



Effective Sucker Management in Apple Orchards

Cesar Cappa, OMAFA Horticulture Weed Management Specialist

Root and crown suckers are unwanted vegetative growths that can be treated much like perennial weeds, with one important distinction: every measure must be taken to avoid damaging the mother plant. This means suckers can be controlled through physical or chemical methods that lead to their burndown or elimination, provided the treatment does not cause damage beyond the sucker's base (the rootstock or trunk).

Suckers require timely management. If left unchecked, they can harbor pests, serve as entry points for disease, absorb herbicides meant for the orchard floor, interfere with daily orchard management, and eventually they can overtake the orchard entirely.

While a small number of suckers is a normal occurrence, excessive growth often points to underlying orchard management issues. This can include poor rootstock selection, incompatibility between the rootstock and scion, or physical damage to the trunk.

Sucker removal is typically achieved through mechanical or chemical means. Each approach carries its own set of advantages and disadvantages, which are outlined below.

Physical Removal

Mechanical removal is generally reserved for orchards with very low sucker production due to the high labor costs involved. The primary physical methods are cutting or flaming.

While cutting is straightforward, it comes with a significant drawback: severing a sucker often stimulates the growth of multiple new suckers just below the cut line. Flaming, on the other hand, can be highly effective at destroying the tissue, but the equipment is expensive, and the process is often dangerous and impractical in most commercial orchard settings.



Figure 1. Root suckers on apple trees.

Chemical Control

Chemical control is usually the preferred option due to its speed, efficiency, and lower cost. Chemical removal strategies fall into three main categories: plant growth regulators, chemical desiccants, and herbicides.

The inherent challenge with chemical control is that products effective at killing suckers are logically quite capable of injuring the mother tree. Maximum caution and precise application are required to prevent drift or translocation to the desirable plant tissues of the mother tree.

Plant Growth Regulators (NAA)

First and foremost, it is crucial to note that there are currently no plant growth regulators registered in Canada for sucker control. Therefore, applying them for this purpose is illegal under Canadian regulations. Although there is movement on this front!



Phoenix SC is a Group 14 herbicide that contains tiafenacil. It is a herbicide used in multiple cash crops (corn, soybean, wheat), along with spot application in grapes.

A submission has been made to the **Pesticide Regulatory Directorate (PRD)**, formerly Pest Management Regulatory Agency (PMRA) for label expansion to include apples.

Gowan Canada has research authorization for the 2026 season to gather efficacy data for use in apples for both weed management and sucker burndown.

Stay tuned for updates with this product.

NAA (1-Naphthaleneacetic acid) is frequently mentioned in US-based literature, where specific formulations are registered for sucker management. However, using NAA improperly can trigger severe physiological disorders in the tree. The concentrations required for sucker control are magnitudes higher than those used for chemical fruit thinning, and the formulations are entirely different. For these reasons, Canadian growers must avoid using NAA for sucker management unless a specific product has been registered for this purpose.

Chemical Fertilizers as Desiccants

Certain liquid fertilizers, when applied at high concentrations, can rapidly dehydrate suckers and even suppress some weeds. Specifically, undiluted solutions of Urea Ammonium Nitrate (UAN) have been used with great success, achieving burndown levels comparable to conventional herbicides.

Because UAN works solely by dehydrating plant cells, it is only effective on soft, green tissue and leaves absolutely no residual effect. Maintaining control usually requires two to three applications per season.

If UAN is used as a desiccant, its high nitrogen content must be accounted in the overall orchard fertility program. For example, a single application of UAN (28-0-0) applied at 200 L/ha will add approximately 17 kg/ha of actual nitrogen to the orchard, assuming a 30% spray coverage area.

Herbicides

Currently, there are only two products explicitly registered in Canada for orchard sucker control: Beloukha (pelargonic acid) and Aim (carfentrazone-ethyl).

While other herbicides registered for apple orchards may suppress or burn down suckers, they are not strictly registered for this use and their applications should be targeted primarily at weed control. Conversely, when Beloukha or Aim are applied to suckers, growers get the added benefit of weed burndown.

- **Aim (Carfentrazone-ethyl):** Aim is a Group 14 herbicide. For optimal control, it should be applied to fresh, green suckers in combination with a non-ionic surfactant (NIS). Because Aim has no systemic activity, it only kills the tissue it directly touches. Complete, thorough coverage of the sucker is mandatory for satisfactory results. The maximum allowable number of applications per year is two. As a highly effective contact herbicide, strict drift management is required to protect the mother tree's green tissue and fruit.
- **Beloukha (Pelargonic acid):** it is a naturally occurring organic acid that rapidly destroys plant cell walls and has no systemic effect. It is a preferred option for growers seeking a "greener" alternative to synthetic herbicides, although it's not currently registered for organic production. Achieving effective control requires high application rates and repeated treatments, which can make it more expensive than conventional products.

Regardless of the chemistry used, control is always most effective on young, green, un lignified tissue. If suckers are allowed to develop woody bark, mechanical removal will be required.

Other Burndown Herbicides

Several herbicides registered for orchard weed control, such as glufosinate (Ignite), diquat (Reglone), and flumioxazin (Chateau), can result in partial or complete sucker burn-down. Although sucker control is not their primary registered use, their activity on suckers provides a useful secondary benefit when managing orchard floor weeds. Some growers coordinate these



weed control applications with sucker control products (e.g., Aim + Ignite) to manage both weeds and suckers simultaneously. This approach can take advantage of additive effects that provide a very strong burndown effect, achieving a broader spectrum of weed control along with effective sucker control.

Spraying Glyphosate on Suckers

Glyphosate should not be applied directly to suckers. Even early in the season when it might be relatively safe, any small amount of glyphosate that translocates

into the mother tree can have severe, long-lasting consequences, so it's better to avoid it. These effects, such as reduced winter hardiness and increased susceptibility to diseases like canker, are often not immediately visible.

Furthermore, it is never safe to apply glyphosate near suckers after mid-summer. Late-season applications will easily translocate down into the mother tree's root system, potentially causing permanent, catastrophic damage. Finally, if you remove suckers mechanically, you must wait 7 to 10 days before applying glyphosate to the orchard floor, as the herbicide can be readily absorbed through the fresh wound tissue.

**Talking Pruning
Advancements in
High Density Systems**

**Volume 7 Issue 1
February 2003**



Managing Light in the Orchard, The First Step

John Gardner, Apple Specialist, OMAF, London

This is really a talk about pruning of apple trees. No subject draws more cultural comment or creates more uncertainty as to just what is right and what is inappropriate.

As we increase the density and investment risk of our orchards in Ontario there is less room for bad decisions when pruning. These decisions can be related to when pruning is carried out, who is qualified to do it, how much can we afford to spend on it, and what should the resulting product look like. We cannot afford to forget other cultural practices and how they relate to pruning. Trees where heavy pruning is done this winter will require much less nitrogen than usual.

My take on winter so far is that it's been relatively friendly in terms of minimum temperatures and number of good working days with the clippers in hand. Cold has been steady but not severe as far as apple culture goes.

The more southerly production areas can normally spread the risk of timing over the entire winter. Many will start with more mature trees and trees with less value before Christmas. Normally, the results are okay. The problem lies with the volume of work to be done. Typically, the pruning job can last for months unless there is a small army of pruners involved.

At this latitude, the desired tree shape is a narrow pyramid or cone. In other words, narrow at the top and gently flaring at the bottom. This basic shape will vary somewhat with density. As we know, light is the fuel that drives the whole fruit production process in the orchard, however, it's only free to the top of the tree. How it gets distributed throughout the canopy will largely determine the value of the crop.

I am always amazed at how quickly a tree can lose its ability to produce quality fruit in the most economically desirable part of the tree canopy. The objective of every pruning program should be to create an even distribution and density of quality fruit buds within the managed canopy. This is only possible when light is able to reach all zones of the canopy on a more or less structured and uniform basis.

One of the keys to doing an effective pruning job is to be able to visualize what a tree would look like if left alone. Trees left unpruned for a year quickly lose their ability to efficiently colour the bulk of the crop. When pruning is not done for two or three successive seasons, yields drop dramatically as quality fruit buds become hard to find.

Many times, a tree can look entirely different when one or two large and intrusive limbs are taken from the upper canopy. These limbs when left look like trees growing within the tree canopy. The temptation can be to leave them because they sometimes have great looking fruit buds. Granted, you do gain quality yield in that area of the canopy but sacrifice too much to get it. These branches will effectively prevent you from producing any sort of quality in two or three times the volume of space under that branch. Train yourself to recognize those branches "trees" growing in the tree canopy and eliminate them with a dormant cut.

Publication 814 "Pruning and Training of Apple Trees" has been revised for Ontario. It includes detailed information on all of the popular and world class training systems that we are now familiar with. Included also is an appendix describing some of the traits of a number of cultivars including many of the new and highly talked about ones. On the next page is a photo (Figure 1) of a mature spindle on a size controlling root system. The upper middle canopy of this tree is requiring attention. Tree-like growth in the top of the tree will shade out a large % of canopy in the middle and lower portions of the tree.