



Crop Recovery for Flooding and Water Logging

What are the problems?

Over the last two years there have been extensive production losses in Victoria due to flooding and water logging of soil. Although not restricted to pasture the damage to pasture has been extensive and some pastures have been affected on several occasions. This article is primarily concerned with pasture damage due to water logging. Water does not need to appear on the surface for a soil to be waterlogged. Water logging occurs whenever the soil is sufficiently wet to restrict the oxygen supply to the plant roots. Besides a lack of sufficient oxygen, other gases such as carbon dioxide, build up in the root zone and can cause problems.

The oxygen needs of a plant vary considerably with the season and the stage of growth. The requirement for oxygen is low when growth is slow. The lack of oxygen causes the roots tips to die and they appear as if they have been pruned. If the period of water logging is a few days the plants survive but the plant growth is stalled. This stalling in growth is likely to be evident several weeks or even months after the water logging has gone. Further water logging at a few weeks or months later can reduce pasture growth dramatically. Additional problems also arise. There is an increase in the number of anaerobic bacteria and this leads to a reduction in available nitrogen for the plant further reducing growth. The soil also becomes depleted in sulfur. Furthermore, it is often observed that additional nutrients are either move into the soil or removed from the soil. This can occur if there is flooding but may occur with just water logging. Additional weeds are often introduced if flooding occurs.

What needs to be done?

Initially it is important to avoid any action which will damage the soil structure. Do not drive over the pasture and do not graze it until the water logging has gone. If animals walk or graze on waterlogged soil pugging results and this will damage the soil structure and dramatically reduce pasture production. If the soil has been waterlogged before letting animals graze check if the water logging has gone by digging a hole about 400 mm deep. If after 30 minutes the hole contains water you still have a water logging problem. It may be necessary to fence off any badly affected areas so at least some area can be brought back into productive use.

Fertilizer application

When the water logging has gone it is important to build up the nitrogen level, increase root development and increase the microbial activity in the soil as quickly as possible. It may be worthwhile to get a soil test if the area is extensive. The nitrogen available for plant growth can be built up rapidly by using foliar sprays rather than soil application of soluble fertilizer or granular fertilizer application. Because the roots are damaged it will be more difficult for the plant to assimilate any fertilizer which is applied to the soil. Foliar fertilizers are rapidly assimilated and used by the pasture but they do not appreciably build up the nutrients in the soil. They need to be applied every four to six weeks or supplemented by subsequent application of the slower acting granular fertilizers. Application of ammonium sulfate as a foliar spray will help address both the nitrogen and sulfur shortfall but has the unwelcomed effect of marginally reducing soil pH. Alternatively foliar sprays of calcium nitrate can be used which increases soil pH but does not supply sulfur. Additional root development and increased microbial activity can be achieved by foliar application of a suitable liquid seaweed formulation. Other natural fertilizers, such as fish emulsion or animal manure can be used to rapidly increase the microbial activity of the soil.



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The best solution for addressing slight to moderate water logging damage is to use a liquid seaweed fortified with added NPK and trace elements such as Fair Dinkum Fertilizers "Spurt" followed up by a second application of Fair Dinkum "Spurt" or "Premium". This approach was particularly effective after the 2009 Swan Hill floods.

Reseeding

If water logging or flooding has occurred to the extent that the pasture dies or is severely damage reseeded is the only solution. Before reseeding check that the water logging has gone and apply a nitrogenous fertilizer and gypsum at least one week before reseeding. If the pasture is prone to water logging in wet winters it is prudent to use pasture plants which are tolerant to water logging and consider if drainage works are needed.

Product Analysis

	SUPERFINE PREMIUM	SUPERFINE SPURT
Nitrogen (N)	5.7%	10%
Phosphorus (P)	1.0%	0.3%
Potassium (K)	5.6%	4.8%
Sulfur (S)	6000ppm	6000ppm
Copper (Cu)	555ppm	300ppm
Zinc (Zn)	555ppm	300ppm
Manganese (Mn)	100ppm	100ppm
Magnesium (Mg)	--	--
Boron (B)	60ppm	60ppm
Molybdenum (Mo)	10ppm	10ppm

% - is W/V, grams per 100ml of product.
ppm - is parts per million on weight basis.



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