

SEQ Hort report

Issue 5 February 2011

Considerations for flood effected cultivation

The recent floods have resulted in movement of soil both off and onto fields and farms. Some have gained soil while some have lost significant amounts and some a bit of both.

Possible effects of flooding on cultivation

← Unevenness in the field

Where water has moved across fields and/or there has been a mix of soil gain and soil loss there may be unevenness within the field that could impact on future production. This may be evident in crop establishment, growth, yield or quality.

← Nutrition problems

Nutrient deficiencies can occur when wet periods follow prolonged dry years. Look for deficiency signs in crops and monitor crop nutrient status with tissue/sap testing.

← Topsoil loss

Where significant depths of topsoil have been lost both nutrients and organic matter will have been lost as well. Soil biology is associated with organic matter and so will also be reduced. Poorer quality soil, previously at lower soil depths, may now be the 'new' topsoil you have to work with. This soil is likely to have poorer structure, lower fertility and less organic matter. Recent penetrometer monitoring of some vegetable fields indicated a compacted layer between 30–50 cm. This may now be well within the rooting zone of many vegetable crops.

Management considerations

Management options for flood affected cultivation will vary depending on the extent and type of damage. The soil you

are now working with is not necessarily the same as what you had before. Soil gain and/or loss could affect fertility, organic matter, structure, drainage and soil borne diseases. With significant soil gain or prolonged inundation soil may have become anaerobic, where oxygen is depleted. Soil smell can indicate anaerobic conditions but this will correct itself relatively quickly, particularly after cultivation. Longer term management options may be required to restore some fields.

← Soil fertility

Soil test to find out what your soil nutrient status is to start with, including organic matter. Organic matter is indicated through soil testing as organic carbon. Even if fields have not lost or gained significant amounts of soil, inundation could have caused significant leaching of nutrients, particularly nitrogen.

Monitoring of nutrient removal and fertiliser use efficiency over the last 18 months in the Lockyer has shown that most crops are grown on very tight nutrient budgets. Where significant soil loss has occurred extra fertiliser may be needed, however, this will not address



Erosion damage following flooding

the loss of organic matter and poorer soil structure.

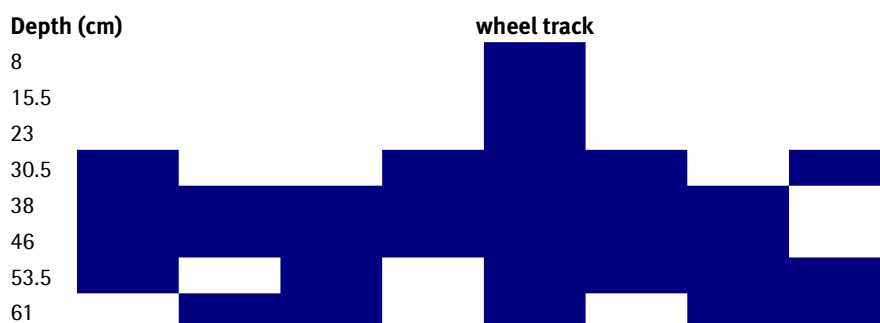
← Crop choice

Crop choice can also be important as some crops may be more sensitive to nutrient issues than others. Where soil has been significantly impacted choose those crops that may be more tolerant or have lower nutrient requirements.

← Soil borne diseases

Any movement of soil and water across cultivation will also move soil borne diseases. Monitor crops for early signs. Fusarium, mainly in cucurbits, and bacterial wilt of tomatoes would be of concern as these remain present in soils for decades. Pythium and Phytophthora are already widespread. However, where soil has been deposited, avoid direct

Figure 1. Penetrometer data across 1.5 m



Blue shading indicates measurements greater than 2000 kPa, the level at which compaction starts to impact on plant growth.

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Contact

Gatton Research Station
Ph: 5466 2222

seeding into this until it has properly dried otherwise you will increase chances of infection with *Pythium* and *Phytophthora*. Transplanted seedlings will be slightly more tolerant. *Sclerotinia* is also likely to be a problem for lettuce.

DEEDI's (formerly DPI) diagnostic service is currently free for growers from flooded regions who think they may have a problem. For more information on this and how to sample please contact John Duff at Gatton Research Station on 5466 2222 or Cherie Gambley on 0429 872 410.

← Green manure/cover crop options

If soil fertility and structure is such that the field is unlikely to produce a quality vegetable crop then you may need to look at longer term management options. These include green manure and cover crops to improve fertility and get some organic matter back into the system. Soil biology will rapidly build up again in the presence of organic matter. Soil structure will also be improved by adding organic

matter and the re-establishment of soil biology.

There is still a significant part of the summer wet season left so getting cover onto fields that are not going straight into production will be important to protect land against any further loss during intense rain and also build organic matter. There are a range of cover options that can still be planted including lablab, forage sorghum and some millets.

To build up organic matter and fertility, green manure crops are the most cost effective method. Green manure and cover options heading into winter include cereals such as oats and barley. These may require some N application to give a high amount of biomass. There is also a range of legume options that can add nitrogen as well as organic matter. These include chickpeas and faba beans (both have high seed costs), soft vetch such as popany or purple vetch. Vetches can add up to 10 t/ha of dry matter and are a very low cost option.

To get the most out of any legumes it is recommended that you inoculate with the appropriate inoculum. This is particularly important as soil and its associated biology has been lost. A small application of starter N fertiliser might also be useful. Well nodulated forage legume crops can add up to 140 kg/ha residual soil N, the equivalent of 300 kg/ha of urea, however this may not be immediately available for subsequent crops.

Seek agronomic advice regarding any green manure or cover crop options you are considering if you have not grown them before.

← Soil amendments

Using soil amendments, such as chicken and feedlot manures and composts, to restore soil fertility is unlikely to be economically feasible due to the high rates required and spreading costs. Nonetheless this is a very good way to build soil fertility and restore biology if sources are available at a reasonable price.

Flood Recovery Extension Support

Additional extension support is now available at Gatton Research Station for Lockyer Valley/Somerset flood affected producers.

Ken Jackson and Ken Bullen have been employed by DEEDI (formerly DPI) until June 2011. These flood recovery officers will provide technical support relating to preparation for February/March plantings of vegetables, lucerne, pasture and field crops and assistance with longer term restoration of cultivation areas.

They will also help with applications for flood recovery assistance and be able to direct individuals to other relevant organisations as required. The two Kens can be contacted on 5466 2222.

Doug Johnstone, Rural Financial Counsellor, is available at Gatton Research Station on 5466 2222.

DEEDI is also working to establish an additional extension officer position until June 2011 to assist producers with:

- ← developing individual flood recovery plans
- ← linking producers to other flood recovery services such as financial counselling, agronomy and advice on erosion and bank stability
- ← co-ordinating meetings and events for producers on farm management issues.

For more information contact Ian Layden on 5453 5823.

Lifeline counselling service in Gatton, phone 3816 9600 for an appointment.

Summary of financial assistance available to flood-affected primary producers

Centrelink

Disaster Recovery Payment: For those affected by flooding through isolation, inability to access home, loss of power or severely damaged dwelling: \$1000/adult, \$400/child. Claim submissions close 4 July 2011.

Disaster Income Recovery Subsidy: For those who have had a loss of income due to flooding. Claim submissions close 31 March 2011.

Premiers Flood Relief Fund: For those whose homes were inundated with flood water above the floorboard level: \$2000/adult, \$1000/child. Claim submissions close 31 March 2011.

Contact Centrelink on 180 22 66 or www.centrelink.gov.au

QRAA

For infrastructure damage to farms, grants up to \$25 000. Claim submissions close 30 September 2011 (grants only). Low interest loans up to \$250 000.

Contact QRAA on 1800 623 946 or visit www.qraa.qld.gov.au

DEEDI

Freight subsidies up to \$5000 for the movement of building/fencing materials, restocking of livestock as a result of flooding, fodder and machinery/equipment.

Contact DEEDI on 13 25 23 or visit www.business.qld.gov.au