

Selected endophyte: seed industry intentions

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Abstract

Perennial ryegrass (*Lolium perenne* L.) forms the basis of New Zealand's high fertility pasture. High levels of endophyte (*Neotyphodium lolii*) are commonly used to ensure persistence. The New Zealand Plant Breeding and Research Association and AgResearch have entered into an agreement to commercialise AR1, a new selected endophyte with high peramine, low lolitrem and low ergovaline levels. A number of commercial cultivars have been inoculated and these are now going through an agreed validation process with animal performance and agronomic trials being conducted throughout New Zealand. The seed industry is not currently in a position to confirm a commercialisation date, but it will not be before 1 January 2001. The parties, though confident that this initiative will be successful, remain committed to having as many questions answered, before the release date, as possible.

Keywords: AR1, commercialisation, endophyte, ergovaline, lolitrem, *Neotyphodium lolii*, peramine, perennial ryegrass, seed

Overview

Perennial ryegrass will form the basis of New Zealand's high fertility pastures into the next millennium. The associated impacts of endophyte present in perennial ryegrass are well understood and have been the focus of this symposium.

For many regions of New Zealand high levels of endophyte are essential to ensure establishment and persistence of perennial ryegrass cultivars. Currently the New Zealand seed industry addresses the issue by offering nil or high endophyte levels in ryegrass cultivars available commercially. While this addresses agronomic issues, the animal performance impacts from wild endophyte remain an ongoing barrier to improved productivity.

AgResearch has for many years been working on the question and in conjunction with industry has been striving to address the issues of non-toxic endophytes for use in our pastoral industries. This has culminated

in an agreement between New Zealand Plant Breeding and Research Association and AgResearch which will see New Zealand farmers benefiting from the new selected endophytes to be released in the future.

Current situation

AgResearch decided two years ago to make AR1, a new selected endophyte with high peramine (insect resistance), low lolitrem (no staggers) and low ergovaline (no heat stress), available to New Zealand Plant Breeding and Research Association member companies. Expressions of interest for inoculation of AR1 into new or currently commercial cultivars were called for. A number of cultivars have been successfully inoculated over the past 18 months. These cultivars are currently in early generation multiplication, bulking up stock seed in readiness for commercialisation.

Joint testing

As part of the validation process, New Zealand Plant Breeding and Research Association and AgResearch have agreed on guideline protocols to evaluate the animal and pastoral effects in New Zealand. This is currently underway with animal performance and productivity trials, agronomic and persistence trials, insect persistence and yield trials being conducted. These trials are being conducted by AgResearch and member companies at sites throughout New Zealand.

The New Zealand Plant Breeding and Research Association has agreement in principle to progress towards commercialisation based on the trial outcomes successfully achieving the various milestones set.

At this point we are still working through the commercialisation questions and everyone remains hopeful that the host/endophyte reactions in the range of inoculated cultivars will be positive.

Availability timeframes

For the seed industry the most important issue surrounding commercialisation is to ensure we have achieved all the desired outcomes from the trials and that the technology is compatible across ryegrass cultivars. We remain committed to a responsible

position. There is agreement in principle that no compromises will be allowed with respect to commercialisation if it is deemed as having the potential to undermine the overall industry. We don't want a repeat of "Endosafe" and Pacific. We are not prepared to confirm a release date at this point in time, however, we can confirm it will not be before 1 January 2001 at the earliest.

Options for farmers

The most critical component of the successful uptake and performance of the technology will revolve around the application on farm. Issues like contamination, paddock history, pastoral mixes, regional importance and applicability or need, will be covered as part of the

technology transfer needed on farm to ensure our farmers make the right decisions and capture the benefits. The New Zealand Plant Breeding and Research Association and seed industry are already planning this phase to be activated when a commercialisation date is confirmed. This is likely to include a national roadshow, information booklets and technical experts addressing on-farm concerns.

Conclusion

We all remain confident this initiative will be successful, however, we remain committed to having as many of the questions as possible answered before release and to learn from past mistakes.