

FROM WEEDS OF HIGH FERTILITY TO PRODUCTIVE
PASTURES

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INTRODUCTION

"Futter Park" is a property of 5000 ha of which 2000 ha is non-arable hill country. This country is grey to red granite lightly timbered with box, gum, apple and kurrajong trees. It ranges from undulating to steep hills with an average elevation of 600 metres above sea level. Approximately 10% of the area is taken up with medium to large granite rocks. Rainfall is predominately winter to spring and averages 612.5 mm annually.

It is this hill country that has the greatest potential for increased production as the rest of the property is well improved. The best country that is not being farmed is under lucerne and the marginally arable country has been sown down to permanent mixed pastures of clover, phalaris and cocksfoot.

HILL COUNTRY HISTORY

Thirty years ago the "Futter Park" hill country was completely unimproved, the pasture consisting mainly of red grass - typical 'One sheep to the acre' country (2.5 dry sheep/ha). Under the management of my father Reg Brooker, who managed the property until his retirement in 1977 and who was a leader in pasture improvement in this area, an aerial topdressing programme was started in the late fifties. 125 kg/ha of superphosphate were spread annually for 10 years during which time Mt. Barker subclover and Wimmera ryegrass was spread with the superphosphate at least twice on each paddock. We found that ants were taking a large proportion of the seed so an insecticide was used to treat it. As the fertility built up and soil testing became a regular practice we were able to maintain the phosphorus level between 10 and 15 ppm by applying superphosphate every second year. During the last 30 years over 2.5 t/ha of superphosphate have been spread and the carrying capacity has doubled. This was followed by a build-up in weeds. By replacing the weeds with good pastures we can double the carrying capacity again.

AERIAL SEEDING

When we talk about aerial seeding we are not talking about throwing a bit of clover and ryegrass out with the superphosphate as I mentioned previously. We are talking about a system where we actually kill all the grasses, thistles and other weeds in a paddock, then sow the desired species of pasture using the dead matter as a seedbed.

The general method of aerial seeding has been well documented for a number of years by Malcolm Campbell, who is the recognised pioneer of the system in Australia. He has been a great help to us in the work we have done. The purpose of this paper is to show how we have used his system to establish permanent and productive pastures in our hill country and to detail the various problems that we have encountered.

THE FIRST EXPERIENCE

Our first experience at aerial seeding was in 1974. We could not have picked a better year as 231 mm of rain fell in April giving us a good autumn break

followed by above average rainfall right through the year for a total of 1030 mm.

The paddock we chose was 140 ha, having 30% undulating light country on the eastern side rising 100 metres to the top of the ridge than ran north and south through the western end of the paddock. The paddock could be described as fertile, having a phosphorus level of 16 ppm, and a pH of 5.6. It carried a cover of barley grass, Paterson's curse, various thistles, some red and silver grass and variegated thistles on the sheep camps.

The paddock contained over 100 kurrajong trees. They were lopped to remove all foliage as it was thought the 2,4-D component in the knock-down herbicide would kill them. Five trees were left not lopped as a trial and they survived well after having most of their leaves fall off. The grey box and gum trees looked a bit sick for a while but suffered no long term effects.

Heavy grazing was carried out until two weeks before spraying when the stock were removed to allow fresh growth to appear and so assist in the herbicide kill. Spraying was carried out on 23rd May. The herbicide mixture was:

9 kg/ha Dowpon^R (2,2-DPA)
 1.4 L/ha 2,4-D/Ester 80%
 0.5 L/ha Accutrol^R (Wetting & spreading agent)
 90 L/ha water

Markers were used to guide the plane during spraying but it proved very difficult due to the steep terrain. We cut baling twine to the width of the spray swathe and tied a tennis ball to one end of the twine. The marker tied a piece of toilet paper to a thistle stick where he stopped. After the plane went over he scrambled up the hill and drag the tennis ball to the last bit of paper. We have not used markers since and the results have been just as good.

Seeding was split into two, the first half on 26th June and the second on 29th July. Seed sown was:

Phalaris - 2.5 kg/ha
 Woogenellup subclover - 2.0 kg/ha
 Currie cocksfoot - 1.0 kg/ha
 Hunter River lucerne - 2.0 kg/ha

The legumes were inoculated and lime pelleted with all seed being treated for ant theft. 125 kg/ha of 0.04% Mo superphosphate was spread in July with the second lot of seed.

The whole operation was most successful and a good germination was achieved. The lucerne was magnificent - had the country been arable a cut of hay could have been taken off it in October. By December it was gone as the aphids killed the lot.

The paddock now is one of the best in the district having a good balance of phalaris, clover and cocksfoot with very little Paterson's curse or thistle present. Carrying capacity is now 10 dse/ha - double what it was in 1974. To give an indication of the type of paddock it now is - In 1985, 360 steer calves averaging 260 kg were weaned into the 140 ha paddock in April. They were sold as fats in September averaging 410 kg.

THIRTEEN YEARS ON

Since the first job in 1974 we have successfully seeded a further 600 ha, and

another 200 ha is ready for this year. We did not attempt the second job until 1979 as we were looking for a good year like the first one. As it turned out the year was a bad one. After a good autumn break it tailed off to only 351 mm of rain for the year. It was a bad year for red-legged earth mite so a spray of DDT was required. As that chemical is now banned we use 140 ml/ha of Lorsban^R. That year we proved how well the young plants can survive so long as there is no competition from weeds.

There was no aerial seeding attempted during the early eighties due to drought conditions but we started again in 1984 and have sown about 120 ha every year.

THE PRESENT SYSTEM

The system we use now is not a lot different to the one we first used in 1974. We have learnt a little over the years so I will list some of the changes.

Paddock Preparation As we move into higher fertility country it is important to prepare the existing pasture starting in the previous year. When mostly broadleaf weeds are present an aerial application 2,4-D amine at 1 l/ha in spring followed by heavy grazing reduces the population sufficiently. In some cases where weeds are very thick we spray the bad patches two years ahead. Where barley grass is the main problem spray-topping with Roundup^R at 300 ml/ha at the right time in spring will reduce seed set. Lucerne appears to like a bit more litter on the ground for a good germination than does phalaris. If we are sowing lucerne we will not graze the paddock as hard as usual, and we increase the amount of phalaris seed in the mix. Kurrajong trees are not lopped.

Spraying A good autumn break is essential. This is the whole basis of the system. Unless the weeds and grasses are actively growing it is a waste of time going ahead. We have continued to use the same spray mixture as the first job except for the addition of 50 ml/ha of Le-Mat^R. By doing this we do away with one generation of red-legged earth mite and may not have to spray again for them.

This year we will be using Roundup^R at 1.6 l/ha. I have been reluctant to use it in the past due to a few poor results in this area. The main reason for the change is economic - it is half the price now of the Dowpon^R / Ester 80 (2,2,DPA/2,4-D Ester) mix. Secondly, and perhaps more importantly, we will be able to sow the seed three weeks earlier. Usually we have to wait four weeks after spraying with Dowpon^R due to residual effect. Roundup^R has no such effect.

Seeding It is most important that the seed be spread before the rain not after it - so you need to be a good weather forecaster or lucky. The seed is now treated for ant theft with Ficam^{WR} at the rate of 200 g/100 kg of seed. If your forecasting or luck is out the seed will be safe while you wait for rain.

Seed Varieties Since that first year we have not changed the pasture mix a great deal. Lucerne was left out until last year due to the high cost of seed and the difficulty in rotationally grazing the paddocks we were seeding. This year we have harvested our own seed so that will be a big saving. Sirolan phalaris has been tried. It strikes well but does not have the ability to suppress weeds as well as Australian phalaris so we put half of each variety in the mix. Haifa white clover germinates easily but it has not been able to survive the summer.

Post Seeding Management The careful stocking of the paddock for the next two years is most important. All the good work that has been done can be wasted if it is not stocked sparingly. Cattle are mainly used in the early stages. They can do a good job in the first spring if barley grass and ryegrass become a problem. We put a beast/ha in for about 10 days, taking the top off the grass and letting some daylight into the small plants. For phalaris to thicken up it is important not to stock the paddock between early November and early January. Once the stand of phalaris is well established it can be maintained at any density required by stocking it heavily or not at all during the seed-set period. The loss of use of the paddock for almost 12 months is a hidden cost but it will be more than made up for in the years to come.

SUMMARY

The cost of the whole operation including all chemicals, aircraft expenses, seed, seed treatment and superphosphate for 1987 will be :

\$ 98.11 /ha (\$ 39.24 /ac) using Roundup^R
 \$ 142.30 /ha (\$ 56.92 /ac) Dowpon^R/Ester 80.

(Note: Our labour not included.)

To double the carrying capacity of our hill country we had two options:

1. Buy the paddock next door for \$700/ha.
2. Spend \$98.11/ha on our existing paddock.

It is obvious which is the most profitable as the money spent in option 2. would not even service the debt in option 1.