

# High Density Legumes – where do they fit?

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## INTRODUCTION

"Montrose" is located in a 500mm (20 inch) winter-dominant rainfall zone. The country is red soil; pine, kurrajong and yellow box type. Out of a total area of 690 ha (1700ac), approximately 280 ha (700 ac) is cropped to wheat, lupins and oats. In the late 1990's, we increased our cropping area in an attempt to make more money. We were told that we would have to get rid of some sheep. Rather than this approach, we decided to increase pasture productivity by growing HDLs. As a result, we are now running more sheep and have increased our cropping area at the same time.

## WHAT ARE HDL'S?

HDLs are small seeded annual clovers, grown for forage. They provide a profitable 1 to 2 year break-crop (depending on the species) for cropping rotations, as an alternative to the traditional pulse break crop. There are many different species that could be termed HDLs, so selections should be made to suit the soil type and rainfall. Generally the softer seeded varieties are better suited for a break crop situation

## THE BENEFITS OF HDL'S

HDLs offer greater flexibility than the traditional pulse break crop in that they can be grazed, cut for hay/silage or green-manured. If the season permits, they can also produce significant quantities of regrowth after cutting or grazing, providing late spring growth to finish stock when other pastures have dried off.

HDLs offer substantial benefits to the following crop(s) in the rotation, including high nitrogen input, disease break and weed control (if managed correctly). Their superior economic returns, compared with pulses, depend on the grower's ability to rotationally graze HDLs throughout winter and spring (and early summer if the season permits), and/or the capacity to use or sell large quantities of hay or silage.

## HDL'S AT MONTROSE

In 1998, 20 different pasture trials were run on Montrose, including lucernes, grass mixes, medics and hybrid clovers. As a result, three clovers were chosen as the most suitable to increase winter and spring feed production. Crimson clover (*Caprera*), berseem clover

(Elite II) and Persian clover (*Laser*) were found to be simple to sow (using conventional machinery), germinated fast and provided grazing in 6-8 weeks. Whilst lucerne is good for summer and autumn feed, and sub clovers and medics have provided good quality feed in the past, these do not provide the quantity of feed needed to increase production and turn off prime lambs.

These HDL's are sown at 5-10 mm (not too deep) in March/April at about 2 kg/ha for each clover in the mix, 75 kg/ha MAP and 1.5 L/ha trifluralin are used. We have found a pre-emergent herbicide is essential for rye grass, fumitory and wireweed control as the clovers are poor competitors when seedlings. Post emergent herbicides for broadleaf weed control may also be required. We have used Tigrex in the first 6 weeks and MCPA up to spring. Advice needs to be sought on herbicides that are registered for use as many can cause substantial dry matter reduction.

HDLs have provided many benefits, including a disease break for crops, weed control for following crops, a soil conditioner (they have increased organic carbon) and a nitrogen boost. Soil tests have revealed increases in nitrogen to 60cm depth from 53 kg/ha to 190 kg/ha from a single year HDL pasture, which was grazed out. Vetch, which was grazed and cut for hay, increased nitrogen from 23 kgN/ha to 152 kgN/ha.

The grazing benefits of our HDLs have been measured by weight gains of 330g/day for first cross lambs and approximately 230g/day for merinos. Lambs are born in March/April and sold as 38kg light trade lambs, first draft in mid July. The 1000 merino ewes are joined to Dorset and East Friesian rams. All sheep are fully vaccinated, particularly to control pulpy kidney. The sheep on HDLs benefit from a burr and seed free environment. Paddock size must be kept small to allow enough grazing pressure to promote regrowth.

Crimson clover has also been successfully harvested on 'Montrose'. It was sown in March, grazed and harvested in the second week of November (at 100 days). Other clovers have a longer growing season and need a November rain to finish before harvesting.

## FACTORS TO CONSIDER WHEN GROWING HDL'S

### Paddock Selection

- Paddocks need to be relatively free of weeds, particularly broadleaf weeds as HDLs are poor competitors as seedlings. A paddock that has been kept

weed free whilst in crop for several years would be best.

- Most HDLs prefer soil pH<sub>CaCl<sub>2</sub></sub> ≥ 5.0 for optimum production.

**Sowing Date**

- Early April (optimum) to mid May. Early sowing produces more dry matter for winter grazing and improves competition against weeds.

**Sowing method**

- Seed is extremely small, so ensure it is placed with only a light covering of soil. Rollers can ensure good seed/soil contact.
- Inoculate seed.
- Keep phosphorus and sulfur levels high. A small amount of nitrogen can help early growth in low fertility paddocks, (although it may also encourage competitive grass weeds). Add molybdenum where necessary to encourage nitrogen fixation.
- A bare earth spray after sowing is recommended, or an early foliage spray as soon as insects appear. Check the label for registrations before use.

**ECONOMIC BENEFIT OF HDL'S**

Figure 1 is based on results of a 3-year GRDC funded project at Wagga Agricultural Institute evaluating the role of forage legumes (including HDLs) in our cropping systems.

Over the 3 years of the project, pea and vetch silage was a more profitable option than HDL silage, due to the increased dry matter production. However, the ability to graze HDLs through winter would increase their profitability.

HDL silage was also more profitable than HDL hay. The presence of maturing grass weeds in the fodder to be cut for hay lowered quality and consequently price. Many growers are growing HDLs to profitably manage herbicide resistance problems. Cutting the fodder before weeds set seed can drastically reduce resistant weed populations.

Although the grazing value of HDLs throughout the season was not evaluated in the project, farmer experience has shown this can be a very profitable option and has been the major reason for adoption of the technology to date.

Figure 1-3 year returns comparing the economic benefits of HDLs, large seeded forage legumes and pulses in year 1

