

## Artificial Intelligence in Farming

(A Success Story of Fasal software: Cultivating Farms with Software)

**Roopa K. Muttappanavar<sup>1</sup>, Arakanti Chaitanya<sup>1</sup> and Pavitra Balundagi<sup>2</sup>**

<sup>1</sup>Ph.D. Research Scholars, Department of Agronomy, UAS, GKVK, Bangalore, Karnataka

<sup>2</sup>Assistance Professor, Department of Economics, College of Agriculture, Baramati, Pune

**ARTICLE ID: 111**

### Introduction

Fasal software is an AI (Artificial Intelligence) powered IoT (Internet of Things) platform developed by a group of workers from Wolkus technology for climate smart data driven precision agriculture. Fasal, is an agriculture technology startup, founded in 2017 by two software engineers from farmer families (Fasal co-founders Shailendra Tiwari and Ananda Verma were working at a Bengaluru company) makes software that tell wine grape growers when and how much to water their vineyards. Fasal predicts the precise quantity and timing of irrigation and pesticide sprays a farm need. Fasal installs sensors at farms ranging from 4 acres of size to over 1,000 acres. These sensors gather data on macro and micro-climatic factors. This data is then fed into Fasal's software and the farmer is alerted about the crop's needs.

There is a small story behind the development of this Fasal software. That's when Verma's father, a seed grower from Azamgarh in Uttar Pradesh, invited Verma's friend Shailendra Tiwari to see for themselves the travails of farming. The engineers were quick in recognising that irrigation is a major pain point in the fields and it is very hard to figure the exact time and quantity of irrigation a crop demand. They created a capacitor-based sensor to help Verma's father. In a few months, Verma's father turned up asking for more of the instruments. After that the two software engineers (Shailendra Tiwari and Ananda Verma) in collaboration with Wolkus technology developed a Fasal software on continuous effort from 2017 to 2019. According to them horticulture covers 25 per cent of India's farmland but contributes as much as 75 per cent to the total output in terms of tonnage. Everybody knows about irrigation, but nobody digs four feet under every day to judge soil moisture. Further, farmers are always on the lookout for indicators of pest attacks. Since a preventive spray

costs Rs. 400 compared to the Rs. 4,000 price tag of a curative one, they tend to spray very often. Half of the times those decisions are wrong, according to Verma.

This software helps in micro and macroclimate forecast of present day and next 14 days, precision irrigation, pest and disease warning etc., They have reported that there was a 50 per cent of irrigation water saving, up to 60 per cent reduction in pesticide cost and increased yield up to 40 per cent. For analysis of Fasal software impact they have implemented the developed software setup in different farmer's fields in different states who are growing horticultural crops in order to see the performance of the Fasal software. The success stories of different crops (Grape, pomegranate, chilli, tomato and bottle gourd) growing farmers by adapting Fasal software are depicted in the Table 1 along with the pictures of the farmer and/field. The respective farmers have shared their own experience in their fields and given the data related to return on investment (ROI). All the farmers have achieved higher ROI by adopting Fasal software. This is mainly because a timely monitoring of pests and the alerts given by the software system helps in preventive pest and disease management which involved very less quantity of chemical inputs as compared to curative measures. Apart from this a real time weather forecasting and water management based on crop need helped in saving irrigation water almost by 50 per cent.

**Table 1: Success stories of different crops growing farmers by adapting Fasal software**

1. Grape		
Sl. No.	Farmer name and place	ROI (Return on investment)
1.	Kiran Patil, Sangli (MH)	<ul style="list-style-type: none"> <li>• Direct monetary benefits of ₹ 78,000</li> <li>• Higher yield of half a metric tonne (₹ 20,000)</li> <li>• Reduction in 14 sprays (₹ 54,600)</li> <li>• 30 per cent decrease in irrigation frequency</li> <li>• 8.5 lakh litres of water saved in one season</li> <li>• Saved 10 per cent in fertigation cost</li> </ul>
2.	Mr. Amol Rakibe Nashik (MH)	<ul style="list-style-type: none"> <li>• 50 per cent reduction in disease and pest management cost</li> <li>• Reduction in chemical residue of fruit and increased the</li> </ul>

		export value to Europe
--	--	------------------------



## 2. Pomegranate

1.	Shree Hemant Wavhal Pune (MH)	<ul style="list-style-type: none"> <li>• Saved ₹ 35,000 in production cost (50 %)</li> <li>• 41 per cent decrease in irrigation hours</li> <li>• Received accurate rainfall forecast</li> <li>• Received precautionary information about the pest outbreak</li> </ul>
----	----------------------------------	---



## 3. Chilli

1.	Shri Hariom Mukati Nagalwadi (MP)	<ul style="list-style-type: none"> <li>• 40 per cent decrease in disease &amp; pest management cost</li> <li>• 50 per cent saving of water, and now less root borne diseases, no colour rot disease and wilt. Significant control of soil borne fungal diseases</li> <li>• <b>Better yield:</b> Local vendors have categorized his produce as the top quality in the market. Getting ₹ 35-40/kg even in COVID market</li> </ul>
----	--	---

2.	Shri Prashant Maru, Rajnandgaon, Chhattisgarh	<ul style="list-style-type: none"> <li>• Direct monetary benefit of ₹ 1,71,250 per hectare</li> <li>• Direct saving of ₹ 11,250 by reduction of 4 sprays per hectare</li> <li>• About 4,00,000 litres of water is saved in this season from irrigation</li> <li>• Increase in yield of about 11.25 metric ton per hectare, converting into higher revenue realization of ₹ 1,60,000</li> </ul>
----	---	--



**4. Tomato**

1.	Sangamesh Talikoti Bagalkot, Karnataka	<ul style="list-style-type: none"> <li>• Remote management of farm during Covid-19 lockdown</li> <li>• Saved ₹ 90,000 approximately in disease management</li> <li>• 25 tonnes more yield as compared to previous season</li> <li>• 60 per cent less irrigation as compared to previous seasons</li> </ul>
----	--	--



**5. Bottle gourd**

1.	Mr. Bhupendra Parmar Chhattisgarh	<ul style="list-style-type: none"> <li>• He is now saving 50 per cent on irrigation water almost by 50 per cent.</li> </ul>
----	-----------------------------------	---

