



Resilient Cropping

Onions Case Studies - Horowhenua and Hawke's Bay

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“Crop losses due to surface ponding affect my profit and I want to do something about it.”

Yields from areas with surface ponding after rain and irrigation were compared with nearby areas. Yield loss in ponded areas ranged from 60 to 80%, a substantial loss. Ponding also reduced the proportion of onions that were in the most profitable size range.

The impact on profit depends on the area affected, but doesn't take much for the losses to add up. A leaky pipe fitting caused 0.2ha of ponding during irrigation. It cost the grower about \$1,700 in lost income. The cost of fixing the pipe was only about \$10.

In a separate field, a similar-sized area was affected by ponding during a big rainfall event in the spring. The result was complete crop loss, about \$3,500 in lost income. The affected areas cost the same to grow as the rest of the paddock.

This work focused on the impact of surface ponding in onions, but the results apply to other vegetable crops. Most crops do not like wet feet especially during germination, emergence and early growth. Surface ponding during these periods can significantly affect establishment and final yield. Some crops require complete replanting, which is costly and can delay supply.

We also tracked soil physical characteristics in ponded areas and found they had poor aggregate structure. This affects drainage and aeration characteristics. Good soil condition is difficult to restore quickly, so protecting what you have is important.

Scott Lawson wants to limit ponding damage. “In the past, water would sit in low-lying areas of our paddocks and our crops would often die. Fungal diseases and weeds were also a problem”.

Scott has done a number of things to manage water away. “It starts by promoting good soil structure, which we do by building organic matter levels, reducing cultivation and working hard to eliminate compaction. We are adopting seasonal controlled traffic to keep our tractors on set areas in the paddock. These practices maintain good drainage. We also use in-field practices like furrow dyking to reduce the movement of water within the paddock.”

LandWISE has a simple tool that can be used to estimate losses associated with surface ponding. By calculating the size of the affected area and measuring crop yields, growers can estimate the potential economic value associated with a ponding issue. See <http://www.landwise.org.nz/projects/crop-variability/>

With this knowledge, growers can then make decisions to match the scale of the problem. There's no point throwing \$1,000 at a \$10 problem. “But equally, there's every point in spending \$10 to fix a \$1,000 problem.

This article extracted from Bloomer and Powrie, 2011 “A Guide to Smart Farming” published by LandWISE

