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Assessing The Damage

This harvest season uncommonly wet conditions not only caused a lot of damge to the fruit it has also put a lot of stress on the crowns. When checking a field for its potential we must always analyze the damage below ground. After renovation this may not show up with growth above ground, the weakened condition may only show up in the spring of next year. I dig up and inspect crowns so that I can put into place management programs to repair damage or if in the worst case make new planting plans for the next season. In some cases I have also had growers plant in August.

Calcium Chloride This Season

Again this season a number of growers used Calcium to increase berry quality and reduce the degree of mold that was in the crop. Botrytis and Grey mold where very difficult to contain this season with the persistant rain. A number of growers in harvest had to apply Calcium after every rain to keep some control.

The over all analysis of the success of Calcium indicated that growers using a sprayer to apply calcium had more control than those putting it through the irrigation. This indicates to me that the sprayer is doing a much better job of placement and perhaps not washing it off as much as the irrigation.

In season people using sprayers increase the rate of Calcium Chloride to 1.5 grams per gallon of water and in spraying tried to travel the opposite direction each time to increase penetration and coverage.

In any case this season turned out to be a challenge for all areas with the water problems that we had.

Nutritional Disorders Below The Ground

During my field visits I will dig up crowns and cut them open to examine them. In the following pictures I will try to provide desciptions on what to look for.

The crown is a culmination of events that has taken place and can sometimes leads us to answers. This analysis can be very helpful in re-defining our fertilizer programs for next season or responding to a problem in this season.

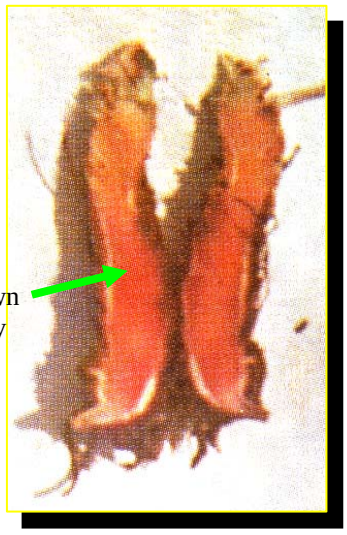
A healthy crown should be bulbus and white. Some varieties will be wider then others but usually a good round, white crown growth indicates conditions are favourable.

Healthy Crown

In a healthy crown the tissue should be clear and dense not flaky. A flaky crown will indicate usually poor K or CA condtions or both and will be more prone to disease and winter damage.

Nitrogen Deficiency

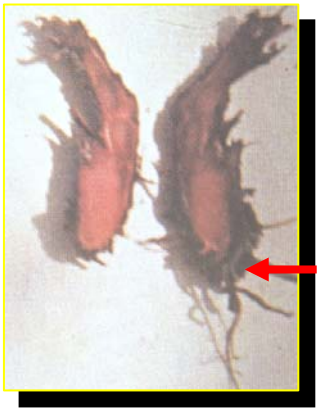
A crown that has been grown in low or deficient Nitrogen conditions will not have the good round appearance but will be smaller, narrow and red in appearance. Older crowns will be always darker than newer crowns that have had sufficient N in their production year.



Red discolouration of crown
Due to Nitrogen deficiency

Phosphorus

A crown that has been subjected to poor Phosphorus levels will be much narrower and often rots will show up in the root and outer edge of the crown. Crown vegetative area will be very dark or blackish with disease apparent. Root formation will be poor.



Phytophthora

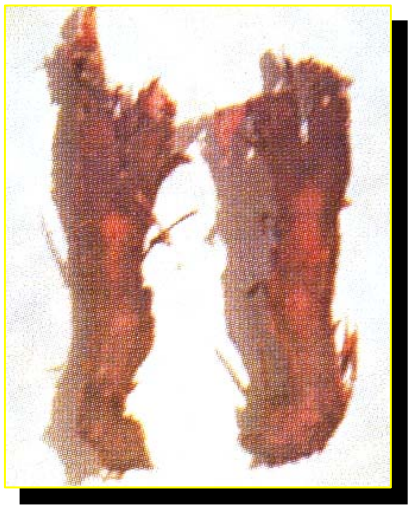
Phosphorous Deficiency

A root that is infected with Phytophthora will have a very pungent odour that is very distictive.

Potassium

Low Potassium levels again the crown will be narrow particularly in the area betweeen yearly crowns. Crowns will be a carmel brown to dark brown in appearance and areas of decayh will show up in the base of the crown. New crowns will be more prone to winter injury. This narrowning of the crown is more pronounced than that of Nitrogen or Phosphorus deficiency.

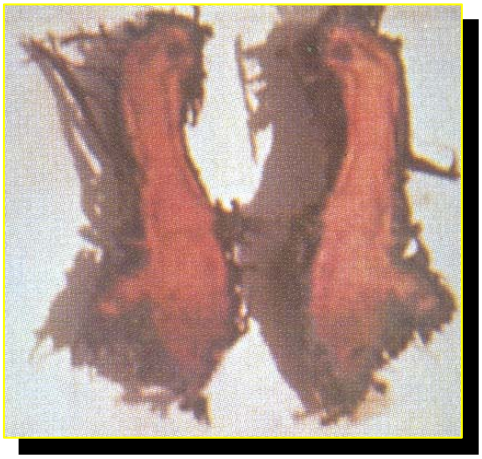
In areas that the crown in brown the tissue of the crown will be flaky or less dense than a healthy crown. Running your thumb nail over the brown tissue you will be able to flake the tissue.



Potassium Deficiency

Calcium

Crown showing low Ca levels will have more damage from diseas and very porrt root growth. Although these crown mayh be wikder than other nutrient deficiencies shown the diensiyt of the crfown will be poorer. This lelel of cell density is why these crowns are more prone to disease.



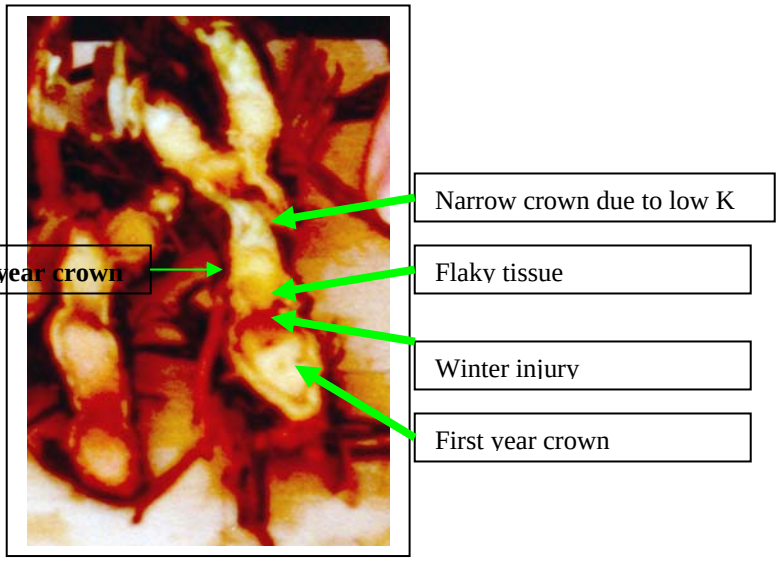
Calcium Deficiency

Digging up crowns will also give us good information on how well our planters are set and if we are creating any soil movement during field operations. Shifting soils and moving crowns that are estabvlished will destroy root systems.

Looking at old crowns and digging an old planting up will give us some historical infomration on weather patterns, watering, fertilization, herbicide injury etc.

If any one wants to send a picture of a crown to me for examination either by print or email follow the following process to preserve the crown.

Dig up crown and wash off as much dirt as possible.



Crown example dia

Cut the crown length ways from top to bottom.
The crown even if it is white will quikly start to turn brown. Have a bowl of lemon juice handy to soak the crown in to preserve the colour. Once the crown is soaked in lemon juice it will remain the same colour for a long enough period to take a picture. Taking these picture and learning how to read crowns is a good

management tool for diagnoses in the future.