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WEED CONTROL IN PERENNIAL PASTURES:

ANNUAL GRASS INVASION - CONTROL COSTS AND PRODUCTION LOSSES

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Abstract: *Annual grass invasion occurs in Central Tablelands pastures. Vulpia, brome grass, and barley grass are involved at 'Roslyn', Lyndhurst, but vulpia is the chief problem. It is unpalatable, its seeds contaminate wool, and cause animal production losses through injury to eyes. It suppresses subclover growth when both are germinating together, which in turn, reduces nitrogen production and pasture carrying capacity. Various management practices available for vulpia control include: heavy strategic grazing in July/August followed by pasture spelling to favour pasture competition; spraytopping to reduce seed production; and the use of simazine to selectively kill vulpia plants in the pasture. Fertilizer and lime are also important for annual grass control. The program at "Roslyn" is aimed to achieve soil pH 5.0 ($CaCl_2$) and available phosphorus 12- 15 ppm (Bray No 1). A suitable sowing mixture for establishment under oats is based on perennial ryegrass, subterranean clover, and white clover plus appropriate fertilizer.*

Our property of 311 ha is on the Central Tablelands between Blayney and Cowra at approximately 700 metres above sea level. Rainfall averages 750 mm. Very heavy frosts are normal and pasture growth is poor throughout winter. The soil is derived from granite and has a pH between 4.1-4.8 which, with a liming program, we aim to raise to around pH 5.0 ($CaCl_2$). Phosphorus levels are quite low at 5-11 ppm (Bray No. 1 test). The wet year of 1990 actually reduced the phosphorus level in tested paddocks from 11-12 ppm in October 1989 to 5-7 ppm in October 1990.

Pastures are mainly subterranean clover and perennial ryegrass, some haifa white clover, and some phalaris with subterranean clover.

At present we are running 1300 1st X ewes to produce prime lambs which are sold as suckers in November- December. We also run 600 Merino wethers producing 19-20 micron wool.

Oats (25- 40 ha) are grown for winter feed. Some of this oats is closed in early September for grain and stored for supplementary feeding of sheep and fattening of carryover lambs.

ANNUAL GRASS INVASION PROBLEMS

Our main problem is with vulpia. Soft brome is less a problem because it has more quality and stock will eat it, unlike vulpia which sheep hate. We also have some barley grass on sheep camps which is being controlled by spraytopping.

Vulpia greatly suppresses the growth of subterranean clover which in turn reduces nitrogen production and subsequent carrying capacity of the pasture. Vulpia is a costly problem in carryover lambs. Lambs not shorn by mid November become contaminated with seed in the wool. Seed in the eyes causes much irritation that results in production losses.

When the autumn break comes, masses of vulpia germinate along with the subterranean clover which cannot effectively compete with the vulpia. The clover produces very little feed or seed unless the vulpia is removed. Stock do not like vulpia at any stage and will actually chew it off and spit it out to get at stunted sub clover plants. A severe infestation will reduce paddock production by up to 70% which in dollar terms can be very costly.

CONTROL MEASURES

Control measures for annual grass include:

- Strategic grazing
- Spraytopping
- Spraying with simazine
- Lime and fertiliser topdressing
- Renovating by direct drilling or pasture resowing
- Resowing under oats.

Strategic Grazing. In phalaris and sub clover pasture, graze heavily in July/August then spell early in spring to allow the pasture to compete better with the vulpia.

Spraytopping. As vulpia tends to send up seed heads over a long period the optimum timing of spraytopping is difficult. It is best to stock paddocks heavily until mid to late spring then close them up to let seed heads emerge more evenly.

We use Roundup(R) (glyphosate) at 300- 350 ml/100 L water + surfactant which costs about $5 to $6 per ha for the chemical. *CAUTION*: Topping phalaris pasture with Roundup(R) will sometimes set back the phalaris quite a lot particularly in a dry season.

Spraying with Simazine. Spray just before the onset of spring, around August. We tried using simazine in May and although vulpia control was similar to later treatments, the clover and ryegrass appeared to be set back and the pasture performed poorly until spring. The earlier treatment may be more suitable in a warmer climate than here. Before spraying the pasture should be grazed heavily and evenly down to 20- 40 mm for best results. If vulpia is 60- 100 mm high and clumpy, poor results can be expected.

Apply 1.25-1.50 L/ha simazine in the liquid form, or its equivalent in granules which appear to mix and stay in suspension better than the liquid form.

The chemical is root absorbed and 15-20 mm of rain is about ideal to take the chemical down to the root zone of the vulpia. It takes 10- 15 days to take effect, the vulpia slowly dying out. The clover and perennial grasses change colour slightly to a lighter green and begin to grow very well producing top quality feed. It appears that the change in colour and boosted growth is in response to the chemical.

Applied properly and with the luck to get the right amount of rainfall, up to 90% or more of the vulpia will be removed. Do not spray headlands as double rates severely affect pasture. If earth mites are a problem tank-mix Le Mat(R) at the recommended rate.

The cost of simazine to control vulpia is approximately $7.50 per ha. This cost is low when compared to some other costs such as superphosphate at $24 per ha when applied at the traditional rate of 125 kg/ha.

Lime and Fertiliser Topdressing. Spread lime to lift and maintain pH to around 5.0 and keep available phosphorus at 12- 15 ppm. Also correct any trace element deficiency. A phalaris and subterranean clover pasture with a moderate invasion of vulpia, topdressed with 0.5 t of lime per ha in 1989, now shows much less vulpia than before liming.

Renovation or Resowing Pasture. Make sure that there is nil or very little vulpia dry matter from the previous spring on the ground and also that the paddock has been eaten down short before spraying prior to drilling. This is most important as dry vulpia residue on the ground will definitely retard and sometimes completely stop the germination of the pasture seed. If necessary, spread lime in the preceding spring, and use a summer crop or simazine or spraytopping treatments to stop vulpia seeding. Then sow in March/April, depending on the season.

Resowing under Oats. Again spring spread lime if necessary and apply simazine or spraytopping treatment to stop vulpia seeding. We recommend Agroplowing in November/December if possible, followed by working in January to February and sowing about mid-February.

Suggested Rates Per Ha

- 45 kg Oats , 40- 60 kg Starter 12, and 125 kg lime super sown through combine.
- 8 kg perennial ryegrass, 2 kg subterranean clover and 0.5 kg Haifa white clover (on low country only) sown through bandseeder behind combine followed by rubber tyred roller.

Approximate seed and fertiliser cost $165 per ha.

CONCLUSION

Annual grass invasion is a costly problem on the Central Tablelands. The problem is due to a combination of factors including the last drought which thinned out many improved pastures to allow the annual grasses to increase. The available phosphorus in many cases is too low to support a good mixed pasture and this, combined with the lowering of the soil pH over the years, results in conditions which particularly suit vulpia.

We believe an on-going program of raising the pH and phosphorus levels using lime and fertilisers and then upgrading the composition of the pasture will overcome the problem.The soil condition should be monitored regularly by soil testing and a suitable fertiliser and management program be devised to maintain a good healthy soil and pasture mix which is not as susceptible to annual grass invasion.