

THE PROFITABILITY OF A COVER CROP DOUBLING AS GRAZING

Philip and Ruhan Theunissen

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The advantages of cover crops regarding soil health and structure, moisture management, erosion control, and so forth, are well documented. In the USA, no-tilling is a more adopted practice than here in South Africa and the use of cover crops is almost common practice.

Research from the USA suggests planting a cover in the off-season right after harvesting the cash crop, which would be winter, with maize or soybeans. The ideal scenario, according to soil biologists, is to have living roots in the soil throughout the entire year. Practically speaking this is much more difficult than it sounds.

Soil moisture and Growing Degree Days are the two main limiting factors in the cooler summer rainfall regions of the Highveld (Mpumalanga and the Eastern Free State). To get a cover crop in after harvesting a cash crop such as soybeans means planting in the dead of winter.

Given that these regions are summer rainfall areas, it means that little or no moisture is available after a summer cash crop is harvested. Apart from moisture, the low temperatures of winter impair germination and growth of some cover crop species. Realistically you are looking at a very short growing season of 4-5 months before field preparation for the next season needs to start. Such a short growing season, coupled to the climatic

conditions of winter, results in low success with off-season cover crops.

Due to these limiting factors, a different strategy has to be devised to successfully implement cover crops. One way of doing it is to take a field out of production for one season, on a rotation basis. In this way a cover crop can be established in ideal conditions either in summer or autumn. The concern that most farmers have with this idea is that they cannot financially afford to have a field out of production.

A way of making up for the loss of production is to add a livestock component to the cover crop. If grazing is controlled, a considerable income can be made by finishing weaner sheep or cattle, while still having the benefit of a cover crop. To show the feasibility of such a system, actual figures from our own experience are shared.

Our own farm is a small sheep and maize/soybean no-till planting operation. With the debilitating drought of 2015/16 we made the decision not to plant any cash crops. Since some of our fields suffered from compaction it was decided to use this off-season to deep till those fields and then introduce a cover crop to hopefully improve the soil structure and prevent compaction from happening again.

After some favourable rains, the fields were ripped in January 2016 and disced afterwards to break uneven clods. Planting of the cover crop was done in mid-March 2016. A mix of Oats, Triticale, Vetch and Radishes was planted in the following proportion:

	kg/ha	R/kg	R/ha
Oats	10.0 kg/ha	R 15.00	R 150.00
Triticale	10.0 kg/ha	R 14.00	R 140.00
Grazing Vetch	10.0 kg/ha	R 39.50	R 395.00
Japanese radish	2.5 kg/ha	R 65.00	R 162.50
Total	32.5 kg/ha		R 847.50



Radish, Rye and Vetch root development 30 April 2016



Cover crop 22 May 2016

We operate on an autumn lambing season from March to April. At the end of May the ewes with their young lambs were introduced to the cover crop. A total of 104 ewes and 129 lambs were introduced on the field of 21 hectares. The lambs were weaned in mid-July and kept on the cover crop while the ewes were moved back to a veld with Eragrostis hay as supplement. The lambs were fed creep feed initially and a supplementary finishing ration later on. As they reached the target weight of 40 – 45 kg they were sold off in batches.

A summary of the lambs' performance is as follows:

	Date	Group weight	Avg. kg/lamb	Group ADG
Introduction	30 May 2016	1 539 kg	11.93 kg	-
Weaning	12 July 2016	3921 kg	30.40 kg	429 g/day
End of season	09 Sept 2016	5 382 kg	41.7 kg	191 g/day

Nett mass gain since introduction: 3 843 kg (29 kg/lamb)

Overall ADG since introduction: 292 g/day

Once all the lambs were sold, the ewes were re-introduced to the cover crop for conditioning before the next mating season in spring. To couple a value to the ewes' gain, a roughage or residue costs of R 1.25 per kilogram material per unit per day was used. The first 42 days were considered as maintenance when the lambs were still with the ewes. With lambs already able to graze on the cover crop, it alleviated the pressure on ewes requiring additional feed to maintain condition. The other 30 days were the re-introduction conditioning period.

	Days on feed	Value
Maintenance (ewes only)	42	R 9 282
Conditioning (ewes and replacement lambs)	30	R 10 264
Total	72	R 19 546

The financial breakdown of the season is as follows:

	Total
Lamb income from nett mass gain @ R 30.00/kg	R 115 290
Ewe maintenance and conditioning	R 19 546
Total income	R 134 836
Commission on sales	R -7 942
Supplementary feed	R -9 531
Seed	R -17 787
Diesel	R -1 260
Total expenses	R -36 520
Total income/ha	R 6 421
Total expenses/ha	R -1 739
Nett profit/ha	R 4 682



Material left after grazing 10 October 2016

These results settle the argument that a field taken out of production to establish cover crops needs not be deemed non-paying. By adding livestock to the system, it holds huge potential while maintaining the benefit of cover and soil health improvement. The results were so astounding that it is worth considering continuing with the system, based purely on the profit per hectare compared to maize for instance. It should be noted that this cover crop was grown with a mere 462mm of rain throughout the season, compared to the seasonal average of 600mm. This is far less than what a decent cash crop requires.

On our farm no-tilling has led us to cover crops which led to a highly profitable grazing system. The principles of no-till can still be applied and soil health and moisture conservation will still benefit the system regardless of what is being planted. This whole experience opened our minds and made us realise that a cover crop should rather be regarded as a "cash crop"

Enough material remained after grazing to be regarded as a cover crop. Input to establish the cover crop was minimal. No fertilizer was applied and the cost of deep tillage was excluded from this exercise because it was regarded as a once-off remedial action. Subsequent cover rotations should be planted in a no-till way. In future a small amount of fertilizer may be used to encourage more vigorous growth to compensate for the material taken off by grazing.



Cover crop after some good rainfall

