

Lilydale Instant Lawn

Designed for efficiency and sustainability

When Lilydale Instant Lawn was looking to expand their production from their original Yarra Glen site they looked to an area near Melbourne with ample irrigation water supply. Some may have wondered about the choice of a drained swamp with heavy peaty soil north of Western Port Bay (a RAMSAR ecological protection zone). The farm drains into this environmentally sensitive protected area via one of the main channels established to drain the swamp and make it suitable for agriculture.

You might also question their choice on sunlight grounds. The Melbourne latitude receives approximately 50% of the sunlight of Queensland and hence has 50% of the annual photosynthesis potential for plant growth.

These factors add to the importance of running a farm that is efficient, wastes little and does not discharge toxic wastes into the environment.

The efficiency plan



the turf farm and a travelling pump is used with a low pressure boom to deliver water to the turf. An approximate measurement of the delivery efficiency of the diesel pump was 61 L per ML delivered.

Key findings:

- Design operations first for efficiency
- Access to reliable water supply
- Efficient irrigation systems
- Good environmental controls

The farm has been cleverly located near the South Pakenham water recycling plant with access to ample Class C water for irrigation. Water quality is important to optimise turf growth and this recycled sewage comes with some salinity (Electrical conductivity of 800 $\mu\text{S}/\text{cm}$ ^[1] but also carries 20 to 30 mg/L of phosphorus which carries more than enough phosphorus for the product turf.

The water is delivered to a channel that runs the length of

^[1] 800 $\mu\text{S}/\text{cm}$ is equivalent to a salt content of about 500 mg/L (Sodium Chloride) which is below the point of salinity that can seriously affect turf growth.

The turf farm is rectangular with a channel along its length so that the boom and pump can irrigate all of the turf in a single sweep. There are no dead spots and irrigation coverage is complete and even.



This picture shows the travelling pump intake system devised to run up and down the channel alongside the pump and boom irrigator

Fertiliser application is a big cost and one where efficiency is balanced against growth requirements. Lilydale managed to get 51% of its applied nitrogen into the turf produced and 38% of the applied phosphorus in 2016-17. This is a good performance for a turf farm.

The Lilydale team is also working at reducing and recycling harvesting wastes generally estimated at 10% of turf. This effort includes looking into composting turf wastes segregated by turf species to avoid cross contamination.

The critical management tool in optimising efficiency is performance measurement; according to the old saying: *You can't manage what you can't measure!*

Environmental risk management

All turf farms have the risk of spray drift moving off site to sensitive environments such as creeks and rivers. In Lilydale's case this drift can affect neighbouring farms. Lilydale has best management practices in limiting spraying to low wind days and ensuring particularly sensitive targets are protected.

Spray drift and run-off from rain events can drain off the farm and into surface water systems causing environmental damage. Chemical mixing and filling can lead to spills of chemicals that may also enter surface water systems. At this farm run-off from the property will enter a major drain that runs into Western Port Bay.

The main control employed by Lilydale to collect all run-off from the farm in a holding dam that can be checked before water is allowed into the main drain. The dam has been equipped with a pump to take water back to the irrigation channel giving the holding system much greater holding capacity.



Holding dam for run-off that can be pumped back to the irrigation channel for reuse.

Spray drift is minimised also from the irrigators by applying shields at the ends that captures the spray and prevents it from travelling off-site.

Energy efficiency

Energy efficiency improves with waste reduction because less energy is lost producing the waste and less energy is used in managing the waste. Lilydale's total of 6.55 MJ of energy per m² of turf produced in 2016-17 was marginally lower than the industry average of 6.65 MJ. In large part this average performance was due to the particular attention paid to the production of quality mature turf, which takes longer to produce. Indeed Lilydale's operations are energy efficient where every effort is made to lower energy losses.

Transport is also a big energy user. Lilydale uses fuel efficient European trucks and runs a fleet big enough to enable the most efficient "milk run" delivery schedule.

Energy drives Greenhouse gas emissions. When an allowance was made for fertiliser and pesticide chemicals, a net sequestration of 1.9 kg of CO₂eq per m² of turf was calculated for Lilydale. This is above the industry average of 1.7 kg of CO₂eq of 30 growers in 2016-17^[1].

Attention to environmental management through efficiency and waste reduction, together with spray drift and run-off controls has set Lilydale's turf farm up as a sustainable operation into the future.



For Further information contact Dr John Cumming, Infotech Research, on 0418 125 688 or john@infotechresearch.org

^[1] The on-farm sequestration of CO₂ includes allowances for energy used and emissions from the production of chemicals and fertilisers.