Factsheet

Protected Cropping – Managing the Environment

Irrigation, humidity and temperature control.

Attentive management of soil moisture, atmospheric humidity and temperature are particularly important in organic protected crops. Good management will reduce crop stress and disease incidence and growers need to educate and equip themselves with the understanding and tools necessary for this.

Achieving optimum conditions is a good aim but frequently either impossible or commercially unviable considering the margin on a crop. Maintaining; exact temperatures and humidity, some movement of air and good light levels while avoiding structural stress from wind, ingress of rain and expensive energy bills is a juggling act. Excellent automation and software systems are available to do this job for you but are rarely a viable expense on a small to medium scale unless no-one is regularly on site.

Key measures:

- Open early and close late during warm summer days,
- Prioritise good airflow to reduce damp through autumn and capture any warmth during winter.
- Focus on sufficient timely irrigation through spring and summer
- Continually monitor conditions and crop health.

Irrigation systems should give the option to water direct to roots via dripper pipes as well as from above. Drippers are not only a more efficient method but avoid unnecessarily increasing humidity. Overhead irrigation will however play an important role in increasing humidity on hot dry days as well as the establishment of seedlings and transplants. Moist soil does add significantly to the humidity in an organic system so timely watering, early on a dry, airy day during the cooler season, is an important strategy for disease reduction.

Heating[1]

Artificial heating can be used to excellent effect, for extending the season of high value crops, however the cost is increasingly prohibitive unless it has more purposes than heating alone. Combined heat and power (chp) with CO2 production are the most efficient and though this technology is still in its infancy if fueled with biomass or biogas, reliance on fossil fuels could be further reduced.

Technologies such as geothermal heating, heat exchangers or capture and storage systems hold promise but still require significant investment.

[1] Additional standards 5.2.3, 5.2.4, and 5.2.5 relate to heated operations.

Factsheet

Pest and disease control in out of season crops is even more challenging due to the reduced activity of natural predators, lower light levels and higher humidity. It is not unusual for heating to be used to reduce humidity as well as raise the temperature. Variety choice, biological control, proactive fertility management and a well-maintained structure become more important than ever.

Rainwater Harvesting

Rainwater should be collected where possible; storage (reservoir or tank) will depend on catchment area and recharge rate. Where there is a risk of pollution from herbicide or biological contaminant to sensitive crops growers may not be able to use collected water for irrigation, in these cases bore hole or mains are the only options.

	Pros	Cons
Reservoir	• Better aesthetics • Higher volume:cost ratio • Other benefits (fish?) • Ecosystem if managed correctly can control pathogens	• Less predictable • May not be wise to use all stored water if 'pros' are to be gained. • Takes up more space due to sloping sides • More impurities to filter
Tank	• Fixed cost • Easier to keep clean • Can be covered to control algae and leaf litter	• Higher capital cost • Possible pathogen build up in Summer • Snow/wind damage

Pollination

In many protected cropping situations you will need to either entice or import pollinators into your structures. In mixed systems the use of attractant plants around (or even in) the tunnel or glasshouse can work well. For larger structures you will need to buy in specific pollinators, (usually bumble bees) for this purpose.

Factsheet

Other publications in the protected cropping series

Systems and Regulations

Business and Costing

Crop Timings

Disease

Pests

Example Rotations

Managing Soil and Crop

Optimising Fertility

Weeds

www.soilassociation.org Tel: 0117 314 5100
Email: producer.support@soilassociation.org
Date Produced: March 2015