

# Case Study

## Israel's largest banana grower "Bananot Hahof" & NaanDanJain launch a new research station

Lior Peleg - product line manager, drip irrigation

Banana is a tropical crop, grown mainly in Latin America, Africa, Asia and Australia. Yet, surprisingly, it is the most consumed fruit in the Israeli market. However, climatic conditions in Israel are not optimal for this crop. Water, which is highly consumed by the banana crop, is scarce and costly, therefore local growers face the great challenge of getting the most out of their plantations, while optimizing the use of water.

The new research station is an

initiative of "Bananot Hahof" who, together with crop expert-agronomist Hanan Ben Shalom, decided to investigate the optimization of banana growing in the Carmel beach area, where their plantations are located. NaanDanJain accepted the challenge of designing and supplying the required materials for this unique project.

The first plot in operation is a demo plot of 4 hectares that evaluates different

irrigation methods for performance improvement of a mature banana plantation in stony soil. This plot, planted in 2000 with the Grand Nain variety, began showing a decrease in uniformity and yield. Since the soil is extremely stony, the hypothesis was that this reduction is related to water distribution.

The common practice in this region is growing with 2 or 3 laterals per row of crop, using PC driplines with 50 cm spacing between drippers and a flow rate of 1.1-2.2 l/h per dripper.

### The treatments tested in this plot are:

1. Micro-sprinklers (2002 micro-sprinklers)
2. Drip irrigation-high density (one lateral per meter)
3. Drip irrigation-local practice
4. Undertree sprinklers (Silva 6024)

### Evaluation methods:

1. Soil humidity monitoring, using tensiometers
2. Yield quality and quantity analysis

After one summer of irrigation, it is evident that the improvement in water distribution has added vigor to the





Alex - Irrigation manager of Bananot Hahof, operating the system via cellular



Hanan Ben Shalom - Agronomist, (on the left) teaching the NDJ team



Control head

plants and the plantation, which was about to be uprooted, is starting to show significant signs of recovery. These first indications confirm the hypothesis that stony soil causes deep draining of the irrigated water, and that the highly localized irrigation usually practiced in this region is not suitable for this kind of soil.

Another benefit observed in the sprinkler and micro-sprinkler plots is the fast decomposition of organic matter, such as leaves, that can be enjoyed by the plants as nutrients.

The disadvantage of sprinkler treatment in this case is the appearance of weeds that enjoy the superficial water and the lack of mulch cover.

The main plot of the research station is a 7-hectare, fully-automated plot under net house, in which 4 different trials are taking place. The subjects tested are:

- **Organic Nutrition** - determining optimal quantities of nitrogen nutrition in organic plantation in order to achieve optimal cost/benefit ratio.
- **Tensiometer Calibration Test** - determining the optimal value of water tension in the soil which should trigger irrigation. This trial is based on 4 different sensing stations-each has a different threshold at which irrigation is automatically activated.

- **Drip Irrigation Methods** - trying to answer the old question 'Two or three laterals?'
- **Plantation Design** - evaluating the benefit of planting on elevated beds.

Although the trials all evaluate practical and applicable issues, they are planned at the highest academic level, featuring random blocks, to achieve accurate and reliable data. This demands a high level of design, installation and maintenance. During 2012, a monitoring and data-collecting system will be implemented, giving each plant in the field a bar-code and ID that will allow the trials to be followed at the level of the specific plant.

NaanDanJain, as well as companies

like Dorot Valves and Amiad Filtration Systems, have all contributed to the project by providing some of their products for the complex installation. In addition, NaanDanJain has been a primary contributor in other aspects of the project, including planning, providing valuable knowledge based on hands-on experience with banana crops in other parts of the world. NDJ is obligated to the functioning of the system, and the company's agronomists and engineers will support and track the trials in the years ahead. The station has become an attraction for the NaanDanJain customers and employees, all of whom come to the site to learn about new concepts in banana cultivation. ■



NDJ and Bananot Hahof management