SOIL REPAIR IN THE LOCKYER, FASSIFERN AND BRISBANE VALLEY'S

Generally described as very forgiving the main horticulture productive soils of the Lockyer, Fassifern and Brisbane Valley's consist of alluvial black earths and alluvial loams. Deep in profile these soils typically display self mulching, fertile, free draining, neutral to alkaline pH characteristics which are ideal for irrigation purposes.

Given these soils proximity to watercourses they are susceptible to flooding and their surface characteristics can be altered enough to warrant changes in management practices.

Flooding in early 2011 through the Lockyer, Brisbane and Fassifern valley's has resulted in productive areas losing topsoil and or being inundated with silt deposits. To address these impacts several key actions need to be managed to ensure a positive outcome.

Topsoil Scouring - Soil surface scouring is due to fast moving water over low vegetated ground and results in the loss of topsoil and what remains is the plough layer. Given the soil profile, the expectation is that this soil is similar to what was previously there but compacted, has a higher clay content and low organic matter. These aspects negatively affect drainage, and the workability range becomes narrower; typically when wet it smears and when dry clods. Working with affected areas over time will steadily improve the profile.

Silt Deposits - Water flowing over land carries sediments and as water flow velocity slows sediment will fall out of suspension and be deposited. Depending on where the sediment has originated will determine the impact and remediation requirements. Usually shallow deposits are able to be worked back into the profile with minimal impacts to production activities. However deeper deposits should ideally be spread over a larger area prior to being incorporated. Soils with high silt content typically demonstrate higher soil moisture and nutrient retention capacities, which are not always readily available, are sticky and plasticine like. (Figure 1)

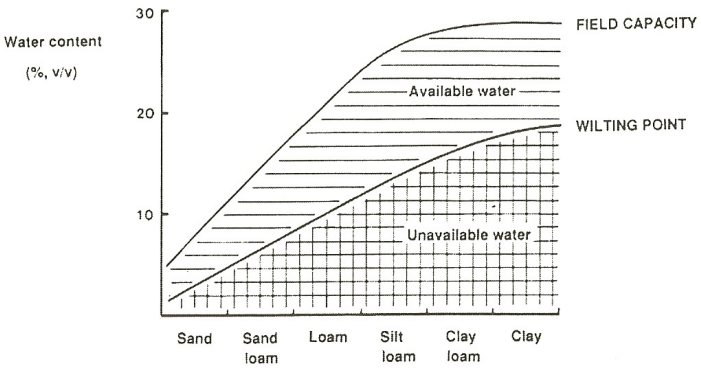

Figure 1: The relative amounts of water available and unavailable for plant growth in soils with textures from sand to clay (McLaren and Cameron, 1996)

Both scenarios result in a variation in soil characteristics that were previously worked with and understood.

- Soil testing is vital in gaining an understanding of how the productive profile has changed and what management actions can be taken to address issues.
- Re-introduction of organic matter via manures, composts, green manure crops etc will build the soil profile improving moisture and nutrient holding capacities and workability. This in turn will significantly increase the soils ability in returning to full production.
- Green manure crops will also assist to breakup compacted soils.
- If the soil is sodic then the recommendation is to apply gypsum.

Irrigation Scheduling

As indicated previously the workability of these soils becomes narrower and this also includes irrigation management. Compacted soils and clay silt soils have low infiltration rates, good water holding capacities but reduced water availability. Typically low application rates more frequently applied will ensure crop water requirement is met given these soil constraints.

The decision to irrigate should be based upon an estimate of crop and soil water status, coupled with some indicator of economic return. Appropriate scheduling should enable producers to maximise profitability while reducing the traditional number of irrigations, thereby conserving water, labour and plant nutrients. Effective irrigation scheduling requires knowledge of:

- Soil water-holding capacity,
- Appropriate placement and calibration of the scheduling tool,
- Current available soil moisture content,
- Crop water use or evapotranspiration,
- Crop sensitivity to moisture stress at current growth stage,
- Irrigation and effective rainfall received,
- Availability of water supply, and
- Length of time it takes to irrigate a particular field.

Soil Texture	Readily Available Water (mmwater per msoil) between field capacity (-8kPa) and;				
Crop Stress Level	-20 kPa	-40 kPa	-60 kPa	-100 kPa	-200 kPa
Sandy	30	35	35	40	45
Loamy Sand	45	50	55	60	65
Sandy Loam	45	60	65	70	85
Loamy Sand	45	65	75	85	105
Sandy Clay Loam	40	60	70	80	100
Clay Loam	30	55	65	80	105
Light Clay	27	46	57	70	90
Medium Clay	24	43	55	65	83
Heavy Clay	21	40	53	60	81

Table 1: Effect of Soil Texture on Readily Available Water Content at various soil moisture tension values as measured using a tensiometer.

Complying with Freshcare Food Safety version 3

Freshcare members affected by the floods should notify the Freshcare office if they wish their membership to be temporarily suspended. This circumstance will arise if growers have no commercial crops and an annual audit in not required.

Growers who suspend their membership are placed in the suspended category until they have a crop ready for market, at which point they should arrange an audit. When the completed audit is reported to Freshcare, the member's status is automatically updated and a new certificate will be issued.

This means growers are not disadvantaged whilst they recover.

If members require a letter for their customers confirming their Freshcare status is 'suspended' they can contact Freshcare on 1300 853 508.

Growers with produce that has come into contact with flood waters need to comply with the testing regimes outlined in the Freshcare Food Safety & Quality Standard Edition 4.2 prior to sending to market.

Freshcare
Fact Sheet – F2 Growing Site

Flooding

Consideration should also be given to the type of produce grown on sites that are prone to flooding. When flooding of the growing site occurs, the potential for microbial contamination of produce is increased by contact between floodwater and the harvestable part of the crop.

If growing sites have been affected by a flood event, the impact this will have on the affected crops or crops to be planted must be taken into account and planting must be scheduled to ensure that the period between flood water subsiding and harvest exceeds 90 days for produce where the harvest able part is grown in, or has direct contact with the soil, and may be eaten uncooked.

Any produce that has come into contact with floodwater should not be harvested for sale unless:

- the produce meets specified microbial limits of E.coli <10/g and Salmonella Not Detected 25/g, or
- customer specifications (which may indicate the produce should be disposed of.

Also in regards to the growing site on page 9

- For growing sites affected by a flood event, planting must be scheduled to ensure the period between flood water subsiding and harvest exceeds 90 days for produce where the harvestable part is grown in, or has direct contact with the soil, and may be eaten uncooked.

Definition

Growing Site: Anywhere that fresh produce is produced. Includes paddocks, orchards, greenhouses, shade houses and growth rooms/chambers.

www.freshcare.com.au/weekly-update-flood-disaster-and-covid-relief-resources/