

CHOOSING A RYEGRASS ENDOPHYTE

SUMMARY – ENDOPHYTE INSECT CONTROL (PERENNIAL AND LONG ROTATION RYEGRASS)

These ratings are indicative and may vary slightly between cultivars. If Argentine stem weevil or black beetle are present at sowing, an appropriate seed treatment is recommended, to improve insect resistance during establishment. The ratings in this table are based in part on glasshouse studies where test plants are 100% infected with endophyte, whereas commercial seed must meet minimum standards of 70% of seeds infected. These tables were compiled by AgResearch, Agricom, Agriseeds, Grasslanz and PGG Wrightson Seeds.

Table 1 – Diploid ryegrasses

Insect	AR1	NEA2	AR37	Standard Endophyte	Without Endophyte
Argentine Stem Weevil	++++	+++	++++ ¹	++++	-
Pasture Mealy Bug	++++	(++++)	++++	++++	-
Black Beetle	+	+++	+++	+++	-
Root Aphid	- ²	++	++++	++	-
Porina ³	-	Not tested	+++	+	-

Notes on tables 1 and 2

1 AR37 endophyte controls Argentine stem weevil larvae, but not adults. While larvae cause most damage to pastures, adults can damage emerging grass seedlings.

In Argentine stem weevil prone areas it is recommended to use treated seed for all cultivars with novel endophyte.

2 AR1 plants are more susceptible to root aphid than plants without endophyte.

3 Control of porina in pastures only applies to the ryegrass component. Other species that are palatable to porina (such as white clover) will still be damaged.

4 There is much less information on the effect of endophyte in tetraploid ryegrasses on insects than for diploids. Tetraploids are generally more susceptible to Argentine stem weevil and the insect resistance provided by endophyte may not be as strong, although this may vary between cultivars. These ratings are based on available data but require further confirmation

SUMMARY – ENDOPHYTE ANIMAL HEALTH & PERFORMANCE (PERENNIAL AND LONG ROTATION RYEGRASS)

These ratings are indicative. Animal performance and health can vary under different management systems and between seasons.

Table 3 – Livestock performance – sheep & lambs

	AR1	NEA2	AR37	Endo5	Standard Endophyte	Without Endophyte
Freedom from ryegrass staggers	++++	++++	+++ ²	++++	++ ¹	++++
Animal production	++++	++++	++++ ³	+++	++ ¹	++++

Key to Tables

++ Moderate animal production and health: This endophyte is known to regularly cause significant problems.

+++ Good animal production and health: This endophyte can cause problems from time to time

++++ Very good animal production and health

Table 2 – Tetraploid ryegrasses

Insect	AR1	NEA2	AR37	Endo5	Without Endophyte
Argentine Stem Weevil	(+++)	++	(+++) ¹	+++	-
Pasture Mealy Bug	(++++)	(++++)	(++++)	(++++)	-
Black Beetle	+	+++	+++	+++	-
Root Aphid	- ²	(+)	++++	(++)	-
Porina	-	Not tested	(+++)	(+)	-

No control

+ **Low level control:** Endophyte may provide a measureable effect, but is unlikely to give any practical control.

++ **Moderate control:** Endophyte may provide some practical protection, with a low to moderate reduction in insect population.

+++ **Good control:** Endophyte markedly reduces insect damage under low to moderate insect pressures. Damage may still occur when insect pressure is high.

++++ **Very good control:** Endophyte consistently reduces insect populations and keeps pasture damage to low levels, even under high insect pressure.

() **Provisional result:** Further results needed to support the rating. Testing is ongoing.

Table 4 – Livestock performance – dairy cows & beef cattle

	AR1	NEA2	AR37	Endo5	Standard Endophyte	Without Endophyte
Freedom from ryegrass staggers	++++	++++	++++ ²	++++	++ ¹	++++
Animal production	++++	Not tested	++++ ³	Not tested	+++ ¹	++++

Notes on Table 3

- 1** Standard endophyte can cause severe ryegrass staggers, can significantly decrease lamb growth rates in summer and autumn, and significantly increase dags
- 2** Ryegrass containing AR37 endophyte can cause severe ryegrass staggers, but the frequency of ryegrass staggers is much lower than for ryegrass with Standard endophyte. One⁵⁰ AR37 may give rise to higher instances of ryegrass staggers than other AR37 cultivars in some situations.
- 3** Lambs grazing ryegrass containing AR37 endophyte can have reduced LWG during periods of severe staggers

Notes on Table 4

- 1** Standard endophyte can cause ryegrass staggers, and has been shown to depress milksolids (MS) production through summer and autumn.
- 2** While ryegrass staggers has not been observed on cattle and dairy cows, it could occur on rare occasions.
- 3** In dairy trials overall MS production from ryegrass containing AR37 endophyte is not significantly different from that with AR1. A small reduction in MS was observed over summer on ryegrass containing AR37. A contributing factor to this was the lower clover content in AR37 pastures