Chapter 12

Adoption of herbage cultivars — an extension rationale

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INTRODUCTION

Over the past 10 years, 14 new **herbage** cultivars have become available to New Zealand farmers. Each cultivar has the potential to increase total and/or seasonal dry matter (DM) production. Many have other desirable features such as insect resistance, improved palatability, better persistence and adaptability. Yet despite these obvious advantages, many plant breeders, advisers and commercial agents are repeatedly asking, why aren't the majority of pastoral farmers quickly adopting these new improved grass and legume cultivars?

CULTIVAR ADOPTION

Is it really a fact that farmers are not using new cultivars quickly enough when there are no guidelines to indicate just how fast they should be adopted? For example, Matua prairie grass was released in 1975 and by 1983 about 36 tonnes of 1st and 2nd generation seed was available. In comparison about 23 tonnes of **Moata** (tetraploid Italian ryegrass) was available in 1983, yet the grass was released much later in 1980.

If the quantity of seed available is partially a reflection of farmer demand, then has the rate of adoption of **Moata** far exceeded Matua or have other factors such as commercial support, cost and availability of seed, and relative ease of management had greater influence? The fact remains however that we do not have any quantitative idea of what is a fast or slow rate of adoption for **herbage** cultivars. It could be that we are expecting too much too soon. For example, it took at least 10 years for an apparently simple innovation such as 2,4-D to be adopted by 95% of American farmers. Is this an acceptable rate of adoption for New Zealand **herbage** cultivars and to whom would it be acceptable — the farmer or the plant breeder?

Plant breeders are critical that a lot of time and money has been spent developing new cultivars, and farmers should adopt them faster to help increase returns for the farm and the nation. However the farmers' view is that improved management of existing pastures has been able to generate greater returns, and the potential for further management fine-tuning still exists on many properties without introducing new grasses.

Another factor to have slowed on-farm usage of new cultivars has been that farmers think the advantages do not exceed the disadvantages of cost, extra worry and physical effort. Sometimes this disillusionment has occurred because new grasses have not performed to specifications, such as perennial ryegrasses not persisting. At other times, farmer mismanagement causing poor performance of the cultivar has finally led to its rejection.

Further, two fundamental issues of human nature have not been given enough attention in the development and extension of new **herbage** cultivars. First, adult learning principles are of direct relevance to the adoption of any new information and second, techniques of communication determine the efficiency of the information flow between people.

ADULT SELF-LEARNING

Agricultural extension is really a type of adult education and the modern principles of adult learning need to be carefully considered by all extension workers. It is now thought that individual rates of learning and behavioural change are influenced more by social attitudes, values and beliefs than the subject matter. These are reflected in personal needs and agricultural extension will not be successful in bringing about change unless it meets the needs of farmers. Although this sounds like a very simple concept, it has proved to be difficult to practise. The major problem is in accurately and reliably defining the farmers' needs both to the advisers and farmers' satisfaction.

Humans are self-directed learners. It has been shown that 80% of adult learning is initiated, planned, directed and carried out by the learner. This

means that farmers are not static beings who need to be motivated or pushed to change but are actively pursuing skills, knowledge and understanding related to their farming, social, family and individual needs. If **herbage** cultivars are to be adopted at a faster rate they must meet certain needs as perceived by farmers.

Therefore the challenge will be for the plant breeder on one hand to develop **herbage** cultivars that can meet specific needs of pastoral farmers, and advisers on the other hand being able to help the farmers as part of their self-directed learning.

How and why do farmers learn? It must not be assumed that new cultivars are high on the list of farmer learning priorities. All farmers are aware of the seasonal growth limitations that their climate imposes on their pastures. In response they have learnt how to improve management techniques to overcome pasture growth deficiencies. Up till now this approach has proved very successful. For example on dairy farms, increasing stocking rates and emphasising the importance of feeding around calving has significantly increased dairying profitability and information on these subjects is still being sought each season by farmers. In Canterbury most farmers contemplating introducing new cultivars are now acutely aware of the cost of introduction, while for others lack of pasture persistency is an even greater problem. All this underlines the suggestion that development of a new **herbage** cultivar is a waste of time without a sensitive awareness of social and management problems within the farming system into which that cultivar is to be introduced. The plant breeder must literally try to think like a farmer and be prepared to supply both cultivars and information which farmers are likely to ask for. This will not only entail testing new cultivars for seasonal palatability, growth, persistence, insect and pathogen tolerance, fertiliser response, but also for mismanagement persistency and potential economic return. It is suggested the current information given out with each new cultivar should give an idea of such things as costs of introduction, suggested role in various farming systems (including sheep, dairying, cropping) potential economic returns based on various degrees of utilization, effects of mismanagement, disadvantages such as toxins, and changes in seasonal palatability and growth pattern. The plant breeder must develop the attitude that farmers will not learn how to use a new cultivar unless they feel the need to do so. The reasons why the needs develop are many, varied, inevitably personal, usually particular to the individual farmer, and will rarely depend on just how much extra dry matter can be produced.

COMMUNICATION

It has been recommended that breeders, advisers and merchants should be far more aware of farmers' needs when communicating on **herbage** cultivars. How can this be achieved? Communication should be considered a two way exchange of information and ideas. In the long term, to improve the rate of **herbage** cultivar adoption there must be better communication between farmers and plant breeders **before** a breeding programme starts.

Presently there are several commercially available improved cultivars believed to have a significant role to play in pastoral farming. They should be in widespread use now. To achieve this is an urgent communication challenge.

The existing farmer discussion group system already provides a network for communication that has not been fully utilized by breeders and merchants. The dairying community is extensively covered, with nearly 30% of farmers each year attending those groups recorded with the NZ Dairy Board Consulting Officer service alone. Produce development and marketing people in the field of drugs to improve stock breeding programmes have made extensive use of this farmer communication medium.

Sheep and beef pastoral districts appear less involved with discussion groups. In these areas, communication pathways using the self-directed adult learning principles of successful groups could be set up specifically to provide demonstration of new cultivars. Important aspects to ensure such groups do succeed are:

1. Initially, work within the limits of farmers "normal" group gatherings such as sports, cultural or church.
2. Leave selection of members to the democratic decision of the group itself.
3. Establish a common reference point by consensus between the group and the adviser, who acts in a guiding role only. For example, the problem of seasonal feed shortages on farm profitability could be a common ground starting point for a district to adopt new cultivars on a greater scale.
4. Experience and knowledge within the group should be used and built on. Farmers trust other farmers' experience far more than results from outside sources such as scientific experiments or even government run demonstration farms.

Once the group had decided that a new **herbage** cultivar will help their problem then a practical demonstration is the next stage. This means members choosing which farms to site the

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demonstration and ensuring that the required management is correctly carried out at appropriate times. It is important that all members participate in some way and that the adviser takes a low profile guiding role only. For example to an adviser, the dairy farmer who crops and regrasses regularly may seem a logical choice to demonstrate a new species. But the district may have little or no respect for that farmer's management so any impact of the demonstration would be lost unless the site was chosen democratically by members. If the whole exercise is really successful the practical outcome should be that every member of the group sows at least one paddock with a new cultivar.

RECOMMENDATIONS

To improve adoption rate in the above ways means a dedicated input over a 3-5 year period. Who will do it, and will it be worth the effort?

Providing farmers feel that new cultivars are worthwhile, use of the existing discussion group network would be a powerful extension tool. Breeders and merchants should make greater use of this system through advisers and consultants or the

farmer convener of the group.

Establishing new special purpose groups may create a workload that existing advisers could find impossible to service. But there is no reason why other agricultural people like the seed merchants, could not establish groups, as long as recognition of the adult self-learning principles is given.

There are other ancillary techniques which could be recommended such as TV, press and radio advertising. The use of demonstration video or perhaps even a small give away seed sample could be considered although without the appropriate management information this could prove to be detrimental. It is stressed however that these mass media marketing techniques merely increase the number of farmers being aware of new cultivars but rarely if ever change basic attitudes towards their adoption.

Finally it is recommended that more detailed management information on each herbage cultivar should be made available, such as practical sowing techniques, time of sowing, fertilizer requirements and grazing management. Other desirable guideline information would be more animal performance data and an economic analysis of the costs versus benefits.

SUMMARY

The present system of extension to increase the adoption rate of new herbage cultivars does not appear to be working satisfactorily. However, accusations between plant breeders, advisers and farmers who make up the system, will achieve nothing except create barriers to communication which perpetuate the whole problem.

Improved adoption rates of new herbage cultivars will depend on developing systems which are sensitive to the following aspects of human nature, especially those centred around adult self-learning:

1. Being aware of farmers social and management needs.
2. Greater use of the discussion group technique.
3. Better communication pathways between farmers, advisers and plant breeders.
4. Ensuring farmers are consulted at all levels of the plant breeding programme.
5. Breeding cultivars that cater specifically for farmers' needs.
6. Supplying more detailed practical management packages with each new cultivar.

FURTHER READING

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