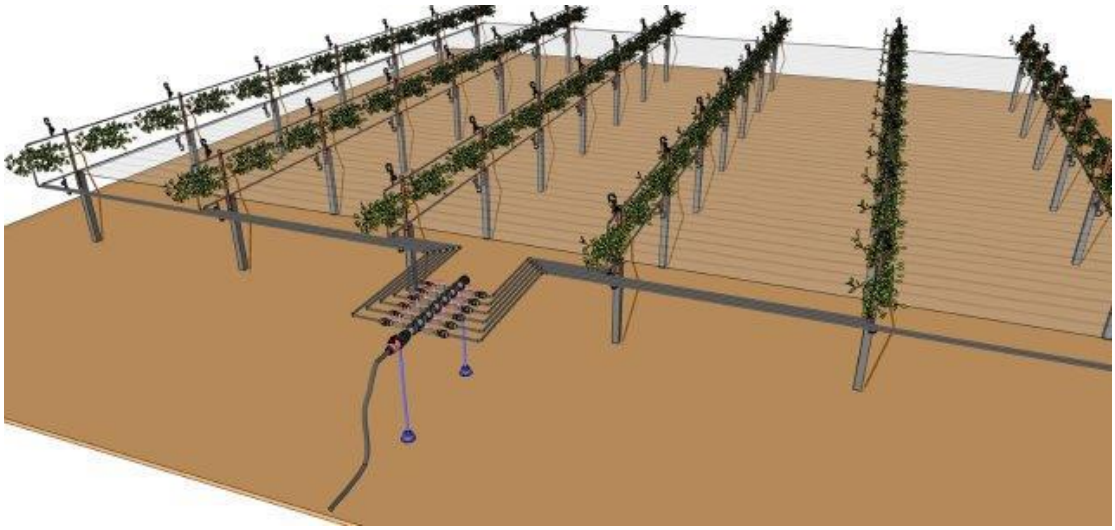
NaanDanJain Presents - A New System for Foliar Application in Orchards

"Crop Care Solution"

Many farmers in different regions around the world have been having to deal with increased production inputs in general and with the rise in manpower costs in particular. This state of affairs compels the farmer to decide where to allocate his available manpower - whether to send them to harvest crops, for planting, or to spray the orchard. From the farmer's perspective, such a decision has economic implications.

The worldwide changing weather and the spread of the Pseudomonas (PSA) through kiwi orchards, and the Sigatoka through the banana plantations, has added urgency to the ability of farmers to provide a rapid, direct response for dealing with these diseases.

This reality, says Maoz Aviv - chief agronomist at NaanDanJain, "has caused us at NaanDanJain to seek a generic solution amounting to a new concept of how the farmer works in his orchards. The system they have presented at the EIMA fair in Bologna is - the Crop Care Solution- Static Foliar Application System.



This is a static system, suitable for a variety of uses within the orchard. It is easy to install and maintain, it remains permanently in the orchard and is always ready for use.

To deploy the system, the orchard is divided into zones. The system consists of two parallel rows of Hadar Sprayers, installed above and below the orchard, such that the system covers the entire area and is ready for operation at any time whenever the farmer or the orchard needs it. All the sprayers are connected to a single system with a central pipe:

Each plot of between 0.2 and 1 hectare, depending on the crop, is connected to a central connection point.

To develop the system, NaanDanJain contacted a longtime business partner, a world-renowned authority on spraying - Mr. Domenico (Mimo) Pronesti, owner of the Italian DSM company. Mimo brought to the project his extensive experience as well as DSM's unique mechanical sprayer. This strategic partnership delivers an immediate, effective solution for operating the system. NaanDanJain will provide the Italian-made DSM sprayers to anyone interested, anywhere around the world.

Reducing costs and increasing profitability

Another question the system developers faced was the issue of profitability for the farmer. The answer to this question lies in the system's performance. For example - to spray a 10-hectare orchard using a tractor sprayer would take 11 hours, while using the new system the work can be accomplished in 56 minutes.

Kiwi orchards and fresh grape vineyards are crops which are harvested over many years. Repeated spraying using a weighty tractor and trailer inside the orchard causes damage over the long term:

- During the wet seasons, heavy machinery entering the orchard is prone to getting stuck.
- Branch breakage (during the wet season). This may even lead to increased probability of contracting fungal and bacterial diseases).
- Damage to the fruit and to the crop blossoms
- Soil compaction

The most significant damage over the years, and the most harmful to the orchard and crop quality (according to studies and observations from recent years in Italy) is the soil compaction. Increased use of Agricultural machinery causes soil compaction in the deeper strata, resulting in an impervious layer, through which water cannot seep and where water cannot drain off. The result is that the plant roots are confined under anaerobic conditions for protracted periods, causing them to rot and inflicting severe damage to the plant roots. This harm is also transferred to the crop yield, which, in kiwi orchards, diminishes, and quality is affected over the years.

The system has other advantages:

- Under windy conditions, the spraying needs not be delayed for long - even a short period of calm is sufficient for completing the spraying.
- By using the system damage to the orchard and the soil is prevented, since there is no need for sprayers to enter between the rows.
- The system is also suitable for areas where aerial spraying is not possible due to low profit margins or because regulation forbids the use of aircraft for spraying (Global GAP).
- The system reduces the damage to the farmer - the farmer needs not to be in the orchard while spraying, thereby avoiding exposure to the spray toxins.
- Reducing manpower - another advantage of the system is the saving in manpower - a single person operates the entire system.
- The system is also suitable for foliar application of fertilizers and micro-elements.
- The system is modular - the area can be sprayed by plot, and the overhead application can even be operated above ground .

Dealing with the disease which kills the kiwi vines

There are five main diseases which afflict damage to the branches and fruit in the orchards, however one of these diseases may kill the vine - Pseudomonas.

According to Maoz, “we have set ourselves a goal of tackling this disease due to the acute damage it causes the vines. The great advantage of the Hadar Sprayer is that it covers all of the sensitive areas of the tree where it is vulnerable to contracting and penetration of the disease. This foliar application system is installed in two planes within the orchard. The upper part, which provides a solution for covering the orchard foliage, thereby also treating the causes of the contagion, and the lower part of the orchard, which provides full coverage for the trunk and branches. There is no other way of reaching all of these.

System Development

So far the system is applicable to kiwi orchards and vineyards, however in the near future it will also be applied in apple orchards and banana plantations.

NaanDanJain’s close familiarity with the kiwi growers worldwide has been a great help in developing the system. These farmers form the basis for the continued research and development, further improving crop yields worldwide.