Production and composition of nil and MAX P™ tall fescue pastures on dry, stony soils.

Background

- In New Zealand, tall fescue (Festuca arundinacea) is more compatible with clovers than perennial ryegrass because its seedlings are less competitive but it is also more vulnerable to invasion by annual grass weeds in summer dry areas.
- The objective of this study was to determine the effect of tall fescue endophyte AR542 (MAX P™) on dryland pasture production and composition, weed invasion, and sheep grazing preference in Canterbury, New Zealand.

Methods

- Advance tall fescue – clover pastures were sown with nil or AR542 (MAX P™) endophyte into a shallow, stony, dryland soil, Canterbury, New Zealand (mean annual rainfall 629 mm) in October 2002. Pastures were rotationally grazed with sheep.
- Pasture growth, botanical composition (% of total dry matter), weed invasion and sheep grazing preference were measured 18–38 months after pasture establishment.

Conclusions

- Nil endophyte tall fescue is unsatisfactory in pastures on shallow dry, stony soils in New Zealand because it is not competitive with annual grass weeds.
- Annual grass weed suppression by MAX P™ endophyte most likely occurred because of increased competition from the greater number and size of tall fescue plants.
- MAX P™ endophyte tall fescue may be a useful addition to a suite of control methods (e.g. herbicides, grazing management) that suppress annual grass weed populations in dryland pastures.

Results

MAX P™ endophyte:

- Increased tall fescue plant density and size but resulted in only a small increase in pasture production.
- Reduced the abundance of the annual grass weeds, vulpia hair grass and barley grass.
- Did not affect clover abundance.
- Did not affect grazing preference.

Effects of MAX P™ endophyte on tall fescue plant density and size (autumn 2005) and pasture production from April 2004 to April 2005.

<table>
<thead>
<tr>
<th>Plants/m²</th>
<th>Nil</th>
<th>MAX P™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal Diameter (cm)</td>
<td>6.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Pasture Production (kg DM/ha/year)</td>
<td>5864</td>
<td>6293</td>
</tr>
</tbody>
</table>

Pasture composition (% of dry matter) in nil or MAX P™ endophyte tall fescue.

- Spring 04
- Autumn 05
- Spring 05

Acknowledgements:
Turkish Ministry of Agriculture
Meat & Wool New Zealand

MAX P™ endophyte tall fescue pastures in spring showing a lower abundance of annual grass weeds.

Katherine Tozer
Serkan Ates
Natalie Mapp
Malcolm Smith
Richard Lucas
Grant Edwards
Agriculture and Life Sciences Division
Lincoln University
tozerk@lincoln.ac.nz