

## Pasture & Forage crop sowing & management guide: Richmond, Tweed & Upper Clarence, Autumn-Winter 2014

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**Note:** The varieties of temperate grasses & legumes, and tropical grasses listed in this fact sheet are expected to perform well in the Richmond, Tweed and Upper Clarence. Most have done well in North Coast and South-East Qld trials, demonstrations and through farmer experience. Undoubtedly there are equal or marginally better varieties available now that are not listed. Companies may also have superior varieties in the pre-release stage. Please also consult with seed company representatives and rural merchandise stores for other/similar varieties.

### Annual Ryegrass

Sow late March to May.

See variety appendix page 6. Tetraploids sow at 35-50kg/ha. Diploids sow at 25-40kg/ha. Use the higher end of the rates for rougher seedbeds and mulch-mow sowings.

Consider including perennial ryegrass, legumes and herbs to extend spring forage quality and quantity.

Ryegrass is best suited to irrigation, where it provides more uniform better feed over the whole season than oats, barley or triticale.

Graze annual ryegrass at the 3 leaf stage.

### Perennial Ryegrass

Sow late March to May.

Perennial ryegrass struggles to persist in the Northern Rivers due to competition from summer grasses. However varieties such as Bealey or Alto could be included in a mix with annual ryegrass up to 10kg/ha to help extend forage quality and quantity into the spring in irrigation situations.

Graze perennial ryegrass at the 3 leaf stage.

### Forage Oats

Sow Mid-March to May.

Sow at 90-120kg/ha except small seed varieties such as Saia 60-100kg/ha. Higher end of the range for broadcast or irrigated stands.

Medium to late maturing varieties such as Aladdin, Outback, Drover and Genie remain vegetative until later in the season and provide a longer grazing window.

Leaf rust resistant varieties such as Aladdin, Drover and Genie recover better after grazing and provide longer winter grazing than other winter cereals. There were reports of a new pathotype of leaf rust in southern QLD early 2013 that infects Drover. This pathotype has since spread more widely. But in absence of this pathotype Drover will appear resistant. Genie has high production in the absence of one race of leaf rust also.

Oats can be planted earlier and give more early feed than ryegrass. Oats can be mixed at half the normal rate with up to 25kg/ha of annual ryegrass to give a good seasonal feed balance.

Graze forage oats as soon as there is enough root development to prevent plants being pulled out (usually about 25cm high for erect types, or 10-15cm for semi-prostrate/prostrate types).

To ensure quick plant recovery and multiple grazings avoid hard grazing. Only graze to the height of the lowest stem node (about 5cm for prostrate types or 10cm for erect types).

### Barley, Triticale & Wheat

Sow April to June

Sow up to 100kg/ha alone or at reduced rates in a mix with forage legumes.

Barley e.g. Dictator 2 or Crackerjack

Triticale e.g. Breakwell and Endeavour

Wheat e.g. Naparoo or Petrel. Naparoo is a winter wheat for grazing and grain. Sow mid-March, graze, then lock-up late July for grain, hay or silage.

Wheat, barley and triticale varieties listed can be grazed first if sown early enough within the sowing window.

Suggested forage legume options to mix with winter cereals include.

Dun field peas e.g. semi-leafless Yarrum at up to 60kg/ha

Conventional field pea e.g. Hayman at up to 50kg/ha

Vetch e.g. Morava, Blancheffleur or Languedoc at up to 25 kg/ha

Arrowleaf clover e.g. Arrotas at up to 15kg/ha

## Forage Legume options

Sow March – May

Persian clover e.g. Maral, Turbo or Laser up to 12 kg/ha, reduce Persian rate by up to 30% if mixing ryegrass at up to 18 kg/ha.

Sub-clovers e.g. Napier, Antas up to 8 kg/ha with annual ryegrass. Ryegrass with clovers enables winter growth to be boosted by N fertiliser if clover growth is slow. Antas sub-clover has better winter growth than white clover. Both sub and white clover can be used in a mix with ryegrass.

High density clover: Persian clover up to 7kg/ha, white clover up to 4 kg/ha, Red clover up to 6 kg/ha plus ryegrass up to 10 kg/ha. Persian clover or high density clover mix is best irrigated and grown on less acid soils.

Arrowleaf clover e.g. Arrotas up to 2 to 3 kg/ha and ryegrass up to 15 kg/ha. Requires well drained soils.

Vetch (sow March-April): e.g. Morava, Blancheffleur or Languedoc at 30-50 kg/ha Vetch best on hills or well drained soils. Vetch has serious disease problems in some years.

Namoi Woolly Pod Vetch is well adapted, but can produce vetch toxicosis in some cattle.

It is important to remember to inoculate all legumes with the correct rhizobia. Speak with your advisor.

## Lucerne

Sow March to September

Sow at 15 – 25kg/ha for intensive haymaking or grazing.

Requires fine seedbeds in well drained soils with minimal soil acidity. Pre-emergence grass weed control, trifluralin. Spinnaker or post-emergence 2,4-DB or bromoxynil for broadleaf weeds.

Many varieties available see the Lucerne variety guide by clicking [here](#). Root/crown rot resistant varieties are preferable.

## Brassicas

Sow March to Mid-April

Sow at up to 3½ kg/ha.

Example varieties include, Winfred rape, Hunter (rape x turnip hybrid) or SF Pacer. These varieties give good regrowth after several grazings.

Brassicas do best on a good seedbed in more fertile sites with liberal N and S fertiliser. They can be sown earlier than ryegrass for quick high quality feed.

More information on managing forage brassica is available by clicking [here](#).

## Herbs

Sow from March to June

Sow at up to 2kg/ha in a mix with temperate grasses

Chicory e.g. Choice, Commander or Grouse

Plantain e.g. Tonic

Plantain tolerates periods of waterlogging while chicory will die out in heavy soils that get very wet.

## Perennial Temperate grass & Legume mixes

Sow late March to June

Prairie grass: e.g. Atom, Grasslands Matua or Tango. Sow 35-60 kg/ha. Prairie grass does better on deep friable, well drained sites and needs a longer grazing rotation than ryegrass. It is best sown with little or no ryegrass as Prairie is slower to establish, but it will be more persistent.

Perennial Ryegrass: e.g. Samson, Alto, Arrow, Fitzroy, Bealey etc. Sow 8-30 kg/ha (less rye and less N = better legume).

Fescue: e.g. Hummer, Jesup MaxP, Dovey, Quantum MaxP or Advance MaxP. Sow up to 25 kg/ha. Fescue tolerates wet sites & produces more even seasonal feed than ryegrass. It is best sown with little or no ryegrass as Fescue is also slower to establish, but it will be more persistent.

Perennial Temperate grasses need good management to maximise yield and enhance persistence. Eliminate summer perennial grasses before establishing temperate perennials. Graze rye at or near 3 leaf stage; prairie 4 leaf; fescue 2 leaf and back-fence after grazing to prevent cows destroying new shoots.

#### *Companion legume options*

Haifa, Trophy, Will, Osceola or Sustain white clover up to 4 kg/ha and/or

Renegade, Claret, Sensation, or Hamua (cowgrass) red clover up to 5 kg/ha and/or

Winter active lucerne up to 8 kg/ha (well drained, less acid sites only).

## Perennial Tropical Grasses

Sow late February to late March

Kikuyu: e.g. Whittet (2 kg/ha). It has also been established with mid-march sown ryegrass

Setaria: e.g. Narok/Solander/Splenda (2-5 kg/ha). Setaria is unsuitable for horses. Splenda - palatable late maturing setaria but is higher in oxalate and more frost susceptible than Narok or Solander.

Panic: e.g. Gatton or Petrie Green Panic (2-5 kg/ha)

Rhodes grass: e.g. Callide, Toro and Mariner or Katambora (1.5-2.5 kg/ha). Callide is more palatable than Katambora Rhodes.

Bisset creeping bluegrass (1-3 kg/ha).

Can also mix with plantain or chicory – see page 2

If autumn sown can mix 2 kg/ha Haifa white clover (widely adapted), or up to 2 kg/ha Palestine strawberry clover for less acid poorly drained heavy soil.

## Fertilising Pastures & Forage crops

Soil deficiencies of nitrogen, phosphorus, potassium, sulphur and molybdenum can limit plant growth. Soil analyses done well before planting, or plant tissue tests done to sort out nutrient deficiency symptoms,

will aid fertilizer and lime application decisions. Talk to your adviser for more detail.

Fertiliser recommendations in this guide are given as rates of actual nitrogen (N), phosphorus (P), potassium (K) or sulphur (S). Different fertilisers contain different quantities of each element as listed below:

### Some Fertiliser Constituents

100 kg fertiliser as:	kg actual			
	N	P	K	S
Superphosphate	Nil	8.8	Nil	11.0
SuPer 40 S	Nil	5.5	Nil	40.2
Pasture Plus	Nil	15.4	Nil	15.4
Sulphur bentonite	Nil	Nil	Nil	90.0
Natural Gypsum	Nil	Nil	Nil	14.5
Pasture 13	Nil	6.7	12.5	8.2
600 (S)	17.9	5.1	Nil	18.9
CK88	15.1	4.3	11.5	13.6
Gold Phos 10	Nil	18.5	Nil	10.4
Cal-Gran	23.9	Nil	Nil	10.8
CK 55(S)	12.8	14.1	11.9	6.0
Urea	46.0	Nil	Nil	Nil
Urea S	40.8	Nil	Nil	4.8
Gold N with elem' S	40.5	Nil	Nil	10.0
Sulphate ammonia	20.2	Nil	Nil	24.0
Muriate of Potash	Nil	Nil	50.0	Nil
Cal-Gran Aftergraze	20.6	3.0	7.5	3.8
Cal Am N + 8% Ca	27	Nil	Nil	Nil
Greentop K	32.8	Nil	11.0	2.9

**To avoid fertiliser burn to seedlings avoid drilling more than 20 kg N + K/ha in direct contact with seed in narrow rows (around 18cm).**

## Fertiliser Recommendations

### Nitrogen (N)

Promotes growth of grasses like setaria, kikuyu, ryegrass and oats and also brassicas (see N rates in above tables)

Broadcast up to 60 kg N/ha for establishment and up to 60 kg N/ha/month (or after grazing) to maximise temperate and tropical grass as well as winter cereal growth.

Legumes also add nitrogen. Ensure effective nitrogen fixation in legumes by inoculating and lime coating all legume seeds (clover, lotus etc) with the correct inoculum.

### Phosphorus (P) and Potassium (K)

To achieve good pasture performance with good legume growth, aim to maintain soil P at or above the following levels:

Soil Type	Colwell Extractable P ppm
Sandstones, shales, granites	30-45
Chocolate basalts/lighter	60-80
Red basalts/heavy clay alluvials	80-100

(Use PBI test for more accurate critical Colwell P).

Soils much higher than these levels (eg. many chocolate basalts and Kyogle alluvials) are fairly unresponsive to P fertiliser. However, low P soils (eg. Sandstones, shales and granites) generally require up to 35 kg P/ha in the first year and then 25 kg P/ha/year for at least 3 years to achieve these levels.

Farmers are encouraged to balance any P loss from their system with added P fertiliser. Dairyfarmers growing intensive pastures will often need to balance K loss with added K fertiliser. For example, a dairy farm running 2 cows/ha and averaging 5800 L milk/cow off pasture and 1.2 tonne concentrate/cow/year needs about 27 kg P/ha/year and 25 kg K/ha/year to balance losses.

*Potassium* - apply up to 50 kg K/ha to intensive dairy pastures on low K soil up to three times a year when you expect good growing conditions. Plants can take up more K than they need, so do not apply any more than about 50 kg K/ha (100 kg/ha muriate of potash) in one application.

### Sulfur (S)

Pastures on most north coast soils, especially those containing ryegrass or clovers, usually respond to S. High P soils such as chocolate basalts are especially S responsive.

Seedbed cultivation often releases enough S for one year. However, pastures sown into uncultivated seedbeds require about 25 kg S/ha at sowing.

Up to 30 kg S/ha/year is usually enough for less intensive pastures, however intensive temperate dairy pasture (especially high N rye) often needs more, so apply 20 kg S/ha in about April, and again in about August to ensure needs are met.

**Note:** Superphosphate, SuPer 40S, and gypsum are good sources of Sulfur. Fertilisers containing sulfate of ammonia are a convenient but far less desirable source of S, because of their acidifying effect on soil.

### Molybdenum (Mo)

About 50 g Mo/ha is needed, particularly by legumes on acid soils. The higher P sorbing basalts need this every 3 years, and the sandier soils every 5 years.

200 kg of Super Mo 0.025/ha gives 50 g Mo/ha.

100 kg of Super Mo 0.05/ha gives 50 g Mo/ha.

Do not apply more Mo than recommended as it can cause copper deficiency in animals

### Lime

Very acid soil with high aluminium restricts growth of crops and pastures, particularly legumes (lucerne is most sensitive). Lime or dolomite rectifies high acidity. Use lime if calcium is down, or dolomite if magnesium is down. On intensive pasture try to maintain pH (CaCl<sub>2</sub> method) at or above 5. For lucerne try to get pH to 6 or more.

## Pasture and Forage crop Establishment Techniques

### Broad area, low cost pasture improvement

The cheapest way to improve pasture and lift stock carrying capacity is to spread fertiliser without any cultivation (superphosphate on low P soils; sulfur fortified superphosphate or elemental sulphur on high P soils). See Fertiliser section above. Contact your Local Lands Service Pasture/Livestock Officer or consultant.

If sufficient legume is not present broadcast white clover at 2 kg/ha.

Spread legume seed in autumn when there is minimum competition from existing pasture.

Spreading the correct fertiliser promotes legume growth and encourages better grasses such as paspalum and kikuyu.

### Cultivated seedbeds

Well prepared, moderately fine, firm, weed free seedbeds provide the best environment for rapid pasture or forage crop establishment, especially for species with low seedling vigour such as most tropical grasses (eg. kikuyu, setaria), lucerne, and a few temperate grasses such as fescue.

### Direct drill/zero till techniques

Easily established species (ryegrass, clover and vetch) can be direct drilled or broadcast into well managed summer base pastures in autumn/early winter. Reduce competition from existing pasture by heavy grazing, slashing and/or suppression with herbicide such as glyphosate.

Species with low seedling vigour establish best when competition is controlled by cultivation. However, slow starters such as setaria, rhodes grass and cocksfoot have been successfully established into chemical seedbeds.

### Surface sowing or direct drilling of intensive ryegrass and/or clover

Usually requires suppression of summer pastures. Suppression can be achieved by herbicide, frosting, closely mulched and/or lightly renovated pastures. Surface sowing can be just as successful as conventional establishment, provided nutrition is good and seeding rate is high. Here are some guidelines:

Apply about 30 percent more seed than to cultivated seedbeds.

Apply 25 kg S/ha, and for ryegrass/oats apply up to 80 kg N/ha (do not drill more than 20 kg N/ha in direct contact with seed). Apply P and K as for cultivated seedbed according to soil type and/or soil analysis.

## Management guide for Intensive Pastures

### Tropical grasses with high N

Try to promote highest leaf to stem ratio, since leaf is more nutritious. Strategic slashing/mulching may be needed to reduce build-up of rank stem material. This is especially important with kikuyu.

During the warmer part of the year, graze within 2 or 3 weeks of last grazing before digestibility drops too much.

#### *Autumn saving*

Milder autumn temperatures mean moderate growth rate, which maintains acceptable feed quality. Heavy N topdressing around March builds up a good bulk of feed that can be saved up until sometime before the first frost. Kikuyu is particularly well suited to autumn saving, while taller grasses like setaria have a greater tendency to shoot up seed-heads.

Be aware that armyworms can be attracted to high N grass, but are less prevalent after early April. Chlorpyrifos controls armyworms.

### Tropical grass with clover

Keep grass short by heavy grazing or slashing/mulching so clover is not choked out.

### Irrigated ryegrass or ryegrass/clover

Rotationally graze ryegrass at or near 3 leaf stage (4 leaf for prairie grass) and back fence to keep cattle off new shoots. Wastage during grazing increases as pasture grows past 2500 kg dry matter per hectare (about 15 cm in height).

In spring, ryegrass grows rapidly and goes to head if left too long. Aim to keep it leafy and try to stop it going to head. This retains its high quality and good animal performance ability, and helps prevent clover being choked out. "clover loves light".

To keep ryegrass young and leafy in spring, restrict grazing rotation to 3 weeks or less and if necessary

top it to restrict head development. Make excess pasture into hay or silage to reduce wastage and fill future feed gaps.

### **To promote good persistence of perennial ryegrass or prairie grass:**

Eliminate summer grasses before sowing. Do not graze lower than about 5 cm during growth season, but in summer do not graze ryegrass below about 7.5 cm and keep summer grasses under control by slashing after grazing if necessary. Prairie grass needs longer spring grazing interval to enhance summer plant survival and promote seeding and subsequent seedling recruitment the following autumn. A heavy grazing in autumn lets in light to promote tillering and assist clover development.

## **Appendix Ryegrass Varieties**

### **Annual Italian (Westerwolds)**

**Early flowering diploids:** Griffin

**Early flowering tetraploids:** Tetila, SF Flyer, SF Catapult

**Mid-season flowering diploids:** Aristocrat II, Noble, SF Sultan

**Mid- season flowering tetraploids:** Maximus, SF Adrenaline, T Rex, Winter Star II

**Late-season flowering diploid:** Arnie,

**Late-season flowering tetraploid:** SF Speedyl (high production in SF Tweed trial)

Westerwoldicum types are Italian ryegrass varieties originally developed in the Netherlands. They are strictly annuals.

### **Italian ryegrass**

**Mid-season flowering diploid:** Eclipse

**Late-season flowering diploid:** Knight, Warrior, Hulk, SF Accelerate, SF Indulgence DipQ (Indulgence better in well prepared seed bed)

**Late-season flowering tetraploid:** Feast II, SF Emmerson

Italian ryegrass is more persistent and can produce for 1 – 2 years under good growing conditions and management.....however the Northern Rivers environment rarely favours growth for more than one year. Late season Italian ryegrass has value for a spring hay or silage cut.

### **Italian hybrids and Perennial hybrids**

Examples include Perennial ryegrass x Italian and x meadow fescue have not yet consolidated a place in the Richmond-Tweed and Upper Clarence but are worth trying

## **More information**

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## **Further Reading**

[2014 Forage Oat Variety Guide](#)

[Winter crop variety sowing guide 2014](#)

[Weed Control in Winter crops](#)

[Pasture varieties used in NSW 2012-13](#)

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