



Strawberry Diseases

Diseases are an important limiting factor in strawberry production in every production system. A control program including cultivar selection, replacement of plants every 3 to 4 years, soil fumigation prior to planting, maintaining population densities plus a proactive disease, insect and weed control program in season helps manage disease problems.

Plant diseases are always present and the level of contamination in a field has a lot to do with the cultural practices that we put in place. A plant pathogen will exist for a number of years in a field but it does not multiply or become a problem until it is able to penetrate a sick and weakened plant. Once inside a plant it will multiply and spread leaving behind even a higher soil population when it's done.

Plant roots give off a number of compounds that control nutrient uptake and stimulate the living "soil biota" around it. A healthy plant will exude amino acids; carbohydrates, vitamins, carbons and other such compounds that feed these soil organisms and help the plant take up nutrients. In a weakened condition the compounds that a root system exudes is much different and instead of excreting compounds that are beneficial to the plant it will give off signals that will stimulate plant pathogens and organisms such as nematodes to invade. This is Mother Nature's way of getting ride of the weak.

A healthy plant will be able to support good bacteria in the soil and keep the bad organisms in check. However once it becomes weak and these bad soil pathogens increase in population in a field even the strongest of plants will not be able to keep them away.

In a continuous cropping system it is likely that you will build these population and keeping ahead of them will be a constant battle. After a year like we just experienced it is advisable to give those fields that had severe disease pressures a rest.

Soil fumigation is one answer however when we fumigate we not only destroy bad pathogen, we also destroy the beneficial pathogens. If we manage the next crop and keep it healthy the plant will build up a population of good organisms that will help keep the bad in check. However if a disease gets established because of the potentially sterile condition and no good organisms to keep it in check it will run rampant and get a strong foothold.

Fields that have high populations of disease should be rotated and allowed to rest. Applying an application of good well rotted manure and planting a green manure such as rye will help the field establish those good bacteria and fungi that support the plant and reduce the pressure of negative organisms.

Well-rotted manures and composts have a natural level of good organisms and natural humates that can re-establish the health of a field and return it to a more natural balance. Good drainage and proper soil pH are also a must for this to work.

Leaf Disease and Plant Nutrition

Leaf Spot and Leaf Scorch

This disease pressure has shown us that usually Potassium is limiting. This can sometimes be due to poor availability such as wet soils or dry soil conditions or stress caused by heavy yield, but in most cases is an indicator that Potassium is or was a limiting factor whatever the cause.

Better soil management has over come some of this in some cases but most time redefining Potassium application and timing has helped, particularly in season application of Potassium.

Botrytis

In all cases with Strawberries it is an indicator that Ca is a limiting factor and we seem to have it under control with our CaCl recommendation. In weak fields if we push nitrogen too aggressively and throw the N:Ca in the plant out of balance botrytis will be a problem. In wet years such as last it is a battle to keep ahead of even with an aggressive fungicide program and Ca sprays.

Phytophthora

Again in most cases for strawberries and brambles phytophthora is an indicator that P is low or its uptake is limited by some condition. Low soil P levels, high Al and Fe, low pH, compacted or water saturated soils all could be a cause for poor P availability.

Angular Leaf Spot

At the present time I do not fully understand which element is creating or promoting this condition as it has been reported in a number of cases. However in the past season in areas that had a problem increased use of CaCl seemed to help. I however am of the opinion that there may be another factor involved with this disease.

Powdery Mildew

This normally is a N:K balance problem in most crops and we see it usually in K deficient tissue after renovation. In past seasons it has been shown that Boron is also playing a major role in this diseases occurrence. Low Boron levels reduce the up take and use of K especially in seasons that are dry after renovation. Keeping tissue levels greater than 60 ppm. of boron will help in the uptake of K.

POTASSIUM Related Diseases

	N:K
Powdery Mildew imbalance	B?
Leaf Scorch	K
Leaf Spot	K
Slim Mold	K,Ca
Sclerotinia	K
Verticillium	K,Ca,B

PHOSPHORUS Related Diseases

Red Stele	P
Phomopsis	P,Ca,B
Pythium	P,B
Phytophthora	P

Anthracnose – poor P levels in low Ca soils where an imbalance between N,K,Ca occur and where soil conditions are warm and moist.

EMERGENCE Diseases

Rhizoctonia	Mn, Zn, S, B
Phytophthora	P, Zn, B, S

When conditions cause slow germination or emergence and the disease organism is at sufficient levels the plant will be infected. The micronutrients that I have listed in these cases will speedup emergence, germination and growth of lateral root systems.