

Case Study 1 - Andrew Crozier

Purpose:

To describe the nature of vegetable production operations in Canterbury and demonstrate what are doing in terms on managing potential leaching on nitrogen to inform the rule framework in the Plan.

1. *Base information*

Area of growing operation: 260 Ha

Number of properties/ sites that it is undertaken on: 3 owned and 3 leased sites

Ownership of sites – owned/ leased/ shared: 240 Ha owned 20 Ha leased

General location in Canterbury: Killinchy

Water zone location: Rakaia/Selwyn

Number of staff employed: 5 permanent staff and up to 10 casual staff for harvest period

2. *Rotation*

Description: A typical rotation may be 2 years onions, 1 year carrots, 1 year potatoes, 1 or 2 years Maize or sweet corn.

Crops grown

Current crops are Onions, potatoes, carrots, maize, and sweet corn. Crops previously grown are pumpkins, squash, lettuce, yams, peas, wheat, barley, grass for silage and dairy grazing. Depending on demand and prices for crops some of the crops not presently grown may come back into the rotation. We are also looking for opportunities to grow crops that we don't currently grow.

Length of rotation

Try to have 4 to 5 years between each crop returning

3. *Irrigation*

We use different irrigators to suit our soil types. We have some peat soils where there is a lot of shelter belts to protect against wind erosion of the soil, on these paddocks we use hard hose rain guns. We find these the most efficient to apply water to peat soils as the peat soils have a high surface tension and water can't be applied too quickly or it will run off rather than soak in.

Where we have got suitable land we use a lateral irrigator. We find this a very efficient way to apply water. It is easier to make smaller applications more often.

With rising costs of electricity and diesel we are very conscious not to irrigate more than is necessary, we are also aware that over irrigation and timing of water application to a crop can have negative effects on yield and quality. For example, crops being too wet at certain times can potentially cause disease.

We have also used probes and more recently Aquaflex to manage water applications, although I still think a spade is the best tool for checking soil moisture. Also the weather forecast needs to be taken in to consideration in the water management of a crop.

4. *Fertiliser use*

We start our nutrient management with soil testing every paddock annually.

A planting plan is then done and fertiliser recommendations are done based on the soil test results and what crop will be planted.

Generally a base fertiliser will be applied either before or at planting. Then as the crop grows topdressings will be applied as per recommendations or as the crop may need them. Topdressing may be split up into two to three or even four applications. We also have some petiole testing done to see if the plant is lacking any nutrients.

We have also had an Overseer nutrient budget Version 5.4.9 done. This covered a typical year and if we continue to grow similar quantities of each crop these results should not change much.

I have attached our Overseer results for information.

5. *Management practices including practices to reduce potential for leaching*

- Fert application based on comprehensive soil testing programme
- Incorporation of most residues to improve soil organic matter
- Efficient irrigation (not beyond field capacity)

- Split applications for fert
- Accurate record keeping and GPS used to apply fert

6. *NZ GAP* I am certified by NZGAP and have been for 8 years

7. *Economic information*

For a farming operation to be sustainable it needs to be profitable, so I think it is important that all compliance costs are kept to a minimum, we don't want to double up on compliance. NZ GAP has nutrient management and water management sections that have to be complied with, ideally If we are NZ GAP approved it would be good if that is recognised by ECAN.