Environmental Controls for Turf Farmers

Examples from Agland Turf

As part of Hort. Innovation project TU16000- *An Environmental Assessment of the Australian Turf Industry*, we surveyed turf growers and found that the median application of pesticide and herbicide chemicals was about 12 kg of formulated products[1] per hectare per year. This varied from 10.8 Litre/Ha/y in 2015-16 to 13.7 Litre/Ha/y in 2016-17. While this does not sound like much, these chemicals are designed for specific toxicity to weeds and pests on the turf farm. An excess or loss of these chemicals to the environment can have negative consequences and are regulated by environmental law. We found good examples of chemical use mitigation at Agland Turf on the mid-north coast of New South Wales.

Key findings:

- **Avoid excessive chemical use**
- **Use safe chemicals only**
- **Prevent run-off leaving the site**
- **Protect waterways with vegetation barriers**

Chemical use

Turf growers have a responsibility to protect the environment as well as grow turf. The use of chemicals on the farm is a critical factor and effective use includes keeping the chemical on the turf. Chemicals lost to the environment can cause environmental damage, such as insecticides in waterways.

The neonicatinoids[2] used for preventative insect control are water soluble and can have a long life. If they run off with a rain event, and this washes into a creek or river system, the consequences can be severe with insect losses affecting the viability of fish and bird species. The following mitigation actions can be considered to protect the environment.

[1] Formulations are generally at about 50% active constituent so actual chemical application was about 6 kg/Ha/y

[2] Neonicatinoids are modern insecticides based on nicotine that has been used as an insecticide for many years

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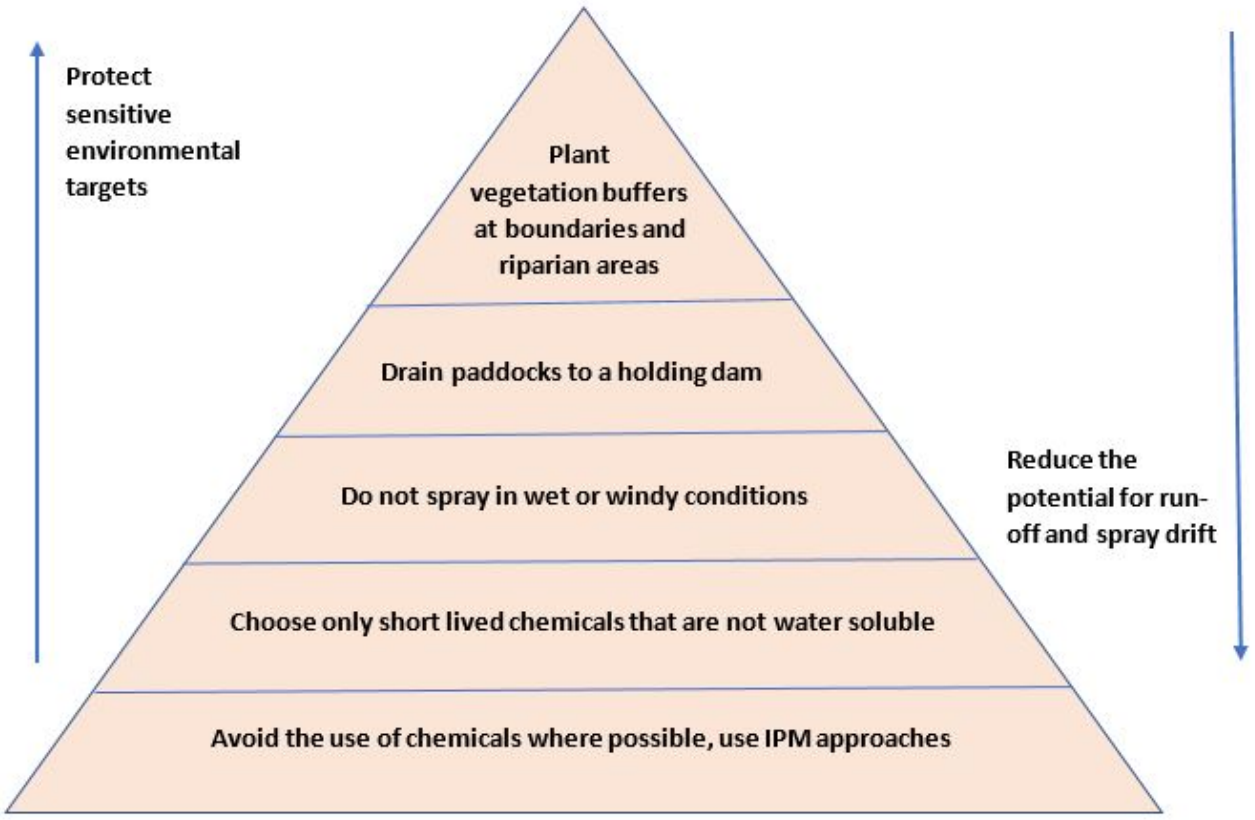

For grub infestations it might be said: “an ounce of prevention is worth a tonne of cure” but using neonicotinoids may prove this saying wrong. This sort of preventative measure may be very costly if it is not carefully managed.

The same control measures will prove useful for all chemical applications including fertiliser products.

Agland’s dam structured to recover run-off from the whole farm for irrigation water reuse and capture of applied chemicals and nutrient run off

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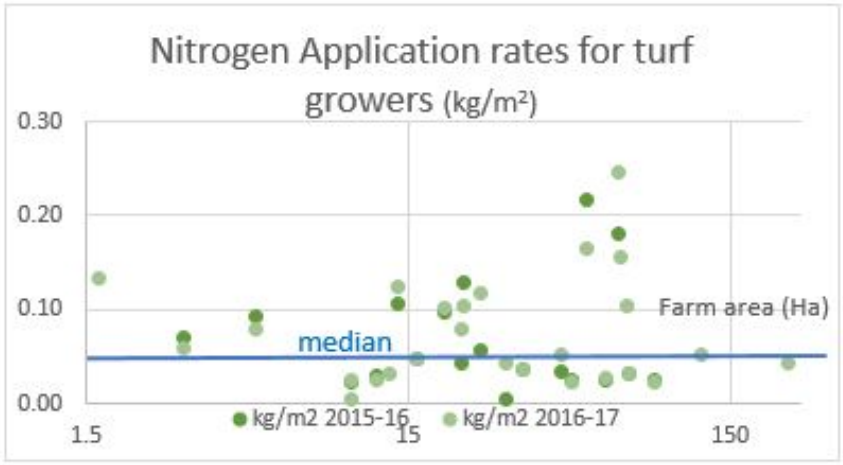
Fertilisers

The fertilisers applied by the 30 turf growing sites surveyed were split by N/P/K with the following results.

Applied Element	2015-16 median kg/Ha/year	2016-17 median kg/Ha/y
Nitrogen	258	350
Phosphorus	96	123
Potassium	108	164



The application rates of chemicals and fertilisers varied from almost nothing to five times the median value. This variation is in part due to the farming conditions: soil types, topography and climate, as well as the varieties of turf grown.

Nitrogen efficiency

Nitrogen applied to the farms per square meter of turf harvested[1]

Agland riparian area vegetation that will absorb nutrient run off and protect water quality in the river system

[1] Care should be taken to differentiate between application rates per Ha of farm and per square meter of turf produced. Application per Ha = Application per m2 X production efficiency (which averaged 6,750 m2/Ha).

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The first step in environmental management of fertilisers is to apply the least amount for the turf growth required. The survey measurements included a product analysis that allowed the determination of the loss of fertiliser. A good performance results in the loss of 50% of nitrogen or less, as measured by difference between applied nitrogen and that in the product turf.

If a large excess of fertiliser is used the losses end up in the soil, in run off, in leachate going to groundwater or volatilising into the atmosphere. Whatever the loss mechanism losses represent costs that do not add value to the product turf.

Agland's retaining wall around a manure pile saves most of the wind-blown and run off losses

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