

heatwaves to get worse

to limit damage, extend resources

the fruit is routinely used in wine grape production. The upper leaf canopy of tree crops can serve the same purpose. Growers often bend leaves over to shade cauliflowers. Damaged leaves should not be removed as they will provide better shading than no leaves.

Glasshouses

THEY are routinely covered by white wash to partly block out the sun. External retractable shade systems can be used but are less common due to their expense and complexity in using them. Internal shading will protect the plants from sunburn, but overheating can still result. Glasshouses provide warmer more humid conditions for plant growth. However heat gained is dependent upon area, not volume. A taller glasshouse will heat up similarly to a short glasshouse but has more space for the heated air to move above the crop. The trapped heat is removed by exhaust fans or other types of ventilation systems, which also serve to maintain a supply of 'dry' air for evaporative cooling. Their correct installation and use is essential for even airflow.

STRATEGY 3: Break the flow of air

PLANTS need some air flow to evaporate water: Good air circulation is needed to move the water filled air away from leaf surfaces and replace it with drier air. However, heatwaves often occur in periods of strong winds. It is therefore important to slow down air movement to reduce excessive rates of water loss from the leaves and give the root system more chance to keep up with the demand for water.

Physical damage resulting from leaves rubbing against each other will also be reduced. Air flow is most damaging when there is nothing blocking the main pathway of flow. Breaking up the pathway of flow and forcing air to move through gaps, is the most effective means of reducing wind speed.

STRATEGY 4: Wind Breaks

THE pressure for maximising available land for growing the field vegetables and tree crops leaves little space for planting permanent wind breaks.

Other means of breaking up airflow, include: Planting the edge rows of tree crops at right angles to the direction of the main rows of trees; using shade cloth along fencing; using different varieties or types of crops in field planting bays.

The different shapes and heights can break up air flow. Using composted mulch and/or sowing a second cover crop to 'protect' emerging seedlings of carrot and onion. Selective herbicides are used to spray out the cover crop when seedlings are established. Some growers also plant a cover crop between the bays of carrots or onions to break up air flow.

Both the compost and protective crop will add valuable organic carbon to the soil.

Reveg-by-design native vegetation borders not only provide a habitat for beneficial birds and insect species of common pests and disease, but can used to provide a wind break. Always maintain vegetative cover over fallowed soil. Your neighbours will not like your soil wind blasting their crop.

STRATEGY 5: Automation

USING automatic controllers attached to decision-making software is used in hi-tech facilities. Good maintenance, training of operators and reliable backup in the event of system breakdown or loss of power are essential.

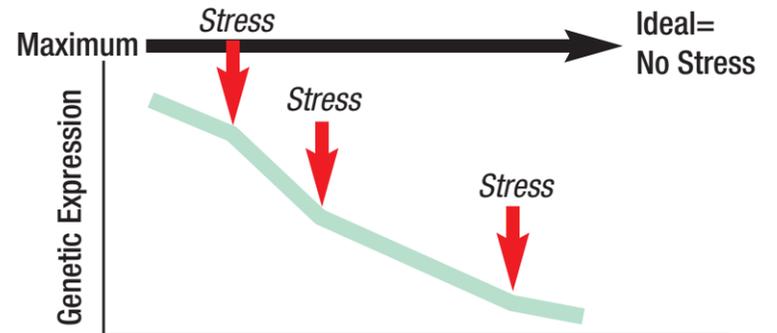
If you automate, have a back-up plan.

STRATEGY 6: Monitor, make informed decisions INSTALL thermometers, humidity, or sap flow sensors, and soil water monitoring devices in the crop. They will help you determine if the plants are potentially suffering a heat related problem and/or water supply problem, as well as the effectiveness of cooling and ventilation strategies. Locate sensors in an area that is representative of the average crop conditions. Use the information and crop response to improve your management strategies.

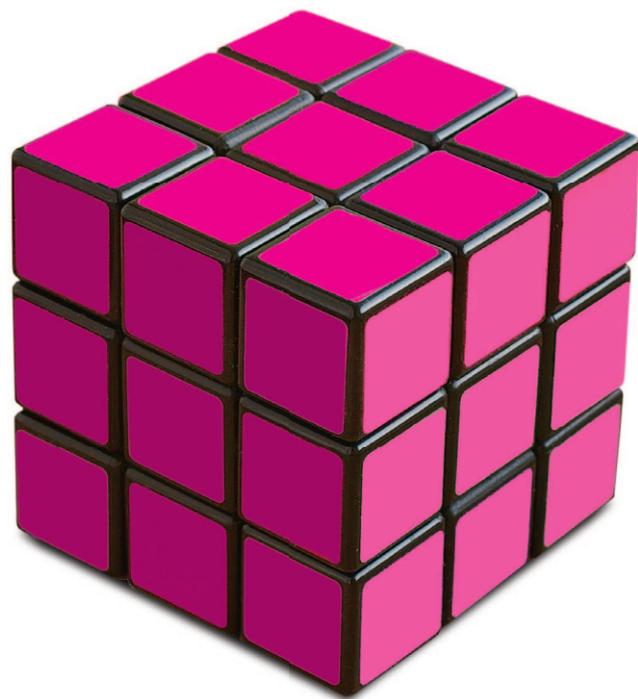
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