



# THE TENDER FRUIT GRAPE VINE

*A Newsletter for Commercial Fruit Growers*

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## **Irrigation – Why, When, And How Much ?**

*By Ken Slingerland, Tender Fruit & Grape Specialist, OMAFRA*

### **Why Irrigate ?**

This should seem obvious but here's a quick review.

- To establish good root systems in new plantings of orchards and vineyards,
- To reduce stress on plants to increase orchard and vineyard life,
- To improve plant hardiness heading into winter,
- To enhance growth and shoot length increasing the supply of carbohydrates,
- To ensure flower bud initiation and sufficient blossoms for the following year,
- To assist in the uptake of nutrients to reduce nutrient deficiencies,
- And to increase fruit size, marketability and overall crop yield.

### **When do you need to irrigate ?**

There are too many factors to list to come up with a precise schedule. Most growers will start in mid June depending upon the crop, the soil type and the rainfall to date. "Feel" testing is one simple method to determine whether the soil needs irrigation. At 50% of saturation (or field capacity), clay and clay loam soils will be somewhat pliable and will form balls under pressure when squeezed in the hand. Sandy loam soils will appear to be dry and will not form a ball under pressure.

Another method is to determine field capacity in the spring after a heavy rainfall, which brings the soil reservoir to the saturation point. Then subtract the daily use water of the crop from the total available water in the root zone until the irrigation point is reached (50% of the crop available soil water).

Samples of average daily water use for mature trees and vines:

	<b>Peach/Pear (mm per day)</b>
May	2.5
June	4.1
July	5.1
August	4.0
Sept.	3.0

For tender fruits it should be noted that there are two key times for irrigation, cell division right after June drop, and cell expansion, a few weeks before predicted harvest. The critical irrigation period for grapes is from berry set through the ripening period (veraison). Avoid irrigation in September to maintain sugar levels and reduce the probability of late growth and winter injury unless under severe stress.

### **How much do you irrigate?**

A general rule of thumb for tender fruit trees under "normal conditions" would be 25 to 38 mm (1 to 1.5 inches) per week early in the season and 38 to 50 mm (1.5 to 2 inches) during final swell. Also, each mature tree requires 36 litres (8 Imperial gallons) of water per day during July and August. Avoid extended dry periods combined with

excessive volumes of water to replenish soil moisture with peaches early in the season to reduce the incidence of split pits.

## Energy Conservation in Irrigation

*Rebecca Shortt, Irrigation Engineer, OMAFRA*

When it gets hot and dry our plants need water. Irrigation is an excellent tool to ensure consistent yield and quality through dry periods. However, irrigation systems can use large amounts of energy which can be costly, especially as the cost of diesel and electricity rise.

Effective irrigation helps conserve water and can also help reduce your energy costs.

Effective irrigation can be achieved using 4 principles:

- Know the general water requirements of your crop
- Use an irrigation schedule for your operation to determine irrigation volume to apply and frequency of application (based on crop, soil texture and climate)
- Modify your schedule based on current weather (rain and heat)
- Verify your methods by monitoring soil moisture

**Effective irrigation means applying only the right amount of water when the plant needs it. This avoids unnecessary water pumping which uses energy and costs money.**

For example:

An over application of 1" water over 1 acre costs \$10 in energy (to operate a traveller with limited lift and a short distance to field). If you multiply that by the irrigated acres it begins to add up.

Imagine you have a 50 acre farm and you apply 2" of water when the plants only require 1.5". You also irrigated 6 times when you only needed to irrigate 4 times. This means 5" of water were applied unnecessarily. The application of those 5" over 50 acres cost you \$2,500! That's enough money to take your spouse on a plane to Hawaii next winter!

## Other Energy Conservation Tips

- Irrigate more effectively: avoid irrigation on hot sunny and/or windy days. Try to irrigate at night when you will have minimum evaporation losses
- Only apply the amount of water required for crop growth (excess watering wastes energy and money)
- Check system regularly for leaks and repair immediately

For more information see:

- OMAFRA Factsheet: How to Prepare for Irrigation During water Shortages, Order No. 99-023
- Best Management Practices book, *Irrigation Management*

## Bird Control Options (and non-options)

*Neil Carter, Tender Fruit and Grape IPM Specialist, OMAFRA and Hugh Fraser, Agricultural Engineer, OMAFRA*

In the last issue of TFGV, I outlined the reasons that European starlings are such successful immigrants to North America and such persistent pests in grapes and tender fruit. Starlings are by no means the only birds that can cause problems in grape and fruit production; other species frequently cited as pests include robins, grackles, mockingbirds, waxwings, and blackbirds, as well as a host of unlikely, but occasional fruit feeders such as goldfinches and even gulls. There are behavioural differences between different types of birds, but regardless of the species involved, the goal of growers is to keep them from damaging fruit and grapes. When planning a bird management strategy, refer to the OMAF factsheet *Bird Control on Grape and Tender Fruit Farms*, Order No. 98-035, and always remember the fundamentals of bird management:

- Start early before birds establish a pattern of fruit feeding on your farm
- Using a variety of methods is much better than one single approach; no method listed below is a stand-alone solution to the problem

- Unpredictability is the key to successfully disturbing birds – vary devices, timing, and placement for best results with acoustical devices
- Communicate your plans with nearby neighbours to mitigate disputes
- Physical exclusion using nets is the most successful method to keep birds from feeding on grapes

### **Physical exclusion (i.e. netting)**

Pros: best single method of reducing bird feeding on grapes; effective, reliable and not subject to bird acclimation (i.e. they can't "get used to it"); economically feasible over life of netting; best of all neighbours love nets compared to other bird scaring methods; research to best timing of net draping underway and if there are other advantages with training, or disadvantages with growth

Cons: significant cost outlay at first with on-going operating costs

### **Propane cannons**

Pros: effective, familiar and reliable; easy to service; relatively cheap; best uses well – known (never fire at less than 3 minute intervals, move around vineyard frequently, randomized rotating multi-shots units work best, newer programmable units can be turned off at low feeding times such as middle of the day)

Cons: Frequent noise complaints; theft or vandalism of units increasing; acclimation of some birds if not moved around or random

### **Electronic sound devices**

Pros: effective and reliable; generally less irritating to neighbours than cannons; devices that mimic distress calls may also attract hawks which repel pest birds

Cons: not everyone finds them less irritating; distress calls mostly work only on the species mimicked

### **Whistling or pyrotechnic pistol cartridges**

Pros: effective; no firearms acquisition certificate (FAC) needed

Cons: disturbing to some neighbours; require your presence to use

### **Shotguns**

Pros: none

Cons: not generally effective and not as effective as pyrotechnic units; require FAC; disturbing to neighbours; will not reduce population of birds significantly; knowledge of legalities under *Fish and Wildlife Conservation Act* regarding nuisance wildlife needed

### **Scare-eye balloons**

Pros: effective on some species

Cons: not effective on robins or waxwings

### **Streamers and flashtape**

Pros: cheap; relatively easy to install

Cons: yellow fine for blackbirds but red/silver needed for other species; useless if not maintained properly

### **Flashing lights and mirrors**

Pros: effective against starlings; solar powered units available that require little maintenance besides frequent moving around vineyard

Cons: lights good at dusk and dawn only; mirrors only good in sunshine

### **Hawk silhouettes, stuffed owls, etc.**

Pros: more realistic units on market now; cheap and easy to deploy

Cons: only effective for a short period of time; require very frequent moving

### **Falconry**

Pros: effective if sustained activity

Cons: expensive if hiring a service; birds of prey are not pets and require significant investment in time and training for falconers; long-term commitment necessary

### **Chemical repellents**

Pros: nice idea in theory

Cons: no such product registered; no products used on other crops (e.g. turf) that would not adversely affect flavour of grapes

**Personal presence in vineyard (i.e. driving ATV etc. around)**

Pros: none

Cons: not very effective for time and energy expended; not feasible in large vineyards; potentially dangerous; physically exhausting as must be constant presence to be effective

**Trapping**

Pros: none

Cons: expensive to construct traps; must separate and free all migratory birds and non-nuisance birds (hence legal liability issues are important) within 24 hours; must understand all responsibilities and applicable directives under the *Fish and Wildlife Conservation Act*; nearly constant maintenance of traps needed; must “seed” traps with some live and cared-for birds (must provide water etc. for trapped and “seed” birds); very low return for energy and money expended; American crows, brown-headed cowbirds, red-winged blackbirds, common grackles, starlings and house sparrows may be trapped and killed; will not greatly affect local bird numbers

**Poison and adhesives**

It is illegal to use poison and adhesives to kill, injure or capture wildlife.