Morava

Common Vetch

Vicia sativa

INTERNATIONAL

KEY FEATURES

- Late Maturity 115+ days to full flower
- Soft seeded, non-shattering
- Resistant to rust and tolerant to ascochyta
- Improved soil health through increased nitrogen fixation
- High yield Potential 17% over Rasina in trials

KEY BENEFITS

- Replacement for current varieties in areas with average rainfall above 350mm
- Suitable for green manuring and grazing
- Vigorous early plant growth and good grazing palatability

MORAVA is a rust-resistant, late-flowering variety with 100 per cent soft seeds, developed in 1998 by the ANVBP at SARDI. Grain yield is superior to other vetches in the high-rainfall areas and to Blanchefleur, Languedoc and Cummins in all other areas in the presence of rust. It is larger seeded and more resistant to shattering than other vetch varieties. MORAVA'S BCN level is 0.65 per cent, which is 50 per cent lower than Blanchefleur and Languedoc. MORAVA produces higher herbage yields than all other common vetch varieties. It is later flowering and maturing than Blanchefleur and grain yield will be reduced in environments with dry finishes. MORAVA is susceptible to Ascochyta blight and very susceptible to Botrytis because it produces very high biomass in wet/cool zones.

Growing Conditions

Soil Type:
Adapted to a range of soil types from sandy loams to clays of moderate fertility. Prefers neutral to alkaline soils

Sowing Rate:
Grain 40 - 50kg/ha
Hay/ Silage 50 - 60kg/ha
Grazing 50 - 60kg/ha
Green Manure 55 - 65kg/ha

Rainfall:
350mm+

pH:
5.0 - 8.0 ($CaCl_2$)

Inoculant:
Group E Rhizobium

Growth Appearance

In the early stages of growth, Morava has reddish leaves and shoots which later turn dark green in colour. It has red/purple flowers and the seed coat is dark brown with beige coloured cotyledons. This compares with Blanchefleur which has light green shoots and leaves, white flowers, smooth light brown seed coat, and orange cotyledons. Morava has shown to produce longer shoots and much larger leaves than Blanchefleur and Languedoc.

Disease Resistance/Tolerance

Older vetch varieties, Blanchfleur and Languedoc, are very susceptible to rust, (caused by Uromyces viciafabea), and ascochyta blight, (caused by Ascochyta spp). Morava however is resistant to rust and tolerant to ascochyta. In screen field and glass house tests since 1992, Morava has been resistant to showing any pustules, whereas Blanchefleur and Languedoc were susceptible, showing pustules on stems and leaves. Morava is a good option in areas where rust occurs.

Insect Pests

Morava, as with all common vetch varieties, is susceptible to red-legged earth mites (Halotydens destructor), native budworm (Helicoverpa punctigera) and lucerne flea (Sminthurus viridis). Appropriate control measures should be taken, especially in seedling stands.

Agronomy and Management

Regeneration Morava has 90–95% soft seed. This is a significant advantage in the reduction of volunteer vetch plants for following seasons for short term cropping rotations. Morava pods demonstrate a longer non shattering period compared to other Common vetch varieties such as Blanchefleur and Languedoc, meaning that seed harvest can be delayed slightly without suffering from a significant yield penalty. Grazing Vetch is not suited to close grazing as its growing points are well above ground level. However, in longer season environments, Morava can be lightly grazed successfully during winter and early spring, provided the growing points are not damaged. Heavy grazing can cause significant damage to the plant, and it may not recover. Bloat can be a problem on pure legume stands and stock will have to be watched carefully if grazing green vetch paddocks.

Common Vetch Agronomic Information

Scientific name(s) *Vicia sativa*

Strengths

- Common vetches are an annual pasture/forage/grain legume, extremely palatable at all growth stages, from early green shoots, as dry matter/hay or silage through to seedpods and seeds over summer. It has very high feed values for animals as green plants and dry matter as well as grain
- Vetches have the ability to offer 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 fixes atmospheric nitrogen in the soil; this is beneficial for subsequent cereal crops in both yield and quality
- 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 from cereal diseases
- For vetch planting, maintenance and harvesting, farmers can use the same machines that are used for cereal crops
- Provides non-selective weed control options for reducing the risk of herbicide resistant weeds in cropping phases (e.g. grazing, green manuring, and hay production, spray-topping)
- Soft seeded species are suitable for use in all crop rotations, without the risk of voluntary plants creating a problem in following crops

Limitations

- Not well adapted to waterlogging
- In early growth stages, vetches are sensitive to red-legged earth mite, and lucerne flea, and in mid to later growth to cowpea aphids as well to Native bud worm/ Heliothis at flowering and podding stages
- Post emergent herbicide options for broadleaf weed control are limited

Plant characteristics

Plant: annual, moderate stem strength and grows as small bushes. 40-80 cm high, with multiple lateral branches from near the base.

Stems: large climbing semi-prostrate with 9-16 internodes with multiple green to dark green leaves.

Leaves: concave, green, hairy on both sides. The central leaf stalk contains 4-8 pair of leaves with a tendril on the top.

Flowers: single or pair, medium (10-35mm); colour-violet/ purple or white.

Pods: length-medium to long (40-70mm); with 6-8 seeds.

Seeds: medium to large (100 seeds = 6.5-8.9g); testa - brownish ornamentation; cotyledons colour: Morava & Languedoc -beige; Rasina -greenish; Blanchefleur -red/orange; softness - Mor 99-100%; Ras 95-100%; BF and LNG 80-95%.

Pasture type and use

Common vetch varieties (CVV) have multipurpose end use options, as a pasture, hay/silage, and green manuring crops. Plant establishment after autumn rains is significantly faster than medics and clovers, reaching 6-10 nodes (10-15cm) in 6-8 weeks. CVV have some resistance to grazing, the other species are more susceptible. This species does not show an obvious preference for particular soils. New vetch varieties are bred for Australian medium/low rainfall areas.

Vetches are potentially adapted to most areas of Australian farming land. Farmers perceive vetches as a reliable, versatile legume for pasture, green manure, hay/silage and grain. Vetches in crop rotations can be used to manage cereal diseases, grass weeds, improve soil fertility and contribute to increased yield and protein content in following crops.

Where it grows

Rainfall

Annual rainfall of 300-750 mm (growing season rainfall 200-350mm). Early flowering varieties (Rasina & Languedoc) are suited to lower rainfall zones, and Morava and Blanchefleur for higher rainfall zones.

Adapted to and grown in most soil types and rainfall areas in southern Australia. Also, in northern New South Wales and southern Queensland (mostly as a green manure).

Soils

Adapted to a range of soil types from sandy loams to clays of moderate fertility.
Prefers neutral to alkaline soils.

Temperature

Adapted to Mediterranean and Temperate Zones of southern Australia (10-35°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.

Sowing/planting rates as single species

See table on the following page - Plant and density and recommended seeding rates for vetch.

Sowing/planting rates in mixtures

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

Sowing time

Mid-April to end of June, depending on break of the season. Data from 10yr's of trials indicates that earlier seeding times produced better yields compared with later seeding. Sown at the same spacing as a cereal; 17-19cm between rows, at 4-6cm deep.

Inoculation

Commercial Group E.

Fertiliser

Triple Super - 50-75kg/ha at sowing time will generally provide a good start and growth, however many growers choose to sow without any fertilizer with good results.

Plant and density and recommended seeding rates for vetch						
	Common vetch varieties		Woolly pod vetch varieties		Purple vetch variety	
End-use	Plant density (plants per sq.m.)	Sowing rate (kg/ha)	Plants density (plants per sq.m.)	Sowing rate (kg/ha)	Plants density (plants per sq.m.)	Sowing rate (kg/ha)
Grain	40-60	40-50	40-50	25-40	40-50	25-40
Hay/silage	50-70	50-60	50-60	30-45	50-60	30-45
Grazing	50-70	50-60	50-60	30-45	50-60	30-45
Green manure	60-70	55-65	60-70	45-50	50-60	30-45

Management

Maintenance fertiliser

Generally common 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

Common vetch varieties have some resistance to grazing after 15 nodes (30cm high) till the start of flowering. Regrowth is dependant significantly on rain or available moisture after grazing.

All current common vetch varieties are palatable for grazing and for hay.

Morava and Rasina are resistant to rust and ascochyta and can be grazed at any time. But Languedoc and Blanchefleur are susceptible to rust and ascochyta, and if rust occurs in the crop DO NOT GRAZE that crop - rust can cause abortion in pregnant cows and sheep.

The nutritive and feeding values of vetch as a green plant and hay 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 green plant stage. As the 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 the best time to cut vetches is at the flowering-early podding stage. At this stage the balance between feed value and yield is the best.

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.

Ability to spread

Not possible to spread by animals or birds. When animals ingest grain, it breaks down completely. If soft seeded varieties are sown, any residual seed germinates in the following crop and is easily controlled with broadleaf herbicides.

Weed potential

New common vetch varieties (Morava & Rasina) are soft seeded varieties and have no potential to be a weed in subsequent crops. But varieties (Blanchefleur & Languedoc) have 5-20% hard seeds and can potentially be a weed in the following 2-3 yrs.

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

Major pests

Red-legged earth mite, lucerne flea, blue-green aphid, cowpea aphid and Heliothis/native bud worm.

Major diseases

Rust (Uromyces viciae-fabae), Ascochyta (Ascochyta blight), Chocolate spot (Botrytis spp).

Herbicide susceptibility

Tolerant of most grass-selective herbicides.
Intolerant of herbicides residues from cropping phase, particularly sulfonylurea herbicides.

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

Animal production

Feeding value

Hay samples have shown very high animal feeding values: crude protein (16-28%), digestible (50-82%) and metabolise energy (7-11MJ).

Palatability

Readily consumed by livestock, either as green or dry feed, including mature seed pods.

Production potential

Excellent feed for growing and finishing livestock. Dry residues of plants and pods, after spray topping provides a useful grazing crop through the summer.

Livestock disorders/toxicity

Plants infected by rust can cause abortion in pregnant ruminant animals.

Characteristics of selected vetch varieties

Variety	Maturity	Yield potential		Flower colour	% of		Disease reaction		
		Grain	Dry matter		Pod shattering	Hard seeds	Rust	Ascochyta	Botrytis
COMMON VETCH VARIETIES *(VICIA SATIVA)*									
Studenica$^{\Phi}$	Very early	High	High	White	0-2	0	R	MS	S
Volga$^{\Phi}$	Early	Very high	High	Purple	0-2	2-5	R	MS	S
Rasina$^{\Phi}$	Early-mid	High	Moderate	Purple	0-2	0	R	MS	S
Blanchefleur	Mid	High	Moderate	White	5-10	5-10	VS	MR	S
Timok$^{\Phi}$	Mid	High	Very high	Purple	0-2	0-2	R	MS	S
Morava	Late	High	High	Purple	0	0	R	S	VS
PURPLE VETCH *(VICIA BENGHALENSIS* SUBSP. *BENGHALENSIS)*									
Popany	Very late	Low	High	Purple	20-30	5-10	R	S	VS
WOOLLY POD VETCHS *(VICIA VILLOSA* SUBSP.*)*									
RM4$^{\Phi}$	Mid	Moderate	Very high	Purple	2-5	2-5	R	MS	VS
Capello	Late	Low	Very high	Purple	5-10	15-20	R	S	VS
Haymaker	Late	Low	Very high	Purple	5-10	20-30	R	S	VS

Source: Pastures Australia, GRDC Crop Sowing Guide and Barenbrug

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