



CalSap® and Nitrogen Efficiency in Pasture.

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Nitrogen is essential for the growth of plants and can provide a large increase in plant feed during spring time. Legumes (clovers, medics) in pastures have the ability to fix atmospheric nitrogen for use by the plant and grasses in pastures, however grass dominated pastures can require additional nitrogen as a fertiliser to boost production over the spring growing season.

Mineral nitrogen fertilisers are somewhat volatile and can denitrify and volatilize (turn into atmospheric gas) or as nitrate leach out of the plants root zone when sufficient water is applied. Nitrogen fertiliser applied to pasture, and for that matter any crop, should be applied in split applications throughout the year to be as efficient as possible, especially to match the growth rate of pasture (Eckard 2007).

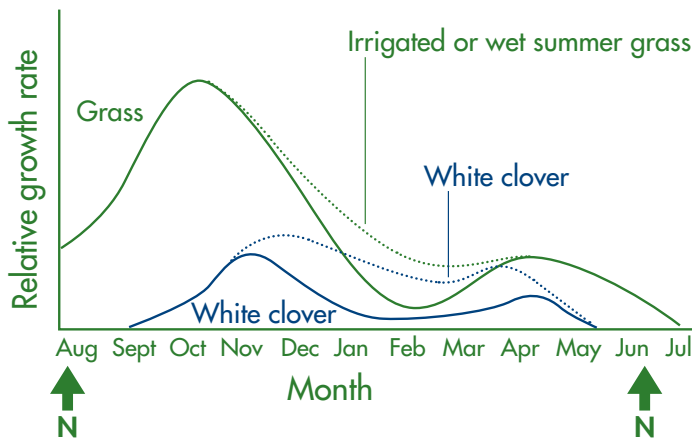


Figure 1: Relative growth rates of perennial ryegrass and white clover over a season. Recommended fertiliser N applications are indicated by arrows. Adapted from Eckard (2007)

Amounts of nitrogen greater than 50 kg at one time to pasture greatly increase the % of N lost to the environment (Curran and Clough 1995). Nitrogen Use Efficiency (NUE) refers to the amount of N applied as a fertiliser that is used by the plant. Estimated NUE in cereal production in the world was only 33 % in 1999 (Raun and Johnson 1999), so split N applications with fertilisers such as the liquid Urea Ammonium Nitrate (UAN) are now used during the growing season to make more efficient use of N.

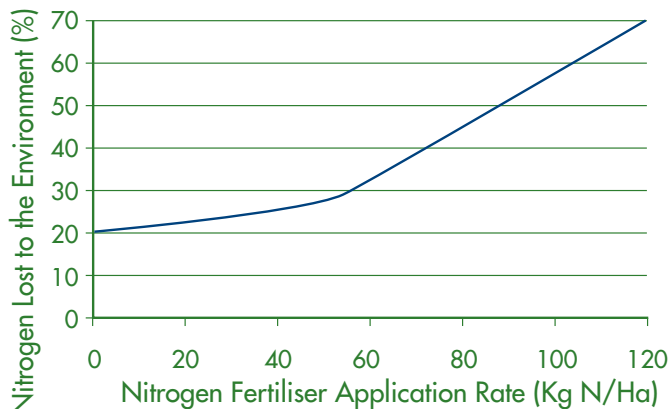


Figure 2: Illustration of increasing trend of nitrogen loss to the environment as nitrogen fertiliser rate is increased. Adapted from Carran and Clough (1995)

One way of increasing Nitrogen use efficiency when applying liquid N fertilisers is to add a soluble, liquid calcium source. Soluble calcium applied with ammonium fertilisers has been shown to increase the absorption of ammonium into the plant when applied as a foliar spray, resulting in larger yield and dry matter (Fenn et al. 1995, Feagley and Fenn 1998). In these studies, a large amount of lime had already been applied to the soil, but it had negligible effects on increasing ammonium uptake, as calcium in lime is very insoluble.

CalSap® is a 100 % Australian made and owned highly soluble calcium source that is suspended by organic carbon compounds. **CalSap®** has been developed for soil amelioration applications, such as reducing available aluminium and salt from plant uptake, but has also been found to increase yields in crops. Information on the full benefits that **CalSap®** can provide can be obtained by contacting Optima Agriculture.

Foliar applications of **CalSap®** with UAN increased grain yields in independent trials (Living Farm 2008), supporting previous research findings. The benefits of **CalSap®** applied to pasture have also been measured, increasing phosphate uptake in lucerne and buffering and removing salt in soils. **CalSap®** has been applied as part of a total nutrients liquid fertiliser to pasture in boom sprays.

Optima Agriculture offers a total nutrient fertiliser for pastures in autumn with its **Liquid Pasture Power** and for spring applications **OptiGraze** and **OptiGraze Max** are the recommended products for that time of year.

Optima's **OptiGraze** liquid fertilisers are excellent sources of nitrogen, they contain trace elements and importantly one of its core ingredients is **CalSap®**. A key advantage of **OptiGraze** as a pasture product is its ease of application which in turn helps to deliver lower application costs and in turn reducing overall farm input costs.



CalSap® can be purchased as a stand alone product, it can be used for mixing with UAN, or alternatively Optima Agriculture has the ability to produce custom liquid fertilisers with variable units of nutrients, including trace elements.

Some of the advantages of Optima Agriculture liquid fertilisers are:

- Their ease of application
- Nutrients are available to the plant more readily as they don't require water to dissolve a granule
- They provide an even distribution (especially trace elements) to the soil
- Optima Agriculture liquid fertilisers are alkaline based, therefore they don't contribute to soil acidity
- Liquid blends can be custom mixed to suit specific needs
- Can be applied using existing on-farm spraying equipment
- Can be easily stored in a poly tank

REFERENCES:

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