

**Transform 4.0 – Deliverable D.T1.1.5 -
Israel (IL) Study visit – 19-24th January 2020**

SUMMARY

The study visit in Israel and the networking workshops within the Deliverable D.T1.1.5, held by CREA and a representative from Francisco Josephinum, Reinhard Streimelweger, took place from the 19th to the 24th January 2020.

The program consisted in the visit of several companies and start-ups that deal with precision farming. In particular, the program of the tour has been:

20.01.2020	Monday
09:00 - 10:00	SATURAS Address: T'chelet 17, Misgav Business Park, Israel, 2017400
14:00-15:00	TEVATRONIC Address: Shaar Hanegev Municipality, Technological Incubator, Sderot, 78100, Israel
16:00-17:00	NETAFIM Address: Kibutz Hatzerim D.N. Hanegev 85420000 Israel

21.01.2020	Tuesday
10:00 - 11:00	CROPX Address: 5 Giborey Israel, Netanya
11:30 – 12:30	Fieldintech Address: 1 Ha'Tzmicha street, 4th floor, Yokne'am Illit, Israel 2069205
14:30-16:00	MANNA Address: Gvat, Israel

22.01.2020	Wednesday
09:00 – 10:00	FARMENTOR Address: 55/31 Bersntein St. Rishon LeZion 7550355 IL
10:30 – 11:30	ISRAEL EXPORT INSTITUTE Address: HaMered St 29, Tel Aviv-Yafo, Israele
15:00-16:30	METABOLICH INSIGHT Address: 7 Sapir st. Ness Ziona Industrial park, Israel

23.01.2020	Thursday
09:30 - 11:00	VIRIDIX Address: Kfar Rut 70, 7319600, ISRAEL
16:00 – 17:00	FRUIT SPEC

After a short introduction of the project and of our institutions, the seminars with every company focused on the discussing about their technological proposal and their technology transfer models.

Regarding the Israel Tech-transfer system we learnt that:

- The ministry of agriculture in Israel provides extension services, referred as SHOHAM. It is an organization of experts in the various agricultural fields, which forms the Ministry of Agriculture's professional nucleus, with the aim of:
 - upgrade the professional and administrative level of farmers;
 - ensure their ability to earn a decent living while living in a good quality environment;
 - ensure the efficient use of the means of production at the disposal of the farming industry: land, water, labour and capital;
 - maintain a repository of farming and agricultural knowledge for the Ministry of Agriculture and Rural Development, for the other government ministries and for other entities, public and private, which are related to the farming sector;
 - create, distribute and assimilate new knowledge and advance technologies to the farmers:
- In Israel there are regional R&D stations that belongs to the farmers, which have the role to introduce new technologies in their farms and to guide them providing results and information about the technology.
- There is an important trend regarding new technologies: many young people are interested and several start-ups that deals with precision agriculture are born, especially in precision irrigation. These start-ups generally born from university or research centres, especially precedents research project had an important role in the testing and development of the technology to transfer towards the creation of start-ups.
- Nevertheless, precision irrigation is a crucial goal in the Israeli agriculture. This is due to their agricultural system: as it is known, Israel is an almost desert country with a low amount of water. 85% of water comes from depuration and desalinization, therefore water is an important source for this country. To improve its use-efficiency sensors, informatic systems and efficiency irrigation systems seems the way to pursue.
- Technological transfer in Israel is well supported by organisations that provide with the aim to link universities and high-level studies with companies, customers or start-ups.

PLACE OF MEETINGS

Israel, several locations

DATE OF MEETINGS

20-23/01/2020

TOPICS TACKLED AND LINKS TO DELIVERABLES/OUTPUTS

The main topics tackled during the study visit are presented below.

Saturas

Date: 20.01.2020

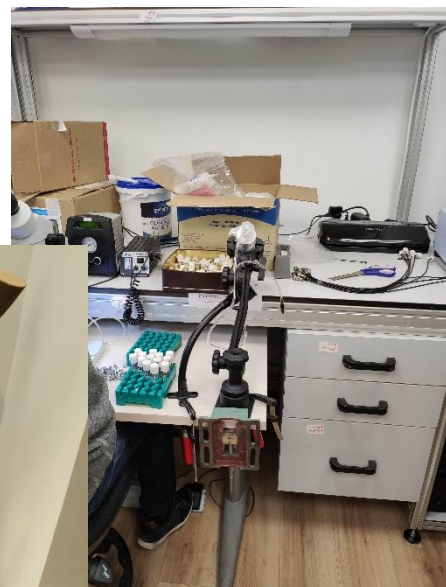
Time: 10:00-12:00

People met: Anat Haloga - CEO, Avi Stein – Agronomist and VP Marketing & Sales

Report of the visit: The company Saturas was born from the expertise in the irrigation field of the research institute in Migav, which support 10.000 farmers and deals with precision irrigation. They have developed a system, already commercial, based on a sensor embedded in the trunk of herbaceous or tree plants that can measure the water stem potential (SWP). The sensor, which is innovative in the field, works with inverse osmosis, capturing the sap flow from the plants, and measuring the SWP through a pressure sensor. It is easy to install (5 minutes) and it penetrates the trunk of about 2-4 mm, depending on the type of crop.

After that, from the data gained, via their algorithms, they can provide a decision support system for the farmers able to improve irrigation management of the crops, but in future, they want to work also with precise fertilisation. The entire cost for the system is 450€ per sensor per year. Their transfer-technology model focus in the researching, with the help of the Migav research institute, of interested farmers where to try out their system.

Our visit at Saturas has been useful for Transfarm 4.0 because we have been able to exchange our contact and set-up a possible tests of their system in the pilot actions of the project.



Tevatronic

Date: 20.01.2020

Time: 14:30-16:00

People met: Ilan Komarovsky - CMO (Marketing & Sales)

Report of the visit: Tevatronic is a start-up company that has developed a system based on algorithms, tensiometers and irrigation controllers to operate automatic drip irrigation. The company was born from a research project of the Volcani research institute, after 4 years of research in the field before to come out in the market.

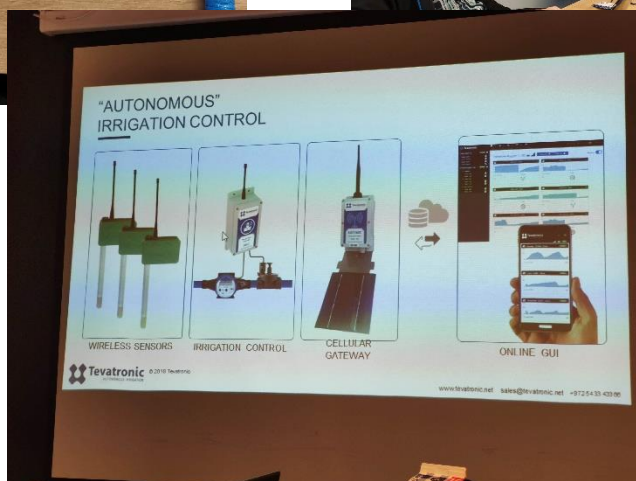
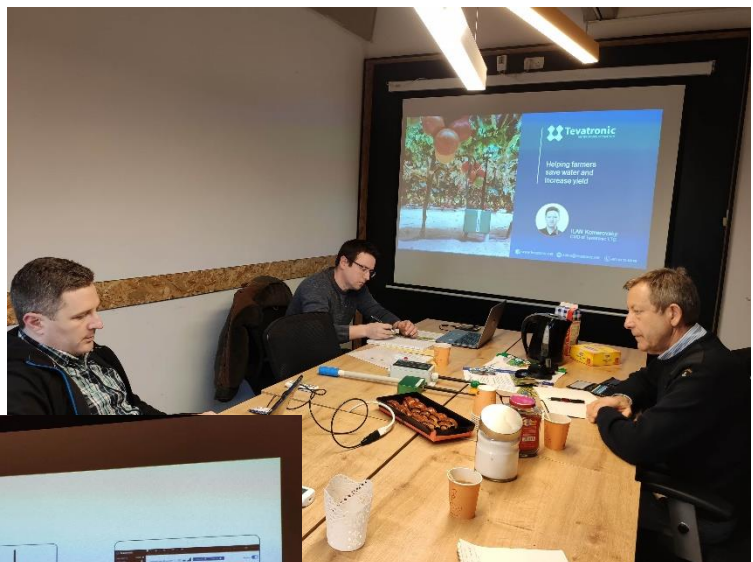
The system is conceived to be cheap for farmers guarantying that the soil tension not overcome a maximum value. This is translated in a constant water supply to the plants with a more accurate irrigation.

The algorithms are developed to measure the water leaching speed in the soil, returning the amount of water necessary for the irrigation turn. The hardware is completely built by Tevatronic without the necessity of wires in the field for the installation.

The cost for the tensiometer is 350USD while for the gateway to control the irrigation controllers is 550USD.

The company would increase their technology-transfer model through pilots projects inside farms to show them the potentiality of their product.

Our visit at Tevatronic has been interesting within Transform 4.0, a possible test of their system in Europe could be set-up in the next months.



Netafim

Date: 20.01.2020

Time: 16:30-18:00

People met: Dekel Segev -Project Manager - Research Department, Itzik Eidelman – Project Manager

Report of the visit: Netafim is a corporate that deals with drip irrigation and precision irrigation systems, mainly in open fields, orchards/vineyards and greenhouses. They are the pioneers of drip irrigation starting their business in 1965.

The company presented us their new solution, NetBeat™, which is a system for automatic irrigation based on data from soil sensors (e.g. tensiometers, delta t probes, etc.), crop models and weather data. The farmers can control NetBeat™ through a computer interface, which resume all the important data related to its the irrigation program and it can provide support up to 7 days before.

The project took 4 years to be ready for the market, and more than 50 people worked on it. According to the company, this system would increase the tech-transfer with the farmers, because farmers can have a direct contact with them.

Secondly, the company presented us a study on VRDI (Variable Rate Drip Irrigation). The study took place in a vineyard in Israel, where a markable in-field variability was present.

The field was divided in 12 homogeneous zones, where a variable rate drip irrigation was applied. Data from satellite was gained in order to determine the NDVI index of the field. From the NDVI values, the Kc (crop coefficient) was determined from reference data in order to estimate the evapotranspiration of the field and determine the variability of the different zones. The irrigation then was submitted depending of the water demand of the crop, increasing the amount in water deficient zones.

The results of the experimentation showed that the variability in terms of yield and grape quality, was decreased in a period of four years. For this reason Netafim is going to propone in 2021 variable drip irrigations among its products. They already have engineered a system that can control different zones in the field.



Cropx

Date: 21.01.2020

Time: 09:00-10:00

People met: Matan Rahav - Director of Business Development

Report of the visit: Cropx is a start-up company that has developed a system integrating above (from satellites) and ground data (through a sensor that measures soil humidity, salinity, soil temperature and atmospheric temperature), in order to make predictions of crops growth and suggestions to the farmer. Predictions are made via an Artificial intelligence software, which is able to predict the water content in the soil.

Four main aspects characterize the system: scalability (easy to install, no calibration needed), connectivity (which is very easy for the farmers), competitive price and accuracy of the measurements, which makes it a good solution for farmers needing.

Our visit at Cropx has been worthwhile for Transform 4.0 project, because we have been able to exchange our contact and set-up a possible test of their system in Europe.



Fieldintech

Date: 21.01.2020

Time: 12:00-13:30

People met: Karni Bachar - Director Of Business Operations, Yakov Armon – IL market manager

Report of the visit: This company has developed a smart farming platform with the aim to optimize agricultural operations. The system is based on sensors that are presented in the machineries, such as tractors, implements, etc.. A software collects data from these sensors, which allow the farmers to control and supervise remotely, every farming operation. As consequence, the farmer has the possibility to improve the performances deciding, for example, the speed of the operations or other parameters.

The company was born from the necessity of the farmers to know more about their operations in the field and currently it employs about 80 people. The main are of work are the North America and Oceania.



Manna Irrigation

Date: 21.01.2020

Time: 15:00-16:30

People met: Shay Mey-tal - Chief Agronomist, Hovav Lapidot – Director, marketing and sales

Report of the visit: Manna irrigation is a subsidiary start-up of Rivulis, a corporate that deals with drip irrigation.

The main mission of Manna is to develop precision irrigation solutions to apply in the Rivulis systems.

During our meeting, they introduced us their new system, the Manna Intelligence, which is a sensor-free digital platform that support precision irrigation for growers.

The platform works with three different data inputs:

- crop conditions based on multispectral images taken from satellites;
- weather forecasts, which are provided by an external service called Foreca;
- crop models that calculates the evapotranspiration thanks to coefficients derived from the elaboration of satellite data

During our meeting, they also illustrated us a study about the utilisation of their system in several crops, such as corn, soybean and alfalfa. The results showed an increase in the efficiency of the irrigation, thanks to the application of water with more accuracy.

According to them, to gain the gap for the technology-transfer with the farmers it is important to create networks to allow them the test of their products and spread the word about the advantages of the precision irrigation systems.



Farmentor

Date: 22.01.2020

Time: 09:15-10:10

People met: Nina Lehmann - CEO

Report of the visit: We met the CEO of Farmentor, an online hub for top-notch agricultural consultants, with expertise on a wide range of agricultural and environmental issues. They provide turnkey consultancy solutions in 17 different fields of expertise, worldwide.

The meeting was useful to understand better how the tech transfer from the research field to the farmer work in Israel. In particular, in Israel exists R&D stations that belongs to the farmers and cooperate with them to the tech-transfer with research centres.

Israel Export Institute

Date: 22.01.2020

Time: 10:30-11:30

People met: Moti Patriano – Manager, Agro-technology sector

Report of the visit: We met the manager of Agro-Technology sector of the Israel Export and International Cooperation Institute. It is a gateway for doing business with Israeli companies. Established and funded by the government and the private sector, IEICI's expertise in technology and product scouting, joint ventures and strategic alliances with Israeli companies spans more than half a century. They offer access to relevant businesses and government resources.

Metabolic Insights

Date: 22.01.2020

Time: 15:00-16:30

People met: David Panik - Chief Science Officer, Ido Koman – CTO

Report of the visit: Metabolic insights is a start-up company that is trying to produce biological pesticides derived from secondary metabolites of the plants. Their work is mainly focus to understand how plants produce these molecules and try to extract them in order to increase the self-immunity of plants.

The meeting was interesting for our work because they have also explained us several biological solutions for the control of the major plant diseases. In particular, promising compounds seems deriving from plant exudates.



Viridix

Date: 23.01.2020

Time: 15:00-16:30

People met: Tal Maor – CEO & founder, Mor Yegerman – COO & founder

Report of the visit: Viridix is a start-up company, which has developed a sense system for the soil water potential. The system is based on two sensors made in ceramic material, and a gateway solar-powered which communicate data derived from the sensors to the cloud system.

This system allows the farmers to monitor the irrigation status of the crop and decide which is the maximum amount of water soil potential before to irrigate.

The costs for the entire system are 500USD with the subscription to the cloud platform, which allow the farmer to have access to the data.

During the visit we had the opportunity to exchange our contacts and brainstorming about possible experimentations of their system in the pilot actions of the Transform 4.0 project.



FruitSpec

Date: 23.01.2020

Time: 15:00-16:30

People met: Shahar Nitsan - COO

Report of the visit: Fruit Spec is a start-up company, which has developed a system for the early prediction of crop yields. Their system is based on the image-analysis of hyperspectral images, with computer vision techniques and algorithms. With this system, they are able to count the number of, for e.g., fruits, bunches, etc. in plants and then calculate the estimated yield.

After that, farmers can take decisions about the management of the yield, which could be, for example, reduced in order to improve quality.

The meeting was useful to continue our collaboration, already started in 2019 and set up possible tests with their system in the Transform 4.0 scope.

EXPECTED EFFECTS AND FOLLOW UP

The visit in Israel has been very useful for the Transform 4.0 project because we had the opportunity to understand how this country is working in the precision farming field. Several companies have been visited gaining an important know-how of technologies that are presented in non-EU countries.

After the visit we expect a positive impact in the project, because we will be able to transfer their know-how in the field among European growers. Again, pilot actions could benefit from the visit thanks to the possibility to test their systems, which deal with REMOTE and PROXIMAL SENSING and BIG DATA management.

Nevertheless, a further meeting with some of the companies visited will be held in Italy the next 12th February, with the aim to give visibility to these companies between the farmers and set-up possible collaborations with them.