



WESTERN

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CORPORATION

VETCH

SECTION 9

NUTRITION

KEY POINTS | NUTRITION

In-crop management – nutrition

Key points

- In-crop nutrient requirements are generally minimal unless nodulation fails.
- Rhizobia nodules need to be pink to be effective.
- Use leaf tissue testing, especially for micronutrients if deficiency is suspected.

FEEDBACK

i MORE INFORMATION

A paper on 'Maximising the fixed nitrogen benefits of pulses' was delivered by SARDI's Ross Ballard and the University of Adelaide's Maarten Ryder at the Southern Region updates held in February 2017. Please see <https://grdc.com.au/resources-and-publications/grdc-update-papers>

Crop Nutrient Deficiency Photo Library app, <http://www.ipni.net/ndapp>

GRDC Micronutrients and trace elements Fact Sheet, <http://www.grdc.com.au/GRDC-FS-CropNutrition-Micronutrients>

GroundCover™ TV Legume nodulation sampling, <https://grdc.com.au/Media-Centre/GroundCover-TV/2015/09/Episode-17-September-2015/bfnBsEM64t0>

i MORE INFORMATION

Inoculating legumes: a practical guide <https://grdc.com.au/GRDC-Booklet-InoculatingLegumes>

GRDC Nitrogen fixation Fact Sheet <https://grdc.com.au/GRDC-FS-NFixation-Legumes>

9.1 Nutrition

In-crop applications of macronutrients are rarely required in vetch. The main reason for application would be if nodulation failure occurred.

Similarly, applications of micronutrients are rare. Manganese may be required for vetch on highly alkaline soils.

Use leaf tissue testing to assess nutrient requirements if nutrient deficiency is suspected ([Table 1](#) and [Figure 1](#)).

9.1.1 Nodulation failure

If plants have failed to form sufficient active nodules, insufficient nitrogen will be fixed by the crop. If soil-available nitrogen is low the crop may be nitrogen deficient.

Description

Plants become yellow or pale green with restricted growth, especially during cold, wet periods through the seedling stages. Oldest leaves are the worst affected. There are few or no nodules on the roots or nodules lack red pigmentation inside. **Nodules that are white or green are not fixing nitrogen.**

Plants can appear normal on soils with moderate to high nitrogen levels until flowering, when they become pale green. Older leaves are affected most and first.

Management

As a salvage operation, apply nitrogen (N) to the affected crop with N fertiliser, if economic.

Ensure future crops are adequately inoculated with viable Group E or F inoculum.

When assessing the effectiveness of nodulation, the more nodules and the earlier the infection (i.e. on the tap and crown roots) the better. Nodules need to be pink to be effective.



Photo 1: Vetch roots showing an adequate level of nodulation for good nitrogen fixation. Vetch can fix between 50 and 150 kg N/ha depending on end use. No differences in nitrogen fixation have been recorded between vetch varieties. Nitrogen fixation is directly correlated to biomass production.

Photo: Emma Leonard, AgriKnowHow

SECTION 9 VETCH

FEEDBACK

Table 1: A guide to nutrient deficiency symptoms.

SYMPTOM	Old to middle leaves						Middle to new leaves					New leaves to terminal shoots					
	N	P	S	K	Mg	Zn	N	Mg	Mn	Zn	B	Mn	Fe	Zn	Cu	Ca	B
Chlorosis																	
Complete	x		x									x [#]	x				x [#]
Mottled	x	x	x		x					x	x						
Interveinal					x						x						
On margins			x		x												
Necrosis																	
Complete		x				x											
Distinct areas (including spotting)				x		x	x	x		x	x			x			
Margins													x				x
Tips				x		x		x				x		x	x		
Pigmentation within necrotic or chlorotic areas																	
Purple	x	x	x	x		x	x	x	x			x					x
Dark green		x										x					
Brown		x	x							x		x	x	x	x		
Red					x							x					x
Malformation of leaflets																	
Rolling in of margin				x				x					x			x	x
Wilting		x															x
Twisting									x				x			x	x
Malformation of leaves																	
Cupping	x							x									x
Umbrella formation								x				x					
Malformation of stems and roots																	
Internode shortening												x			x		x
Petiole collapse																	x
Root distortion												x		x		x	x

= mild

Source: Snowball & Robson (1991) Symptoms of nutrient disorders – faba beans and field peas, UWA in PIRSA/GRDC (2010) Vetch: The Ute Guide. PIRSA/GRDC – <https://grdc.com.au/vetch-the-ute-guide>

FEEDBACK

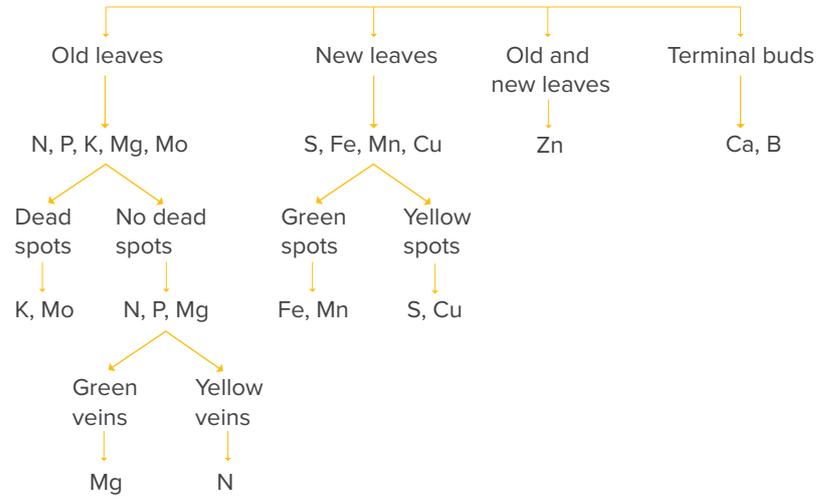


Figure 1: Considerations when diagnosing nutrient disorders.

Source: T Reddy, G Reddi (1997) Mineral nutrition, manures and fertilizers. In Principles of Agronomy. Kalyani Publishers, Ludhiana, India