LOTUS

LOW-COST INNOVATIVE TECHNOLOGY FOR WATER QUALITY MONITORING AND WATER RESOURCES MANAGEMENT FOR URBAN AND RURAL WATER SYSTEMS IN INDIA

LOTUS COMMUNICATION N°7 | PUBLICATION: MAY 2020

Jalgaon Irrigation System Management Co-Creation Workshop

With participation of team members from Jain Irrigation Systems, inno TSD and TU Dortmund

One goal of the LOTUS project is that LOTUS sensors will be used by Jain Irrigation Systems Ltd. to improve the reliability and operation of irrigation and fertilisation systems. The farmers who were present at the workshop are medium to large successful farmers that specialise on certain crops: Banana, cotton, sugarcane, turmeric, grapes, and onions. Their plots of land are between 15-100 acres each.

Figure 1: Participants at the co-creation workshop

The crops that are cultivated by the workshop participants require continuous irrigation outside the rainy season. Irrigation is combined with fertilisation. All farmers use drip irrigation systems which are fostered by Jain Irrigation. The needs for fertilisers vary much between the plants and their stage of growth. The farmers follow guidelines provided by Jain Irrigation to adjust the amount of water and fertiliser depending on the crop age and season. Fertiliser is added in liquid form to the irrigation water by pumps or suction. Most farmers use simple irrigation machines were all the settings are made manually. LOTUS sensors are planned to be integrated into the irrigation systems to monitor the quality of the water, to inject the optimum amount of fertilisers, and to reduce the risk of clogging.

Figure 2: Working groups at the co-creation workshop

The farmers expressed a strong wish to have an advisory system for fertigation that takes into account weather data, crop, and soil properties. It could lead, according to them, to significant cost savings. On the long term, the sensor data could be integrated with data from other sensors, e.g. measurements of the soil moisture and be correlated with advanced precision farming system such as satellite data analysis.

Figure 3: Co-creation workshop moderated by Prof S. Engell (TUDO)

LOTUS is co-funded by the European Commission under the Horizon 2020 research and innovation programme under Grant Agreement N° 820881 and by the Indian Government, Ministry of Science and Technology.

In parallel, Jain Irrigation would like to provide the data via mobile phones. For example, if there were problems with the system or with the water intake, alerts would be sent by SMS.

During the workshop, also the acceptable cost of the sensor was discussed. Estimates ranged from a one-time investment of up to 600 Euros (if many parameters are measured) down to 90 Euros, with possible options for extensions and maintenance services. Savings on fertilisers are expected to pay for the investment.

Figure 4: LOTUS representatives at the co-creation workshop

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