Serenade Prime FAQ

Application

Is water volume critical at application?

For spray applications, the volume is not critical other than that the total spray mixture needs to be capable of being delivered with normal commercial equipment. If applied through irrigation, the recommendation is for sufficient irrigation to thoroughly wet the soil in the root zone, but not too much such as to wash the bacteria away from the root zone.

Mode of Action

Will Serenade Prime work every time I apply it?

Perhaps not. The bacteria in Serenade Prime become part of an extremely complex biological system. The positive results occur when most of the factors are not too far out of balance. If there are major imbalances then the overall result will be compromised to some extent. As with any agricultural product, environmental factors and agronomic practices present in the crop will be major influences on the benefits achieved from Serenade Prime.

How does Serenade Prime interact with the chemical exudates from roots?

After germination from spores, the bacteria can detect chemicals which are exuded from plant root systems, and will then move towards the plant's root system. If it has been applied close enough, colonisation of the roots can then occur very rapidly. The bacterial colonies utilise the exudates from the roots as their primary source of carbon (food). At the same time, plants benefit through the bacteria converting soil nutrients into useable forms.

How can an application to the soil/root system early in the crop give yield benefits at the end of the crop cycle?

In short cycle annual crops such as vegetables, it is plant vigour in the early stages which often determines yield potential at harvest. Similarly in tree crops, the critical period which is most important for determining fruit or nut yield commences with an effective root flush. If Serenade Prime is applied early and using suitable delivery methods, then the plants have an opportunity to set up without constraints caused by a poorly performing soil/root complex. The benefits can come through at the time of harvest as yield, quality and crop uniformity.

Repeat Application

How many times will I need to apply Serenade Prime to a tree crop?

For most permanent tree crops, applications up to 3-4 times per year coinciding with periods of accelerated root growth flushes is suggested as a logical schedule for Serenade Prime replenishment.

I grow 2-3 crops per year in the same ground each season. Do I need to apply Serenade Prime to each crop?

Yes. Applying Serenade Prime at each planting will ensure the optimal root colonization and improved crop access to soil resources. Serenade Prime does not colonize the soil so after one crop is removed, the new crop needs to be treated to allow for effective root colonization and the resultant crop growth benefits.

Will I always see a benefit?

Serenade Prime has the ability to improve a plant's access to soil nutrients through effective colonisation at the root/soil interface. This improved access to the soil nutrient resources can result in increased plant yield and produce quality, with specific benefits depending on crop type. However, as with any other agricultural inputs, benefits can vary based on soil health, pest and disease pressure or other environmental factors and agronomic practices affecting the crop performance. Maximum benefit will only be realised when all other needs of the crop are met, including disease, insect and weed control.

Rate

Will Serenade Prime work better if I apply a higher rate or more often?

In many crops there are density dependant signalling effects among the bacterial colonies which limit the value of applying excess rates. Occasionally there are slight decreases in results when optimal rates are exceeded.

Colonisation

How long will it take Serenade Prime to colonize the roots?

Colonisation is very rapid and begins within hours. In most situations it is effectively completed within 2 -3 days and continues to colonize the roots as they grow and develop.

Does Serenade Prime need to be applied close to the roots?

It is important that the material is applied close enough that after germination the bacteria can detect the root exudate chemicals. Application directly to the root zone is ideal, however, applications have been successfully made using side-dress methodologies (e.g. up to 13 centimetres away from the plant in some crops). This distance might be different in different soil types. For example a poorly structured heavy soil with limited aeration and limited pore spaces may not allow chemical signal detection by the bacteria to the same extent as in a healthy friable loam soil. In that situation the material would need to be applied very close to the existing roots**.**

How long will Serenade Prime last in the soil?

Based on field data, we know that Serenade Prime does not persist in the soil year to year. Serenade Prime will only colonize roots and not soil, therefore after the plants are removed the bacteria will return to their spore state and be diluted by the natural microbial population in the soil. In a permanent crop situation, the bacteria will also be diluted by the natural

bacteria population, and some benefit may be gained from further product applications. Application and re-application recommendations should be based on local experience and will vary based on crop and agronomic practices and conditions.

Is Serenade Prime UV stable and can I leave it on the surface and water it in with irrigation?

Serenade Prime is UV stable and it is possible to apply on the soil surface and water it in soon afterwards. However, the best results will occur when it is directly applied as close to the root zone as possible.

After watering in, how long before it is safe to irrigate again?

Germination of spores occurs fairly quickly after exposure to water, but it may take a couple of days for the bacteria to move towards the roots and colonise. After this is completed, ensuing precipitation is not a threat to washing bacteria and spores away and normal irrigation practices can be maintained.

Shelf Life

Do I need to store Serenade Prime in a special way?

We recommend storing Serenade Prime under typical agricultural product storage conditions; in a cool, dry location out of direct sunlight. It does not require refrigerated storage. The product needs to be used within two years of manufacture date for best results.

What is the expected shelf life of Serenade Prime in normal conditions?

Under normal storage conditions, the expected shelf life of Serenade Prime is at least 2 years.

Compatibility

Can Serenade Prime be applied as a tank mixture with liquid fertilisers?

YES. Serenade Prime has been tested for physical compatibility with a broad range of liquid fertilizers and is fully compatible with most common fertilizer products. This is due to the stability of the microbial endospores of this product. Negative effects would result only if the fertiliser placement or concentration is such that plant root or leaf development is damaged or hindered.

Can Serenade Prime be applied in tank mixtures with fungicides and insecticides?

YES. Serenade Prime is physically compatible with, and can be tank-mixed with pesticides, including fungicides, insecticides and herbicides. This is due to the stability of the microbial endospores of Serenade Prime. However, mixtures of Serenade Prime with insecticides, fungicides and herbicides have not been tested for phytotoxicity to treated plants, and this should be checked over small areas before treating commercial crops.

I use compost and other soil amendments to improve soil health. Are they compatible with Serenade Prime?

YES. Soil amelioration to improve soil health will be helpful to processes of beneficial bacteria colonising root systems. In fact, there have been studies which have shown that Serenade Prime applied in conjunction with compost or soil amendments can improve the soil nutrient/root interface, providing increased plant productivity compared to the soil treatment alone.

What exactly does Serenade Prime do to the roots?

The beneficial bacteria Bacillus subtilis does not directly do anything to plant roots. The bacteria colonise around the root surfaces and stick there very persistently. These colonies thrive on the exudates from actively growing roots. In exchange for the exudates (principally sugars providing a food/carbon source for the bacteria) the bacteria through complex interactions are capable of converting soil minerals into useable forms for the plant to use. It is through this mutually beneficial relationship between the bacteria and the plant roots that the positive benefits to crops can occur.

Competitors

What is different about Serenade Prime vs other competitor products also based on beneficial bacteria?

Serenade Prime is based on a single isolate of a highly active strain of Bacillus subtilis. This isolate was identified as highly effective on a single peach tree in California many years ago. The product Serenade Prime is a pure and consistent formulation of very robust spores of this single highly active strain. It is a formulation of the highest quality which can be used immediately out of the container. The crop benefits seen from use of this product have been documented in hundreds of field trials in many countries.