PROFITABILITY INTERGRATING LUCERNE BASED PASTURES WITH CEREAL CROPS

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Property

The property area is 1102 ha less 62 ha of timber, shelter and administrative areas, leaving 1040 ha for production. Soils are red brown earths with 500 mm average annual rainfall. The altitude is 300 m above sea level.

Cattle account for 1000 dse, being 46 cows and calves, 2 bulls and 45 young stock.

Sheep - we currently run 4800 dse's, a total winter grazing of 6280 dse based on 1 wether equivalent to 1.1 dse.

Cropping enterprises consist of 81 ha of rapeseed, 144 ha of barley and 225 ha wheat.

Summary

Lucerne based pastures allow more flexibility with stocking and higher stocking rates. Stock are unable to handle excess spring growth which allows hay to be made and fed back in the autumn and the winter or for drought reserves. Higher stocking rates help control broadleaf weeds and grasses in pastures, stubbles and fallows, benefiting crop rotations and lowering the incidence of take-all. Resultant fertility build-up maintains yields for longer periods in the cropping phase. Paddocks are kept in crop until a satisfactory pasture (lucerne and sub. clover) has been established. There is no future in keeping a poorly established pasture in the pasture rotation. One has more control of a paddock by continuing to crop it.

Establishment of lucerne pastures

Attention to details is important in planting and establishing pastures with cover crops. We prepare a seed-bed which is fine, moist and weed free. We use trifluralin to assist weed control. We use an air seeder, dropping the seed in the middle of the five by three rung covering harrows. This allows the front of the harrows to level the ground and the back of the harrows to cover the seed, putting seed at a suitable depth. Early insect control is most important. Red legged earth mite can kill a pasture before it gets out of the ground. Weeds need constant attention to see that they are not too competitive.

The seeding rates:
2.5 kg viable lucerne seed per ha.
3.5 kg viable clover seed per ha.

We use Condura 73 lucerne, mostly harvested from our own pastures and Seaton Park sub. clover also harvested from our own paddocks. Seed is treated with molybdenum trioxide at 75 g/ha lime pelleted and inoculated before sowing. Soil pH ($CaCl_2$) range from 4.5 to 5.0. Exchangeable aluminium reaches 4.5% with soil manganese levels low.

The pasture phase usually lasts 5 to 6 years but can last longer. The decision to go back into cropping is based on the capacity of the particular paddock to maintain production, the economics of crop versus livestock; the density of lucerne and sub. clover and the density of weeds.

Stocking procedures

Newly sown pastures are carefully stocked. We are happy to leave cattle setstocked on newly sown lucerne, for the first season after harvest encouraging better crowning, teasing dry matter about and generally helping lucerne to develop. Cattle do not eat new shoots like sheep do. Sheep need to be rotated, first grazing needs to be for a short period, but grazed hard, then allow pasture to recover well before further grazing. Winter grazing tends to be different as pastures can be set stocked or have a stocking rate of 25 dse/ha to control weeds or manipulate pasture composition (eg. keeping barley grass short allows clover to develop).

Returns from stock

District averages run at 7.5 dse/ha, cutting 5.5 kg wool/dse giving 41 kg total production per hectare. In our situation, we run 10 dse/ha, cutting 7 kg wool/dse giving a total production of 69 kg/ha.
Assuming a nett wool price of 310c per kg:-
69 kg @ 310c = $214.00
41 kg @ 310c = $127.00
Difference $87.00 per hectare gross return in favour of lucerne based system.

Cropping

Rapeseed tends to be a good first crop out of pasture because of its disease control, (ie. being a non host to root rot and take-all). Rapeseed also opens up the soil with its tap root system and because of its canopy, competes well with weeds. One of the real benefits of using rapeseed is the advantages that flow to the following wheat crop. It can often be direct drilled without spraying or cultivation. The wheat crop responds well to this situation, with a reduced need to use pre-emergent herbicides, minimum disease and low cost establishment. Rapeseed yields average 1.28 tonnes per hectare, usually half the yield of wheat.

Wheat generally is grown for two or three years, using double super. on the first two crops at the rate of 106 kg/ha. Third and continuing crops are fertilised with DAP at the rate of 100 kg/ha. Ten year average wheat yields are 2.49 tonnes per hectare.

Two-row barley fits into our programme well, after two or three crops of wheat. Schooner is used in our rotation. All paddocks being sown to pasture have a cover crop of two-row barley. Barley matures early, is less competitive, (eg. doesn't have as much flag as other crops, or as tall, so is less light competitive, and the stubbles are shorter and don't collapse easily). Also as registered barley seed growers, we are required to grow barley as the first crop on some paddocks and we continue to grow barley as seed crops on those paddocks.

Soils

Soil phosphorous levels are monitored regularly after a pasture phase. Phosphorus levels usually are around 10 ppm (Bray), while following a cropping phase, phosphorus levels are around 24 ppm. We don't topdress during the pasture phase.

Cereal stubbles provide useful grazing for wethers (at 10 dse/ha), this keeps weeds in check, spreads stubble about without tracking or powdering the soil too much. While stubble is being grazed, lucerne pastures have a chance to recover, replenish their plant reserves, flower and set some seed. We are then able to harvest some seed in most seasons for resowing of new pastures. Lucerne is worth 2.5 dse/ha to us. We never wish to be threatened with not being able to grow lucerne.