



How to remove Nitrogen safely

The total Nitrogen removed in milk is the volume of protein/Ha divided by 6.25. For example if you produced 1400kgMS/ha and 30% was protein then you would have lost 67kgN/Ha. Its' possible under the right conditions for a pure clover sward to produce 200kgN/Ha [source FAR](#). We figure a mixed pasture clover sward that is really cranking could produce the required amount of N to completely replace all Nitrogen inputs, but most of our mixed pastures currently struggle to do 20-50kg/Ha. The clovers are too small and inefficient which results in a net deficit over the season. We've found it possible to replace all the Nitrogen fertilizer without loss of production in the first season, but soil N levels can be slowly depleted. This typically means that the pastures respond very well to a Nitrogen fertilizer the following Spring. Often a shot of 30-40 Units N is usually required to make up for this deficit. As the natural Nitrogen fixing capacity of the soil expands the deficit is reduced. It can't be turned around over night. So it pays to plan to apply some Nitrogen in the first 2 years. Its part of the change process.

There are several approaches you can take.

1. Start by replacing 50% of the N with alternate applications of N and Pasture Plus Formula 2. This has been a very risk free approach. This allows the nitrogen-fixing organisms in the soil to gain momentum and generate the levels of Nitrogen required to replace added fertilizer. As soil temperatures rise creating a longer growing season then there is also more activity from Nitrogen fixing organisms. Think of reducing it over 3 years. That's the safest way.
2. The second approach is to take a soil Nitrogen test prior to determining whether to apply Nitrogen or use our product Pasture Plus. Pasture Plus requires replace all of the Nitrogen in the first year with Pasture Plus and do a soil test to see how the levels of soil Nitrogen have changed. Apply Nitrogen if required. Be prepared to apply 1-2 applications Nitrogen the following Spring.

Pasture Plus works on the soil and plant. When Nitrogen is applied after 12 months of soil preparation you get a better response from it – a synergy effect. This is positive for the farmer but negative for us. The farmer looks at the great response and assumes that Nitrogen is the best product to use "I got a great response from Nitrogen I'll stick with it." Some farms may generate a deficit of 30kgN over the previous season and in Spring they apply a light rate of

Nitrogen say 15kg N . I recommend a soil test be taken to ensure adequate N in the soil before applying Pasture Plus.

Available soil Nitrogen is lowest at the end of winter and picks up again going into spring i.e the Spring flush. In Southland people often apply Nitrogen in October. There should be adequate levels of N in the soil by this time. If there's not then there are obvious problems with the nitrogen cycle – the balance of nitrifying and ammonifying microbes; or a lack of ability to store the nitrogen which is related to soil humus and decomposing cycles. Microlife is needed to resolve these problems. Most farms have both of these problems, which is why nitrogen inhibitors produce reasonable results.

Through planning and monitoring huge changes can be made safely over 3 years. **There are no wrong products only wrong applications of a product**

Soil Nitrogen levels can be tested for in soil tests. You can get both total soil nitrogen and available soil nitrogen. Take the soil test as close as possible to the required application date. Same day collection and overnight couriers are required for accurate analysis. Allow 1 week for the lab report to come back. If the available soil N is below 100kg/ha then consider using Nitrogen fertilizer. **Note: Pasture Plus may still be a better option at soil nitrogen levels less than 100kg/Ha , but we don't as yet know this for sure so its best to play safe.**

Every property is going to be different, some will start with no clovers and the deficit will be bigger. They should leave more Nitrogen in the system in the first 2 years.

We have worked hard to create a product that will grow as much dry matter as Nitrogen and our trials have shown Pasture Plus easily capable of doing this but there has to be some Nitrogen in the soil to work with. Planning for that is the best approach.

The people who grasp the concept of what we are talking about usually see this as a 3 year program. When they follow our instructions they are never disappointed. After 3 years they look at the grass growth, their net fertilizer usage, their production and finally their bank account they compare it to other systems and they know they have made good decisions. Those looking for a one off miracle are often disappointed.