

RGT HUSTLE RGT18

Proven solutions
for farmers



think
SOLUTIONS
think RAGT

RGT HUSTLE RGT18

BAD NEWS FOR INSECTS. GOOD NEWS FOR ANIMALS

Anyone can make claims, but RGT New Zealand can back them up with results. The benefits of our RGT18 endophyte are not just impressive - they're proven. Quickly gaining traction across the country, RGT18, combined with the top performing RGT Hustle perennial ryegrass, is becoming a trusted choice for farmers looking to enhance pasture productivity and resilience.

RGT18 plays a key role in helping farmers tackle the challenges posed by black beetle, a major pest impacting pasture systems, particularly in certain regions of the North Island. Beyond that, RGT18 boosts ryegrass tolerance to other troublesome pests, such as Argentine stem weevil and Porina, which can undermine both pasture productivity and persistence.

Stock health is always top of mind for farmers, and RGT18 goes a step further by improving insect tolerance while significantly reducing the negative impacts on animals compared to other novel endophytes.

RGT18 not only supports better pasture systems but also a reduced risk of ryegrass staggers, making it a game-changer for on-farm productivity.



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WHAT IS AN ENDOPHYTE AND WHY DO I NEED IT?



Endophytes are a type of natural fungus that is commonly found in grass, particularly ryegrass.

The grass offers the endophyte food and a place to live, and in return the endophyte produces chemicals [called alkaloids].

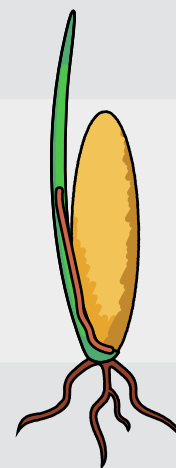
The good alkaloids provide the grass protection from insects so it persists and grows better with little or no impact on stock performance.

Some of these alkaloids are less helpful and significantly impact on animal performance, which is why pastures today come with specially-bred novel endophytes that ensure only beneficial chemicals from the endophyte and little or no harmful ones.

ENDOPHYTE LIFE CYCLE



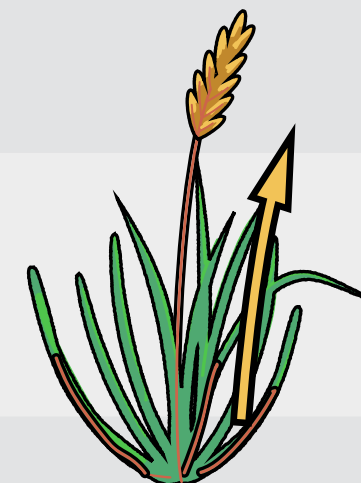
Endophyte is a fungus found in the ryegrass seed.



As the seed germinates the endophyte grows into the emerging shoot.



Endophyte is in the base of the plant. Little is found in the leaf, none in the roots.



In spring as stems form, endophyte grows up them onto the new seed.

HOW DO RGT18 ALKALOIDS COMPARE TO OTHER ENDOPHYTES?

RGT18 Endophyte contains alkaloids (chemicals) known as “**Janthitrem**s,” which distinguishes it from some of the other endophyte options currently available for ryegrass, such as AR1.

Traditionally, most New Zealand pastures contained the endophyte now referred to as ‘Standard’ endophyte, which includes the alkaloids Peramine, Lolitrem B, and Ergovaline. While Standard endophyte provides some benefits, it also has negative impacts on livestock. Novel endophytes offer insect protection while being safer for animals.



For ryegrass, endophyte options can be roughly divided into two groups:

Janthitrem types like:



And endophytes containing one or a combination of the following alkaloids: Peramine, Lolitrem and Ergovaline.

Some endophytes have varying concentrations of all three alkaloids, while others, like AR1, contain only Peramine.

Attributes of these alkaloids:

Endophytes composed of alkaloids called “Janthitrems”:

These can provide increased tolerance against a wide range of insects, including Black beetles, Root aphids, Pasture mealy bug, Argentine Stem Weevil, and Porina.

While Janthitrem can potentially cause ryegrass staggers, RGT18 has undergone a number of independent trials that show the risk of ryegrass staggers is significantly less than the AR37 control, making it very safe for livestock while still offering excellent pest protection. RGT18 should not be used where grazing may include deer or horses.

- > **Peramine:** Increases plant protection from Argentine stem weevil (ASW) and Pasture mealy bug. It is non-toxic to animals.
- > **Lolitrem B:** Is toxic to Argentine stem weevil larvae at high concentrations, it can negatively affect livestock, particularly causing ryegrass staggers, with the most pronounced effects in summer and autumn.
- > **Ergovaline:** Offers increased protection against Black beetle feeding and moderate resistance to root aphids. It can constrict blood vessels and may contribute to heat stress in stock under certain conditions.

HOW DO RGT18 ALKALOIDS COMPARE TO OTHER ENDOPHYTES?

| ENDOPHYTE | PERAMINE | LOLITREM B | ERGOVALINE | JANTHITREMS | LOLINES |
|-----------------|----------|------------------|-------------------|-------------|---------|
| STANDARD | ✓ | ✓ (Very high) | ✓ (high) | | |
| NEA, NEA2, NEA4 | ✓ | ✓ (Very low) | ✓ (low-medium) | | |
| AR1 | ✓ | | | | |
| AR37 | | | | ✓ | |
| RGT18 | | | | ✓ | |

INSECT PROTECTION

IT'S PROVEN!

It's not just us saying it. The science has been tested and the independent trial results are in, the benefits of RGT18 endophyte for farmers are nothing short of impressive.

RGT18 can help farmers mitigate the impact of black beetle on their pasture systems, a major pest that predominantly affects certain regions of the North Island. Additionally, RGT18 enhances ryegrass tolerance to two other significant pasture pests that can harm both productivity and persistence - Argentine stem weevil and Porina.

ETC INSECT RATINGS

THIS IS JUST THE BEGINNING

RAGT continues to seek improvements in what the RGT18 endophyte offers farmers. Ongoing work is focused on validating findings from our internal trials regarding other pests. Pasture mealy bug and root aphid - we're coming for you next!



Endophyte Insect Control Diploid Perennial Ryegrass

| ENDOPHYTE BRAND | ARGENTINE STEM WEEVIL | PASTURE MEALY BUG | BLACK BEETLE | ROOT APHID | PORINA | GRASS GRUB |
|----------------------------|--------------------------|-------------------|--------------|-------------------|--------------|-------------------|
| DIPLOID PERENNIAL RYEGRASS | | | | | | |
| AR1 | ++++ | ++++ | + | - ² | - | - |
| AR37 | ++++ ¹ | ++++ | +++ | ++++ | +++ | + |
| CM142 | NOT TESTED | NOT TESTED | NOT TESTED | ++++ | NOT TESTED | NOT TESTED |
| NEA2 | +++ | [++++] | +++ | ++ | NOT TESTED | - |
| NEA4 | +++ | [++++] | +++ | ++ | NOT TESTED | NOT TESTED |
| NEA12 | [++++] ¹ | NOT TESTED | [+++] | ++++ | [+++] | NOT TESTED |
| RGT18 | [+++]¹ | NOT TESTED | [+++] | NOT TESTED | [+++] | NOT TESTED |
| STANDARD ENDOPHYTE | ++++ | ++++ | +++ | ++ | + | - |
| WITHOUT ENDOPHYTE | - | - | - | - | - | - |

Notes on Tables

- No control.
- + Low level control: Endophyte may provide a measurable 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.
- ++++ Very good control: Endophyte consistently reduces insect populations and keeps pasture damage to low levels, even under high insect pressure.

- [] Provisional result: Further results needs to support the rating. Testing is ongoing.
- 1. AR37, NEA12, RGT18 endophytes 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,

BLACK BEETLE

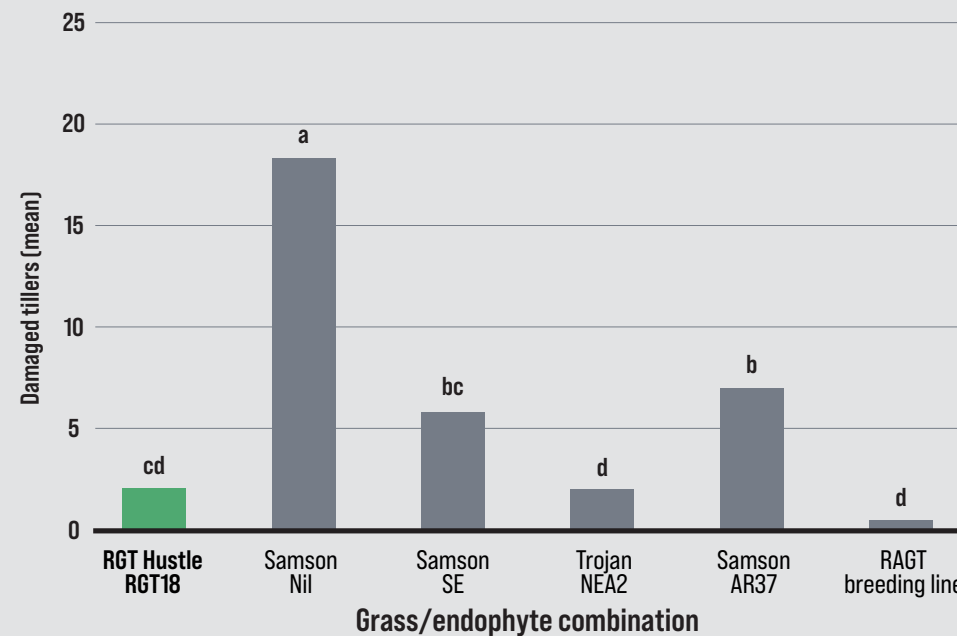
TAKE THAT TILLER KILLERS!



PORINA

RGT18 PROTECTION

Damaged tiller count DPE21 (mean with SE)*



Presence of endophyte RGT18 in host grasses was found to confer better resistance/ tolerance to Black Beetle (*Heteronychus arator*) feeding compared to nil endophyte varieties. The DPE21 results indicate that RGT18 endophyte confer a better vigour score and thus are more resistant to insect feeding compared to SAMSON Nil, SAMSON SE, TROJAN NEA2 and importantly provide a significant improvement over SAMSON AR37.

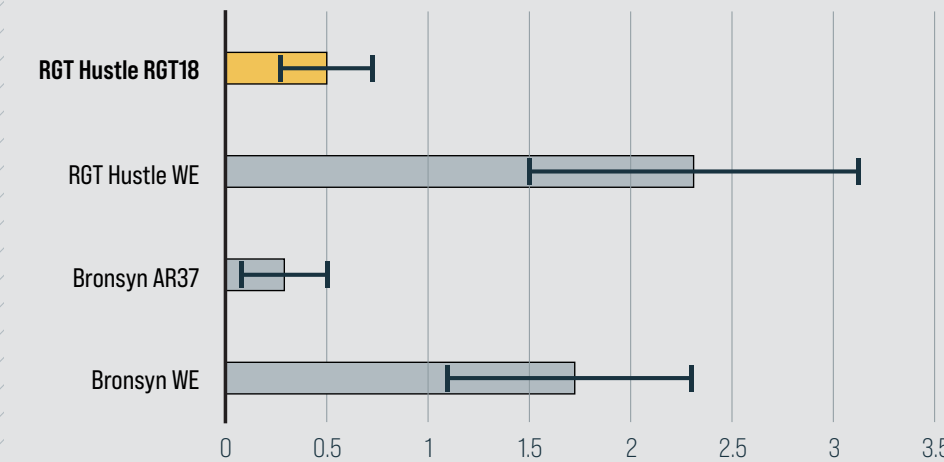
Conclusion extract for Black Beetle tolerance, patent number 759735



*Assessment of diploid perennial ryegrass lines for resistance / tolerance to adult black beetle (*Heteronychus arator*) feeding. Bruce Willoughby, Sandra Barns.

When comparing individual cultivars with and without endophytes both RGT Hustle RGT18 and the control variety, showed less pseudo stem damage from larval feeding than endophyte free plants.

Mean numbers of pseudo stems destroyed by Porina larvae during the trial*



*Assessment of Ryegrass endophytes on Porina (*Wiseana copularis*): Effect on survival, growth and feeding. Shery Hana, Colin Ferguson, Scott Hardwick

Porina caterpillars can pose a significant problem for farmers, as they consume valuable pasture that would otherwise be grazed by livestock. RGT Hustle RGT18 has undergone rigorous testing against porina, with results demonstrating a substantial reduction in damage to pastures containing the RGT18 endophyte, similar to that of AR37. While RGT Hustle RGT18 enhances pasture tolerance to porina, in environments with very high populations, some damage may still occur. In such cases, additional control measures will be needed alongside the RGT18 endophyte to effectively manage the pest.



ETC ANIMAL SAFETY

Stock health is a crucial factor in on-farm productivity and is always top of mind for farmers. RGT18 is a new breed of novel endophytes that not only enhances insect tolerance but also significantly reduces negative impacts on animals compared to previous endophytes with similar insect tolerances.

AR1 has long been regarded as the gold standard for animal safety among novel endophytes. Extensive research reviewed by the ETC has confirmed that RGT18 is equally safe for grazing livestock.

It is important to note that RGT18 is not suitable where deer or horses may graze.



ANIMAL SAFETY

Key to ryegrass staggers ratings:

- + Likely to cause severe staggers in most years.
- ++ Can cause severe staggers in some years.
- +++ Can cause severe staggers occasionally.

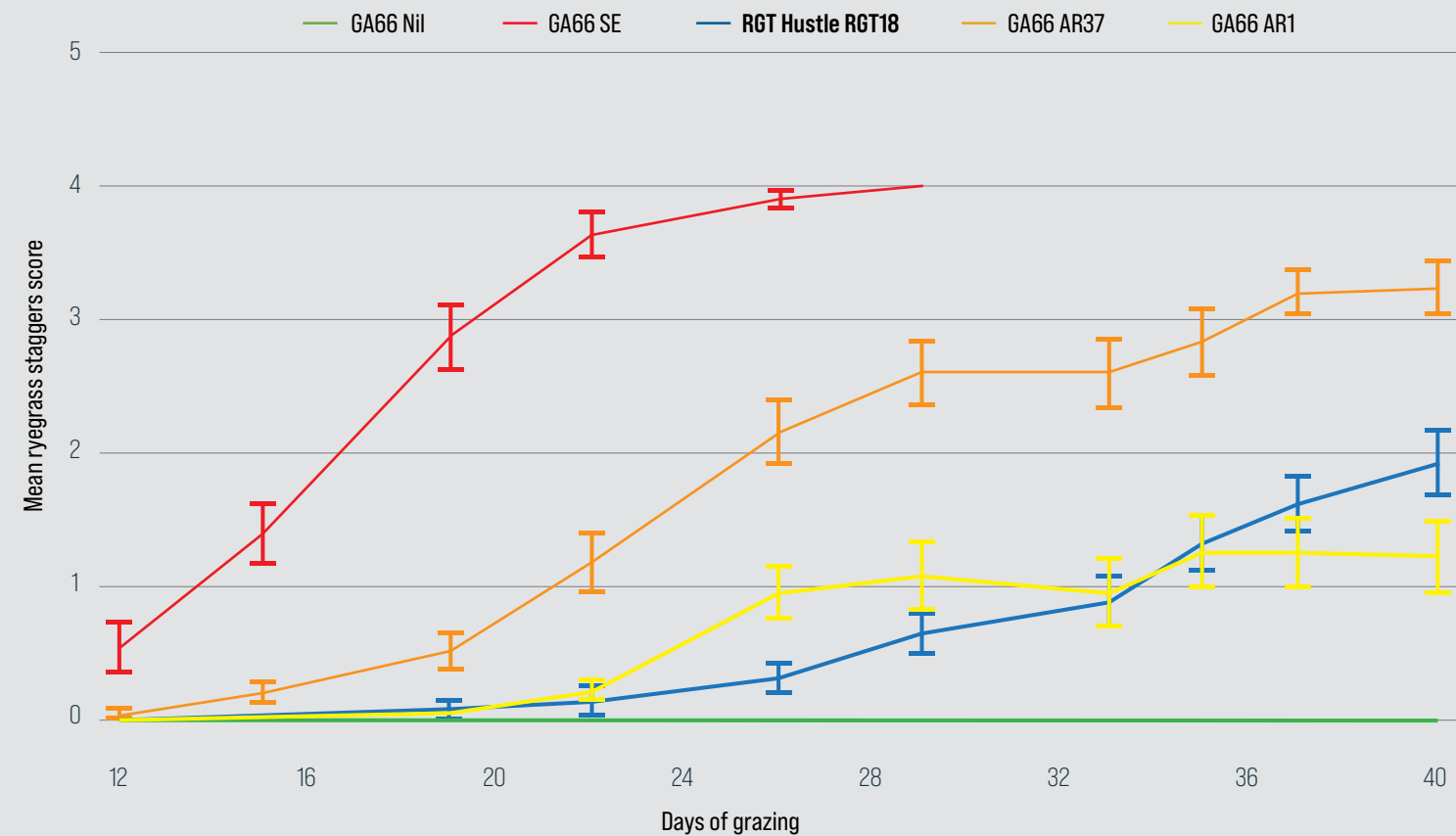
- ++++ Very unlikely to cause staggers.
- [] Provisional result: Further results needs to support the rating. Testing is ongoing.

Endophyte Animal Safety Ryegrass

| ENDOPHYTE BRAND | FREEDOM FROM STAGGERS | | EFFECTS ON ANIMAL PERFORMANCE |
|--------------------|-----------------------|---------------------|---|
| | SHEEP & LAMBS | CATTLE & DAIRY COWS | |
| AR1 | ++++ | ++++ | High level of animal performance |
| AR37 | +++ | ++++ | Typically provides a high level of animal performance. Can cause ryegrass staggers in sheep and lambs in extreme circumstances. Lamb liveweight gain can be reduced during periods of severe staggers. While ryegrass staggers has not been observed in in cattle and dairy cows, it could occur on rare occasions. |
| CM142 | [++++] | ++++ | Typically provides a high level of animal performance. Can cause ryegrass staggers in sheep and lambs in extreme circumstances. Lamb liveweight gain can be reduced during periods of severe staggers. While ryegrass staggers has not been observed in in cattle and dairy cows, it could occur on rare occasions. |
| NEA2 | ++++ | ++++ | Typically provides a high level of animal performance. Lamb liveweight gain could be reduced in extreme circumstances. While no effects have been observed in cattle and dairy cows, body temperature could be elevated on rare occasions. |
| NEA4 | ++++ | ++++ | Typically provides a high level of animal performance. Lamb liveweight gain could be reduced in extreme circumstances. While no effects have been observed in cattle and dairy cows, body temperature could be elevated on rare occasions. |
| RGT18 | [++++] | ++++ | Typically provides a high level of animal performance. Can cause ryegrass staggers in sheep and lambs in extreme circumstances. Lamb liveweight gain can be reduced during periods of severe staggers. While ryegrass staggers has not been observed in cattle and dairy cows, it could occur on rare occasions. |
| STANDARD ENDOPHYTE | + | ++ | Can cause ryegrass staggers in sheep and lambs, and significantly decrease lamb growth rates in summer and autumn, and significantly increase dags. In dairy cows, it has been shown to depress milksolids production through summer and autumn. |
| WITHOUT ENDOPHYTE | ++++ | ++++ | High level of animal performance |

WHAT IF THERE WAS A BETTER ENDOPHYTE? THERE IS - RGT18

Mean ryegrass staggers score of lambs grazing different endophyte treatments over the grazing duration from when symptoms were first detected.



What this graph shows:

To measure ryegrass staggers' scores, animals are run for 400m (if able), with a score given either after this exercise, or prior if the animal doesn't make the full 400m. The higher the score, the more the animals are affected by ryegrass staggers. The lower the score, the less the animals are affected.

- 1. Light shaking in the neck, shoulders and sides.
- 3. Marked shaking all over, including the head; some clumsiness and trouble seeing while running after a 400m run.
- 5. Severe muscle tremors even with slight disturbance or short exercise (less than 10m rapid movement), leading to staggering and collapsing in severe spasms that can last up to 20 minutes in very bad cases.

FOLLOWING INDEPENDENT AND AGRESEARCH TRIALS:



RGT HUSTLE RGT18 IS VERY UNLIKELY TO CAUSE RYEGRASS STAGGERS ON SHEEP, BEEF OR DAIRY CATTLE.



RGT HUSTLE RGT18 HAS SIGNIFICANTLY LESS RYEGRASS STAGGERS THAN AR37 AND STANDARD ENDOPHYTE.



RGT HUSTLE RGT18 SHOWS A SIMILAR TREND TO AR1 IN TERMS OF RYEGRASS STAGGERS RISK.

DEVELOPED AND TESTED ACROSS A RANGE OF CONDITIONS.

THE NFVT TRIALS PROVIDE THE BEST, INDEPENDENT DATA ON CULTIVAR PERFORMANCE FOR THE PASTORAL INDUSTRY.

The perennial ryegrass NFVT trials follow industry-leading protocols, providing farmers with reliable, local performance data to help inform decisions on cultivar and endophyte selection. Farmers should utilise these trial results as part of the overall information-gathering process, in consultation with their trusted advisor.

Since the trials are analysed by competing companies and scientists, the resulting data offers a high level of trustworthiness regarding the potential of different ryegrass cultivars.



NFVT SUMMARY 2024-2025

PERENNIAL RYEGRASS



> **UNBEATEN:** RGT Hustle RGT18 is unbeaten in the Upper North Island (UNI) NFVT data set.



> **MORE PROFITABLE:** Greater yield translates directly into increased profitability - by growing more pasture, you can reduce feed costs and boost animal production.



> **POWERHOUSE FORMULA:** RGT Hustle RGT18's elite genetics combined with new endophyte technology delivers outstanding yield and persistency.

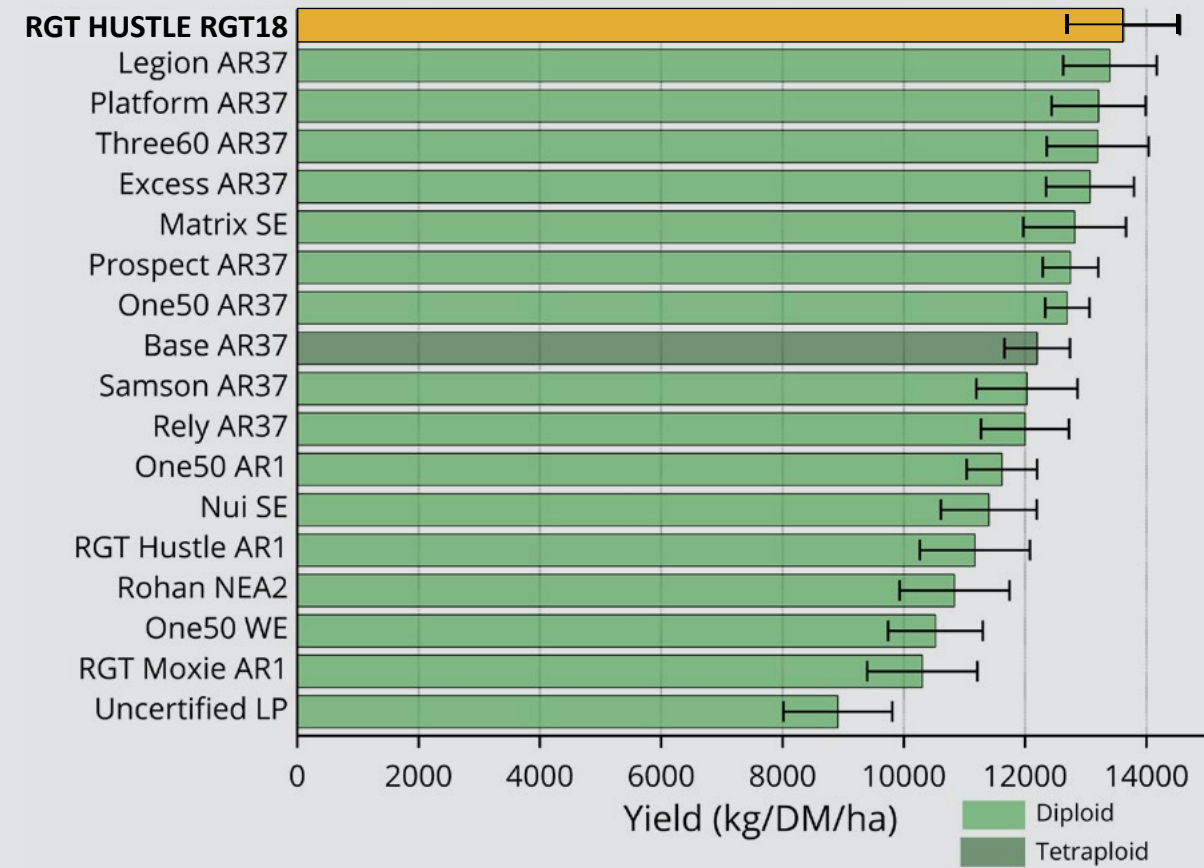


> **OUTSTANDING YIELD:** Performance, production and persistency remain exceptionally strong even under high insect pressure, particularly from black beetle and Porina.

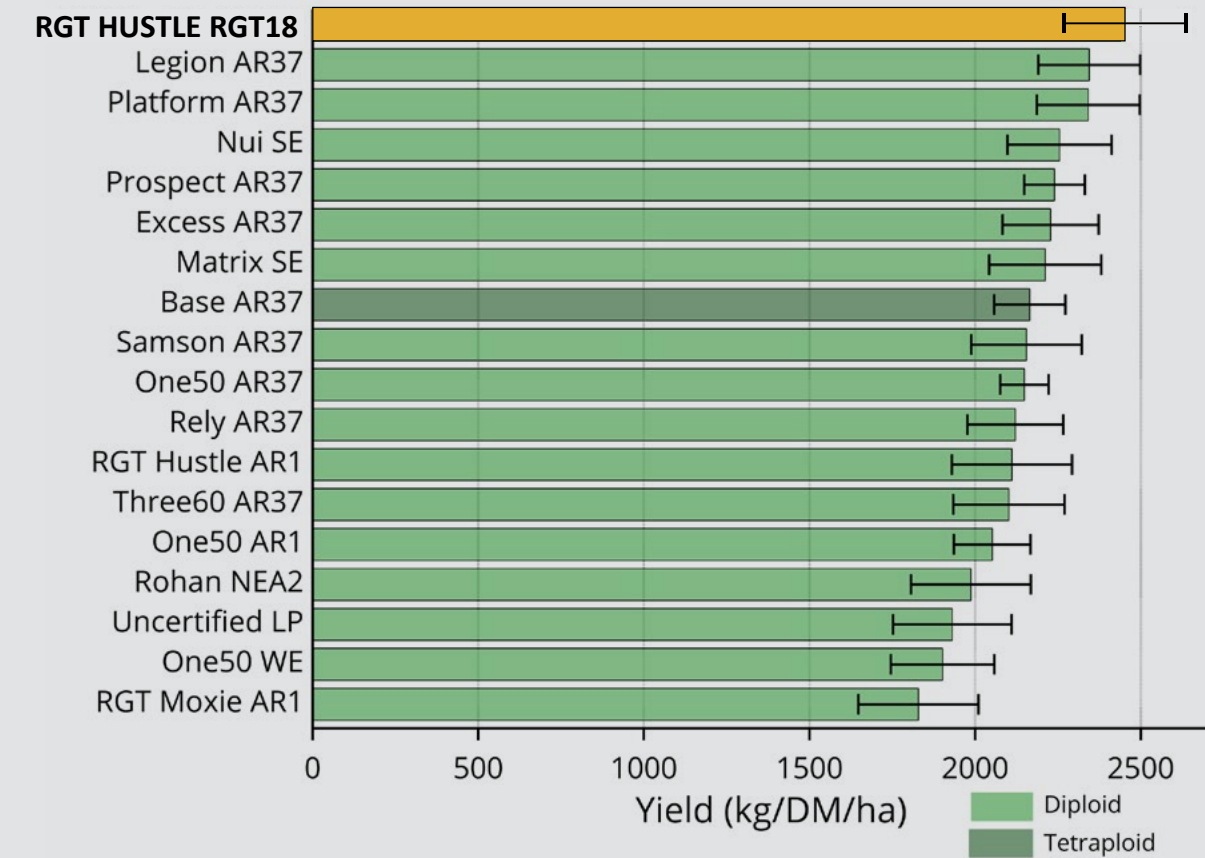


> **COOL SEASON PERFORMER:** A key factor behind RGT Hustle RGT18's high yield is its strong growth during cooler seasons, providing a highly palatable and nutritious pasture when it's most valuable.

UPPER NORTH ISLAND - TOTAL YIELD



UPPER NORTH ISLAND - EARLY SPRING



AGRONOMIC INFORMATION



> **FEED BOOM:** RGT Hustle RGT18's exceptional early spring performance enhances farm profitability by providing high-quality pasture at critical times.



> **PROFITABLE:** Early spring pasture is very profitable feed, allowing for earlier animal production, avoiding summer stress, and helping farmers capture early market premiums.



> **BETTER GROWTH:** By producing pasture when you need it most, RGT Hustle RGT18 helps better match pasture growth with stock demand during the crucial early spring period.



NFVT SUMMARY 2024-2025

PERENNIAL RYEGRASS



> **BEST YIELD:** RGT Hustle RGT18 is undefeated for total yield from Taupō to Southland.



> **BRED TO PERFORM:** This proven performance across a wide range of environments is a clear reflection of RGT Hustle's elite genetics, enhanced by the benefits of the RGT18 endophyte.

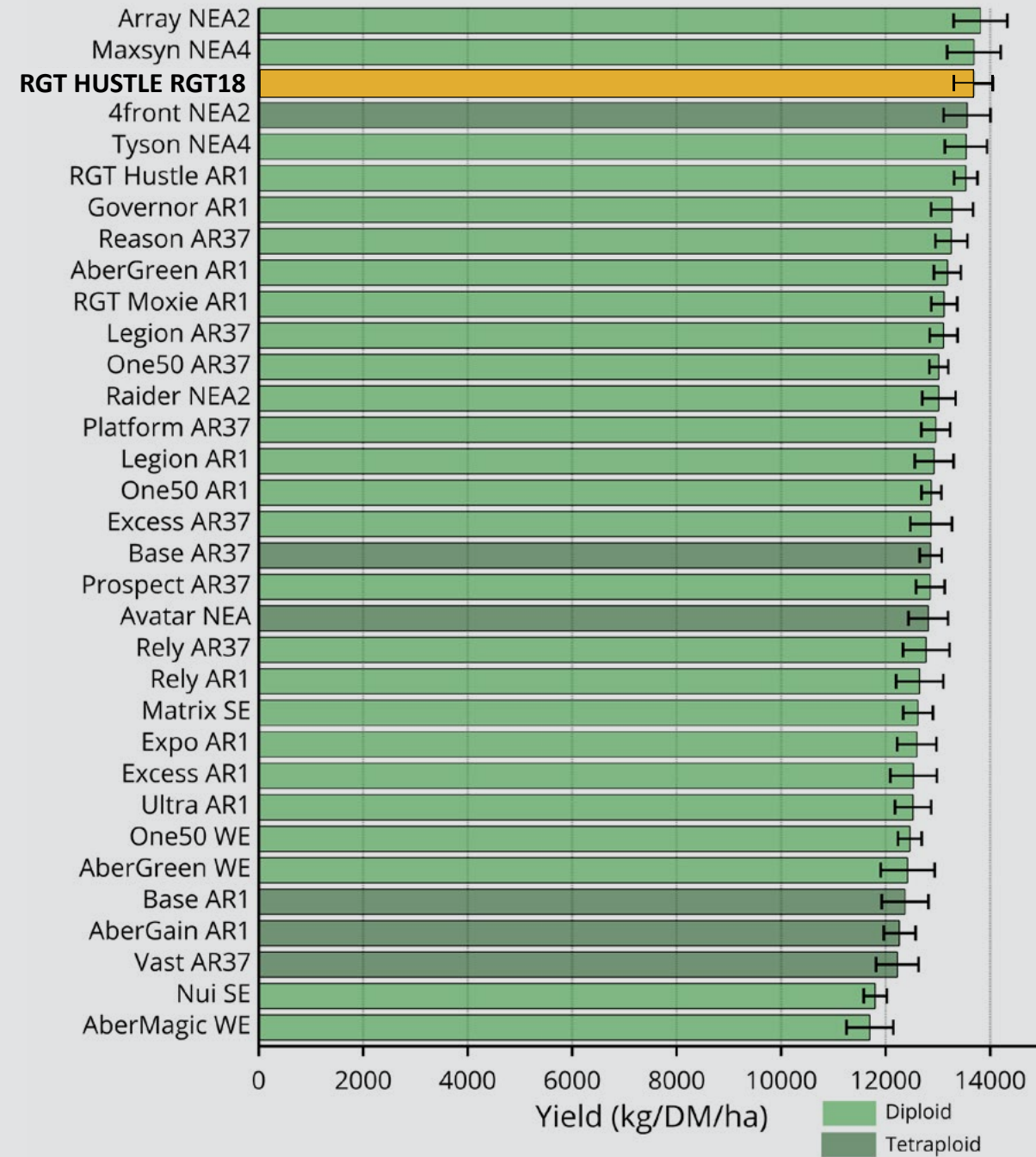


> **PAYS OFF/GREAT VALUE:** With strong growth throughout all seasons, RGT Hustle RGT18 ensures reliable pasture when livestock need it most, no matter what your farm system is, helping to reduce supplementary feed costs and increase profitability.

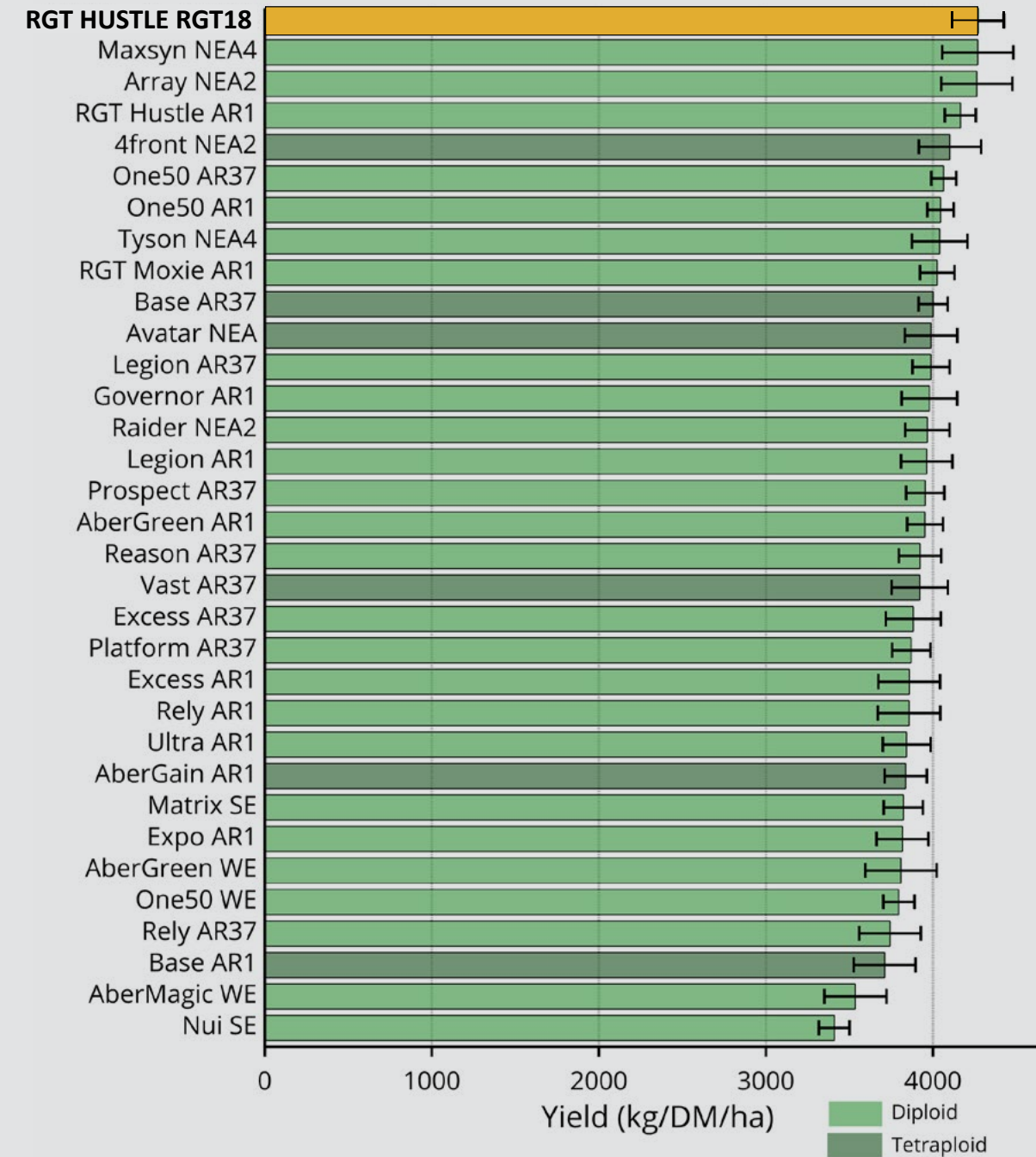


> **TICKS ALL THE BOXES:** The versatility, persistence, and durability of RGT Hustle RGT18 make it an excellent choice for New Zealand farm systems, whether dry stock or dairy farming.

SOUTH OF TAUPO - TOTAL YIELD



SOUTH OF TAUPO - SUMMER



AGRONOMIC INFORMATION



> **HOT PERFORMER:** Strong summer production plays a crucial role in providing essential energy and protein, contributing the overall farm performance.



> **CONSISTENT FEED:** Summer feed ensures consistent nutrition at a critical time of year, helping to maintain body condition, support liveweight gain across all livestock, and importantly, sustain milk production in dairy systems.

RGT18 ENDOPHYTE



**STRONG TOLERANCE
AGAINST BLACK BEETLE,
ARGENTINE STEM
WEEVIL AND PORINA.**



**REDUCED RISK OF
RYEGRASS STAGGERS
WHEN COMPARED TO
AR37 AND STANDARD
ENDOPHYTE.**



**PROVIDES INDUSTRY
LEADING PRODUCTION
WHEN PARTNERED
WITH RGT GENETICS
SUCH AS RGT HUSTLE
PERENNIAL RYEGRASS.**



INSECT

KEY INSECT
PEST TOLERANCE
/RESISTANCE



ANIMAL

MEETS ALL REQUIRED
ANIMAL SAFETY
REQUIREMENTS



FARM

HIGH
PERFORMANCE



think
SOLUTIONS
think **RAGT**



WEB



YOUTUBE



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The technical data mentioned in this document comes from tests carried out by RAGT. The results obtained may vary according to agronomic and climatic conditions, as well as specific cultivation techniques. In any event, the technical data provided is for information purposes only and does not bind RAGT contractually.