



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

## Woolly pod vetch

### Scientific name(s)

*Vicia villosa* ssp. *dasycarpa*

### Strengths

- An annual pasture/forage/grain legume, palatable green and as dry matter/hay/silage.
- Very high animal feeding value as green and dry plant.
- Very high in dry matter production (5-12t/ha) and highly acceptable as hay/silage as well for green manuring. WPV offers substantial improvements in soil fertility, structure and organic matter as well as offering a weed and disease break for cereals in a crop rotation.
- Vetch as a legume crop fixes atmospheric nitrogen that is beneficial in field crop rotation as well as in orchards, vineyards and cotton production.
- Growing vetch in crop rotations as a pasture or hay can be a very good strategy for controlling resistant grass weeds, because they will be grazed or cut before grasses have formed or set seeds and it provides a disease break for cereal diseases.
- For vetch planting, maintenance, cutting and harvesting farmers can use the same machinery that they use for cereal crops.
- Provides non-selective weed control options for reducing the risk of herbicide resistant weeds in cropping phases (eg grazing, green manuring, and hay production, spray-topping).

### Limitations

- Grain can not be used for feeding any live-stock.
- Varieties are hard seeded (10-70%) and can occur as voluntary plants/weeds in following crops for many yrs.
- Initial growth is poor and requires clean land before seeding. In early growth stages it is a very poor competitor to weeds.
- Cannot perform well in low/medium rainfall (<400mm/yr) areas.
- Not well adapted to waterlogging.
- In early growth stages they are sensitive to lucerne flea and in mid to later growth to cowpea aphids as well as to *Heliothus* in flowering and podding stages.
- Herbicide options for broadleaf weed control are limited.

### Plant description

**Plant:** winter growing annual, with multiple laterals branching from near the base.

**Stems:** weak stemmed climbing, 40-120 cm high, green and hairy.

**Leaflets:** two pair, narrow green leaflets. The central leaf stalk containing 5-10 pair of leaves with a tendril on the top.

**Flowers:** small with multiple, 5-20 (10-20mm); colour-violet/purple.

**Pods:** length 20-30mm by 7-10mm with 2-5 seeds.

**Seed:** small to medium (100seeds=3.5-5.5g).

### Pasture type and use

Woolly pod vetch (WPV) varieties in Australia are: Namoi, Capello & Haymaker. This species can be used as a pasture plant, hay/silage and green manuring crop. Plant establishment is much slower than common vetches (in 10-12 weeks reaching 10-15cm high. These varieties in Australian conditions grow rapidly during the second part of vegetation and generally are higher in dry matter production than common vetches.

## Where it grows

### Rainfall

Annual rainfall >450mm (growing season rainfall >350mm).  
Adapted and grown in southern Australia for grazing/green manuring or just grazing as well as for hay/silage and seed export. In subtropics in northern New South Wales and southern Queensland, mainly as a green manure in cotton production, orchards and vineyards.

### Soils

Adapted to a medium and heavier soils of moderate fertility.  
Prefers neutral soils, but can grow in slightly acid (pH 6.3) to alkaline (7.5-7.8pH) soils.  
Not tolerant to long periods (>7days) of water logging or salinity.

### Temperature

Adapted to Mediterranean and Temperate Zones of southern Australia (10-35<sup>0</sup> C)

## Establishment

### Companion species

Can be grown in mixtures with annual ryegrass, volunteer cereals or sown cereals for grass/legume pasture or hay production, and with a range of summer growing grasses in the subtropics.

In Europe it is grown as a 'companion' crop between rows of corn and sunflower to provide nitrogen to 'companion' crops.

Vetches as an annual legume can be grown with perennial legumes to provide more bulk and feed in the first year of seeding.

### Sowing/planting rates as single species

20-25kg/ha in areas with annual rainfall of <450mm/yr; and 25-35kg/ha in areas with annual rainfall >500mm/yr.

### Sowing/planting rates in mixtures

For quality pastures or hay/silage use mix of 2/3 vetch and 1/3 of rye grass or cereals (as a % of) the recommended rate for particular areas.

### Sowing time

For early feed/grazing obviously an early (mid April- May) sowing time is needed, especially in lower rainfall areas. Dry matter production is significantly reduced if sowing is delayed to end of June or July (for southern Australia)

### Inoculation

Commercial Group E

### Fertiliser

This species has much slower initial growth, compared with common vetch, and requires 25-50kg/ha of nitrogen.

Phosphorus at 50-75kg/ha is very important to be added at sowing time, and generally provides a good start and growth.

## Management

### Maintenance fertiliser

Generally vetches are grown in rotation with cereals that regularly use a combination of fertilizers; this provides enough residual nutrients to maintain soil fertility for vetch growth. So no extra fertilizer applications during the growing season are required

Vetch has a strong root system that develops nodules at an early stage; this provides sufficient nitrogen for the plants to use and accumulates significant amounts for the following crops.

### Grazing/cutting

Least resistant to grazing than common vetches. Regrowth is dependant significantly on rain or available moisture after grazing.

All current WPV are palatable for grazing and for hay/silage production.

This species can be grazed only after it reaches 15 nodes (>50cm high) and up to flower, not before 15 nodes or after flowering - otherwise it can cause problems or even death of livestock. The vetch plant and hay nutritive and feeding values are very satisfactory for ruminants. Dry matter (DM), dry matter digestibility (DMD), crude protein (CP), acid detergent fibre (ADF) neutral detergent fibre (NDF) and water-soluble carbohydrate, are inferior to the plant stage. As plant matures, DMD, leafiness and CP decreases and NDF and ADF increase. Just before flowering the nutritive value of vetches is at its best.

For hay/silage use the best time to cut WPV is at the flowering stage before pod set. Hay should not be made after pod set, due to grain toxicity.

In crop mixtures with cereals or rye grass varieties of these crops have to be chosen to mature at the same time as the vetch crop.

Cereal machines are recommended for cutting and bailing.

### **Seed production**

Average over 5yr's is approximately 800kg/ha mostly in areas >500mm of annual rainfall. Harvesting is by cereal harvesters with crop lifters

### **Ability to spread**

Small possibility to be spread by animals or birds.

### **Weed potential**

Capello and Haymaker were selected as "soft" seeded varieties from the very hard seeded variety Namoi. But, these two varieties in cross pollinating have become hard seeded varieties and will be replaced with softer woolly pod varieties.

In cereal crops the voluntary vetches can be easily controlled by many broadleaf herbicides that are regularly used for controlling broadleaf weeds.

### **Major pests**

Lucerne flea, bluegreen aphid, cowpea aphid and Heliothis.

### **Major diseases**

Ascochyta (Ascochyta blight), Chocolate spot (Botrytis spp).

### **Herbicide susceptibility**

Tolerant of most common grass-selective herbicides, check labels.

Intolerant of herbicides residues from cropping phase, particularly sulfonylurea herbicides.

Susceptible to spray topping herbicides (Glyphosate, Paraquat & Diquat) as well to most broad leaf herbicides that used in cereal crops.

## **Animal production**

### **Feeding value**

Hay samples show very high animal feeding values: crude protein (16-28%), digestible (50-82%) and metabolise energy (7-11MJ). Hamilton Veterinary Institute - data of 225 samples of mixed vetch species.

### **Palatability**

Green and dry plants are palatable for all ruminants.

### **Production potential**

Excellent feed for growing and finishing livestock.

Dry residues of plants after spray topping provide a useful grazing crop through the summer.

Very good potential for exporting pure seeds to overseas countries for pastures, hay and green manuring.

### **Livestock disorders/toxicity**

Many reports have shown grain toxicity from this species has caused toxicity and even death of livestock.

## **Cultivars**

Cultivar	Seed source/Information
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<p>Capello    Haymaker</p>	<p>Capello and Haymaker are similar in maturity (&gt;130 days from seeding to flowering); adapted to high rainfall (&gt;450mm) areas with medium to heavier soils. Resistant to rust and susceptible to ascochyta and chocolate spot, as well as to lucerne flea, blue green aphid, cowpea aphid and Heliothis. Capello contains a higher % of hard seeds (&gt;40%) than Haymaker (10-30%). For hay production they both have good leaf retention. Planttech</p>
<p>Namoi</p>	<p>Namoi is the highest biomass producer with a very high % of hard seeds (&gt;50%). Namoi is a later maturity variety (&gt;140 days from seeding to flowering); adapted to high rainfall (&gt;450mm) or irrigated areas with medium to heavier soils. Resistant to rust and susceptible to ascochyta and chocolate spot, as well as to lucerne flea, blue green aphid, cowpea aphid and Heliothis. For hay production it has good leaf retention.</p>

 Denotes that this variety is protected by Plant Breeder's Rights Australia

### Further information

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### Acknowledgements

"Vetch Sowing Guide"

"Vetch Fact Sheets"

"Seedmark pamphlets for Capello and Haymaker"

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