



### **Established Berries Early Growth**

Strawberry growth this season is ahead of the normal and the amount of winter injury is minimal. At this time we need to make sure that the irrigation system is working and ready for frost protection.

If and when you use frost protection make sure that you rotate as much as possible the irrigation schedule to reduce the volume of water you apply. In areas where you may need to frost protect a number of nights this water volume can be very damaging to the crowns.

In order to avoid excess water application once the air temperature has reached 32 degrees F shut down the system. If the air temperature is getting warmer or not dropping any longer and you have been pumping water for a long period with standing water in the field you can shut down the system at 30 degrees F.

If you are frost portecting a number of times make sure that you keep applying fungicides and check for insect pressure. Additional application of Captan after each irrigation is advisable. Some growers have used CaCl instead of Captan if frost protecting often with excellent results and much lower costs.

The application rate of CaCl through the irrigation is 4 pounds per acre put on at the end of the frost protecting leaving it on the foliage. If using a sprayer the rate is 1 gram per gallon of water in 30 to 40 gals of water per acre. This does not seem like much but ***do not*** go higher and do not combine with any other spray; this is hot material and will cause leaf damage.

Standing water will limit the uptake of Potassium and Nitrogen in the plant and if the season is right spider mite may become a real problem at this time.

### **COLD TOLERANCE OF STRAWBERRY**

<b><u>Stage of Growth</u></b>	<b><u>Temperature</u></b>	
Open crowns	23 F	-5 C
Fully Extended Crowns	26 F	-3 C
Open Flowers	28 F	-2 C

These are the temperatures where we begin to see commercial loss due to frost damage. Use these levels as a guide. Always start your irrigation a few degrees above these temperatures to allow for unexpected delay in starting up the irrigation.

### **Foliage 1 inch in height**

Examine the dead leaf material and the underside of over wintering live foliage for spotted spider mites, if mites are present spray as soon as possible. Areas of the field that will be more prone to

having mites will be low wet areas, waterlogged areas, and areas where the fertility is poor or soil is compacted.

When foliage reaches 1 ½ to 2 inches in height an application of Boron should be applied through the irrigation system if you have it calibrated to give even coverage, or through the sprayer. The rate of Boron to apply is 1 pound per acre of actual boron, which would be 5 pounds per acre of Sol U bor.



**Boron Deficient flower**

Other Boron sources are available and work as well but the rate should be 1 pound per acre of actual Boron.

It is important that the Boron and Zinc sprays are applied early because they play a major role in the formation of fruit. Zinc is responsible for cell division and leaf area production and the formation of seed on the berry. Boron is responsible for P uptake in the root zone, development of root growth, pollen and pollen tube formation and cell division. If poor pollination or poor zinc levels in the plant reduce seed formation the size of the berry will drop quickly in season.

Boron and Zinc both play a major role in cell division. If these nutrients are in proper balance and the nutritional status is good the cell size is reduced and the fruit will become denser and of better quality. The denser the fruit the larger the surface area of cell walls and therefore the higher the level of calcium in the fruit which increases flavour, and shelf life.

Boron can be applied to the soil anytime from the time that you uncover the berries until foliage is 2 inches in height. Any later and it could effect yield and quality of the fruit.

I recommend that it go on through the irrigation because in most seasons the soil condition is too poor to carry a sprayer this early and if we wait for the proper soil conditions it will be too late. This also makes sure that the irrigation system is operational for frost protection.

Zinc application foliar should go on when the foliage is 2 to 3 inches in height just prior to flower truss extension. It is common in strawberry to see Zinc deficiency early. Usually one application is enough to correct this condition but in soils very low in zinc or very high in Phosphorus an additional application of Zinc may be required.



Soil test information will give an idea if Zinc levels are low and suggest an application of zinc to correct the soil condition, however regardless of soil levels I recommend a foliar application of zinc in the spring.

Cold soil condition will make zinc unavailable to the strawberry early in the season when we need it. As soil temperature warms up soil zinc will become available but this may be too late to give us the leaf size and berry size that we want.

In a lot of areas of crop production another nutrient that limits early growth is Manganese. In the case of strawberries where we use a lot of straw mulch this straw will increase Manganese deficiency early. The microorganisms in the soil that decompose this straw oxidize the manganese at this time and make it unavailable to the plant.

Tissue analysis from previous seasons and soil levels should give you a good indication if this is a problem on your farm. If Manganese has been a problem including a small amount in the zinc spray at this time would be beneficial.

A Plant Analysis should be taken 2 – 3 weeks before blossom to check nutrient status of the crop. Additional foliar application such as foliar N, P, Mg, may be required and a sample at this time is proactive in treatment.

Sample the most recently matured leaf, about 20 – 25 plants and submit by courier to the lab. Use a paper lunch bag to package the sample do not use plastic the sample could rot. See A&L web page for information.

## **Early Spring Weed Control**

Sinbar on Strawberries is still one of the best broad-spectrum herbicides that we have. However it has been well documented that high rates and long term use of Sinbar does increase Black root rot in Strawberries.

My personal experience would suggest that this is a big problem with most growers that I have visited when they use the recommended rate of sinbar.

Another problem that I see in my visits to growers is that this material is not being washed off the plants. When we see visual symptoms of Sinbar injury in the field, especially on very sensitive varieties, even though the berry grows out of it, the damage can be very severe.

What happens is that the damage to the leaf causes stress in the crown and root and the crown will be weak and usually die out. In sensitive varieties the next year or after renovation we start seeing gaps or spaces in our plantings where the Sinbar has taken out the crown.

I would rather see more frequent applications of Sinbar at lower levels to reduce this type of injury and make sure that it is washed off the leaf with at least 1/3 of an inch of water.

The following is recommended rates of Sinbar use that will reduce the injury and black root rot yet give the weed control that we require.

**Rate of Sinbar Application  
based on soil pH and organic  
matter content**

If soil pH is 6.5 or less use 4 oz. Per acre

If soil pH is 6.5 or less with greater than 6% organic matter apply 5 oz. per acre.

If soil pH is greater than 6.5 apply 3 oz. per acre.

If soil pH is greater than 6.5 with greater than 6% organic matter than apply 4 oz. per acre.

Make sure that Sinbar is washed off the plants immediately after application with at least 1/3 of an inch

**Raspberries**

Like the strawberry a few nutrients are very important for brambles. Boron and Zinc are key in good fruit formation. However unlike strawberries our raspberry nutrient program must include Manganese as it is very prone to Mn deficiency early in the season.

As soon as there is fully developed leaf on the cane collect a half of a pint of loosely packed leaf material and submit it to the lab for analysis to confirm this requirement.

A typical nutrient program we follow in raspberry production will look like the following. Some of the nutrient levels will change because of different fertility but the program will follow the same pattern.

**Early Spring**

N	P	K
50	50	50

The form of N should be from Ammonium Nitrate. Depending on Mg levels the K source should be from Sulfate of Potash Magnesia unless Mg is greater than 20% saturation on the soil test. If Mg is greater than 20% saturation use Sulfate of Potash.

In established brambles if Ca is a problem we may need to apply gypsum at this time at 300 pounds per acre depending on the soil test and tissue information from previous years.

At this time the Raspberries should also receive a pound of Boron (ai) per acre watered in to the soil.

As soon as there is some green showing an application of Zinc and Boron foliar should be applied. With Zinc depending on the product apply label rates and with Boron apply 1/4 pound per acre equivalent. Shortly after this once there is good foliage development and the tissue information suggest that it is needed apply an application of Mn.

Zinc and Boron can go on earlier because they will penetrate the wood and the buds and help bud and leaf break. Mn needs more leaf surface.

**Pre-bloom**

An additional application of Zn, Mn, and B may be required just prior to bloom, if the history of the patch suggest there is a problem an additional plant analysis will confirm the requirement.

At this time an additional application of Nitrogen at 25 pounds per acre is required. This is best applied as Calcium nitrate at this time. If K and Mg levels in the soil and plant analysis indicate a problem we may also suggest an application of Sulfate of Potash Magnesia at this time of 200 pounds per acre or 40 pounds actual K.

### **Heritage Raspberry**

If the variety that is being grown is Heritage it will require more Nitrogen. The Nitrogen management of this raspberry will be as follows.

Early Spring	75 lbs/acre N
Late June	25 lbs/acre N
Pre-bloom	25 lbs/acre N

More nitrogen may be required depending on the year and growth.

As with all crops Nitrogen management is difficult as it will vary year to year and crop to crop. In strawberries as I will cover in the next newsletter there are in field Nitrogen kits that allow us to monitor N levels so that we do not over apply or run short of N. In raspberries there is no such tool and lab analysis is the only true way to monitor N levels.

A general program however for raspberries in season is a weekly application of 3 – 5 pounds of Urea foliar plus a weekly application of 20-20-20 for maintenance.

This may promote too much growth so judge the application accordingly.

CaCl is also a good program for raspberries to maintain fruit quality and suppress disease. CaCl should be applied every 7 – 10 days at a rate of 3 – 4 pounds per acre through the irrigation if you have overhead irrigation. If you apply this with a sprayer it should be as mentioned earlier 1 gram per gallon of water. **Do not mix with Urea or any other spray.**

In Magnesium deficient soils or if plant analysis indicates the need apply an application of Mg foliar in the spring during regrowth. Do not use Epson salts.

If an aggressive Nitrogen program is being used as suggested above two applications of Boron foliar at ¼ actual boron should be applied during harvest. One at early bud of ¼ pound ai. and a second at the same rate at early fruit set.

If any of these recommendations are not clear or you have questions or concerns on any of the applications forward your questions and comments to [aginfo@al-labs-can.com](mailto:aginfo@al-labs-can.com).