

Hill country cropping regime

The hill country no-tillage cropping technique involves spraying off the existing pasture with glyphosphate in late October followed by oversowing with a brassica species and clover. The objectives of this programme included increased quality feed from the crop over the summer period for lamb fattening, and a cost-effective process for improving the species composition through pasture renewal.

On the right site it is an excellent method for improving your pasture sward and production. However on the wrong site there may be disastrous results. From a land management perspective there are a number of issues that need to be considered before undertaking such a programme that include:

- Long term sustainability of hill country pastoral farming requires the integration of space planted trees. Research following the 1992 wet winter showed that traditional soil conservation trees adequately spaced over the erosion prone parts of the slope reduced soil slip erosion on average by 66%. The most effective space planted species are poplars. When spraying a paddock containing poplars there is only a very marginal window of opportunity when there will be minimal effect on the poplar. This is between after leaf-fall and before bud-burst. Spraying herbicides outside this period will have detrimental effects on the poplars. Hence you should consider an alternative method for pasture renewal.
- Often several varieties of poplars are planted in the same paddock to overcome the different soil and climatic conditions. An example of this may be Kawa planted in the gullies and lower slopes whilst Argyle is planted on the more exposed drier sites. Between these two different varieties there may be up to 6 weeks difference in the time they loose or come into leaf. Hence when the window of opportunity is right for one variety it may not be right for another.
- Even if you do have only one variety of poplars and you spray during that marginal window of opportunity, clover will only germinate at a soil temperature 12 degrees or higher. More than likely the soil temperature during this window of opportunity will not be above the critical 12 degrees.
- Topsoil depth must be considered as it affects the ability of the soil to store moisture. Thin topsoil depths store less moisture than thicker topsoil depths. On steeper slopes the amount of topsoil is thinner due to erosion processes. So as a consequence the steeper slopes should be avoided. Also on these slopes it is often difficult to retain the high fertility pasture species.
- The inherent natural fertility between soils varies considerably. Soils derived from sandstone for example are generally less fertile than those soils derived from mudstone. It is important to ensure that the fertility of the paddock is sufficient for high producing pasture prior to cropping.

- Climate and aspect must be considered. If you are in a region that experiences occasional summer droughts then undertaking this practice on sunny faces may have detrimental effects from topsoil loss in a dry year.

- The spraying of the gully systems of some soils such as those formed from unconsolidated sands increases the vulnerability of that landscape to accelerated erosion. In the Wanganui district last December 8 inches of rain was recorded over a 36-hour period. If this had occurred on land with nil to limited vegetative cover then the topsoil loss from surface wash would have been intensive and the erosion of gully systems reactivated. The climate experts are telling us we can expect more high intensity rainstorms in the spring and autumn periods.

- Consider space planting soil conservation trees after spraying. On the right site you may be able to plant lighter 2.5 metre poplar sheep poles with minimal protection since the programme excludes cattle for the first year or two. This will reduce the cost of poplar establishment.

- High fertility pastures will 'run out' after a period of time. This period is quickened if fertility levels are not maintained or the pasture is exposed to drought conditions. It is important to do some form of cost benefit analysis to determine your bottom line.

So in determining if no tillage cropping on the hill country is right for you then you need to consider the geology, topsoil depth, aspect and the affects of the spraying programme on the presence of poplars. This programme may be suitable for rolling hill country but wise land management suggests it is not suitable for the steeper hill country. Should you require help in determining whether it is suitable for your property then contact your local soil conservator.