



## Background

**Tonic** is a mineral-rich perennial grazing herb. It is becoming an increasingly valuable pasture component for supply of minerals and dry matter production, particularly in drier regions and less fertile conditions.

**Tonic** is a fast-establishing species, and will be productive and persistent over a wide range of soils and climatic conditions. This includes less fertile soils and especially dryland regions. **Tonic** can be sown with a multiple grazing brassica at 2-3 kg/ha, with a permanent pasture mix at 2-4 kg/ha, and up to 10 kg/ha as a specialist crop with legumes. **Tonic** suffers from few pests and diseases. Pre-emergent weed control is important as **Tonic** is susceptible to broadleaf herbicides after emergence. It is not recommended to sow **Tonic** if a brassica crop is being used as a weed clean-up tool.

**Tonic** is highly palatable and preferentially grazed. **Tonic** suits a grazing management similar to ryegrass, with potential yields like that of perennial ryegrass. Ideally a 20-25 day rotation will maintain seedhead palatability through late spring and summer. **Tonic** is not known to cause milk taint.

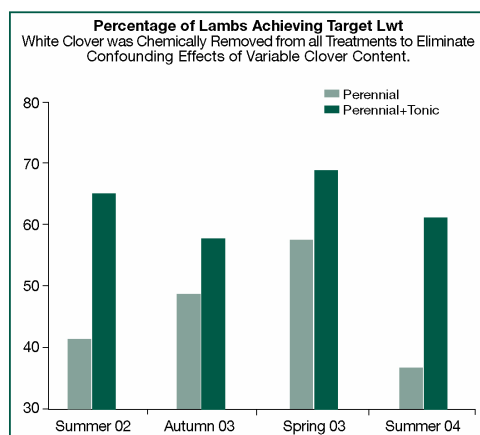
Scientific evidence (Moorhead et al, 2002, Hoskin et al, 2005 & Hoskin et al, 2006) suggests **Tonic** is effective at transferring minerals to the grazing animal. Literature reviewed by Stewart (1996) has identified biologically active compounds in **Tonic** that have beneficial medicinal properties.

**Tonic** can add value, both in terms of dry matter and quality, in a diverse range of ways in any farming system. The benefits of **Tonic** include improved dry matter production and quality at key times of the year. **Tonic** also has a positive impact on animal performance by improving the supply of some trace elements.

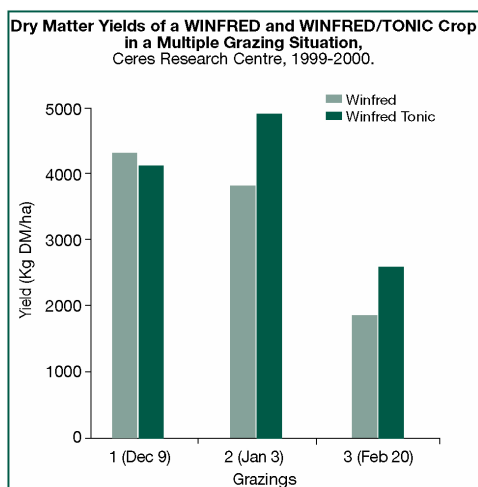


## Production Data

Inclusion of **Tonic** as part of a perennial pasture has been proven to increase lamb growth rates.



Percentage of lambs achieving slaughter target liveweight at the same date from a perennial pasture, with and without **Tonic**, in 3 successive years, Ceres Research Centre, 2002-2004.



Dry matter yields of a Winfred and Winfred/Tonic crop in a multiple grazing situation, Ceres Research Centre, 1999-2000.

Addition of **Tonic** to a multiple grazing brassica will improve yields in subsequent grazings, and possibly aid rumen adjustment (a function of its chemical properties and greater diet variation).

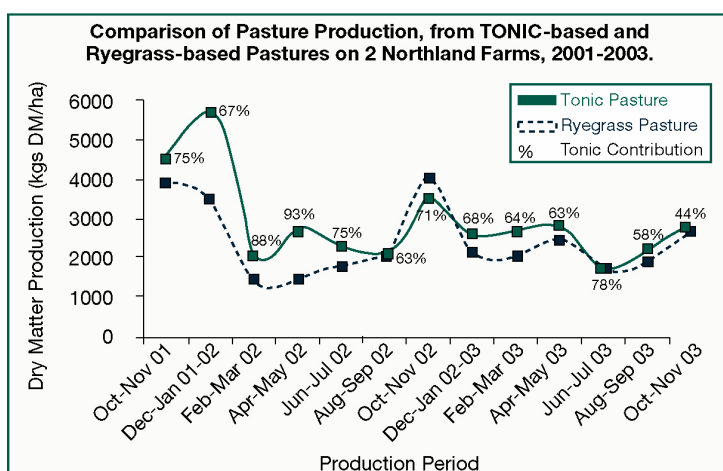
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**Tonic** contributes invaluable dry matter production, typically at times of the year when ryegrass, and other species, e.g. white clover, are not performing. **Tonic** has a deep, coarse root system which gives it a degree of drought tolerance, and the ability to respond quickly after summer-dry conditions. Inclusion of **Tonic** in pasture mixes will also improve summer pasture quality, being both high in minerals and endophyte-free.



## Key Features

- ✓ Valuable year-round DM contributor
- ✓ Source of key minerals
- ✓ Strong cool-season growth
- ✓ Suits wide environment range
- ✓ Extended 'shoulders' of seasonal production

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## Suggested Mixes

Due to its adaptive nature, **Tonic** plantain is recommended for a wide range of soil fertility, soil types and climatic zones. The main criteria is that long-lived weed species are well controlled prior to sowing or that the **Tonic** is left out of the mix until after weed control has been applied to the young pasture and the **Tonic** is broadcast on at a later date.

### High-fertility pasture

Cultivar	Kg/ha
<b>Tonic</b> plantain	2
Commando perennial ryegrass AR1, AR37	18
Tribute white clover (bare seed)	5
<b>Total</b>	<b>25</b>

### High performance, finishing pasture

Cultivar	Kg/ha
<b>Tonic</b> plantain	2
ONE <sup>50</sup> perennial ryegrass LE, AR1	18
Tribute white clover (bare seed)	3
Emerald white clover (bare seed)	2
Colenso red clover (bare seed)	4
Choice chicory	1
<b>Total</b>	<b>30</b>

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## Tetraploid pasture

Cultivar	Kg/ha
<b>Tonic</b> plantain	2
Ohau long-rotation ryegrass AR1	25
Tribute white clover (bare seed)	3
Prestige white clover (bare seed)	2
Colenso red clover (bare seed)	4
Choice chicory	1
<b>Total</b>	<b>37</b>

## General purpose pasture

Cultivar	Kg/ha
<b>Tonic</b> plantain	2
Samson perennial ryegrass LE, AR1, AR37	18
Tribute white clover (bare seed)	3
Prestige white clover (bare seed)	2
<b>Total</b>	<b>25</b>

## Brassica forage system

Cultivar	Kg/ha
<b>Tonic</b> plantain	2
Winfred forage brassica	3
Grouse chicory	1
Colenso red clover	4
<b>Total</b>	<b>10</b>