

Success Story

ANNA SAHEB AND CHANDRAPRABHU RAINGUN: A STORY OF SUCCESS

MEET ANNA SAHEB – THE INNOVATOR



Anna Saheb, on the extreme left, is seen with his family

The Chandraprabhu Raingun is an innovation of Shri Anna Saheb Udgate, a 70-year old sugarcane farmer, of Sadalga panchayat, Chikodi taluk, Belgaum district, Karnataka state. Anna Saheb heads a joint family with his two sons and their families.

Anna Saheb was a betel vine farmer for a long time before he faced a severe water problem to which he responded in typically innovative fashion by successfully developing his own drip irrigation system.

Poor prices for betel leaf forced him to switch over to tobacco, which he cultivated for a few years. During this period, he started thinking about the sprinkler irrigation system. His ideas about using a sprinkler irrigation system were reinforced when he switched to sugarcane for better returns. By studying commonly available sprinkler systems, he developed his own design to suit the requirements of the sugarcane crop. Upon successfully testing the raingun, he started refining it by adding nozzles of various sizes for discharging water, and introducing a locking system for performing part circle irrigation operation also. The raingun was named Chandraprabhu, after a Jain Tirthankar.

While it has been developed with sugarcane in mind, it can also be applied with excellent results to a number of other crops such as groundnut, tapioca, onion, potato etc.

CHNADRAPRABHU RAINGUN – ITS PLACE IN IRRIGATION



Chandraprabhu Raingun innovated by Anna Saheb

The raingun irrigation system has to be appreciated in light of the current irrigation practices. An overwhelming majority of farmers still continue to practise unplanned irrigation (i.e., flood irrigation). The efficiency of such methods is very low and is estimated at 40 per cent by one national study (the remainder is losses owing to seepage and evaporation). What is more, as a result of subsidized power supply to farmers, the common practice is to keep the pumpsets running for hours on end. This leads to

even greater waste of precious water resources. This precipitates the national water crisis, which is so acute that the very sustainability of agriculture is being threatened. Further, demand for water in the industrial and domestic sectors is also growing at a very rapid pace.,

influencing the amount of water that can be supplied for agriculture. As a result, amending irrigation practices is the only way out if agriculture is to be sustained profitably.

The solution is clear and stares one in the face – to go in for planned micro irrigation systems, of which there are various types. Depending on the crop, there is drip irrigation, sprinkler irrigation and raingun irrigation (a subset of sprinkler irrigation). All of these offer high water savings (to the tune of 50 per cent) and additional benefits.

Therefore, India has much to gain from promoting micro irrigation systems. It is in this context that we see the Chandraprabhu raingun as a path breaking farmer friendly technology.

CHANDRAPRABHU RAINGUN – ITS FEATURES

The Chandraprabhu raingun is a powerful mega sprinkler that throws a large amount of water (up to 500 litres per minute) to a good distance (radius of 90 feet and even more) as artificial rain.



Chandraprabhu Raingun at work

It offers a number of benefits to the farmer:

Reduces water consumption by 50 per cent as compared to flood irrigation in achieving the same yield.

As a result of the reduced water consumption with the raingun irrigation system, a number of savings accrue:

irrigation time comes down (50 per cent time is saved), power consumption comes down, and labour requirements come down (as raingun irrigation is less labour

intensive than flood irrigation).

Further, it is a superior form of irrigation and increases crop yield by 10 per cent, as sugarcane farmers have experienced.

Fertilisers can also be applied with the raingun irrigation system, reducing consumption of fertilizers.

Irrigation with the raingun washes away pests like aphids, white flies etc.

The raingun irrigation system supports the highly recommended practice of trash mulching in sugarcane, which is a process of converting trash into nutrients for the crop. As the cane grows, the trash is stripped from the cane so that the cane is protected from pests and diseases. At the same time, the trash is valuable as it has a lot of nutrients. However, farmers do not make ready use of this available nutrient and resort to clearing it or setting it on fire to manage the huge quantity of trash. Mulching is a practice whereby the trash is used as a soil cover to aid moisture retention, prevent proliferation of weeds and the trash itself is eventually converted into nutrients. The raingun irrigation system gives farmers the ability to practice trash mulching successfully.

Clearly, the raingun is a very valuable technology, as it can play an important role in conservation of water in irrigation, a priority at farm-level as well as the national level. Its other benefits make it an even more attractive proposition to farmers.

Anna Saheb: Winner of National Awards

Not surprisingly, since development, the Chandraprabhu raingun has received a lot of recognition. In 2002, the Chandraprabhu raingun was selected for the 3rd prize by the National Innovation Foundation, a body constituted by the Department of Science and Technology, Government of India to recognize, respect and reward grassroots technological innovations and outstanding traditional knowledge experts.

The raingun has also made an impact in the marketplace, with a total of 700 rainguns sold over the last five to six years. The growing numbers are a testimony to the Chandraprabhu raingun's potential. The Chandraprabhu raingun occupies a strong position in the raingun market as the nearest competitor costs the farmer Rs. 13,500/-, double that of the Chandraprabhu raingun.

HOW DOES A FARMER BENEFIT?

The following experiences shared by two users are highly educative in helping us get a better idea of the impact the Chandraprabhu raingun can have on the farmer economy. These farmers were interviewed as part of a wider study conducted in June 2002 by RIN

Mr. Vardhaman, Cane Farmer, Bellad Baigewadi, Chikodi, Belgaum:

He read about the raingun technology in the new products section of a magazine. However, he found the cost of the raingun system featured in the magazine too high and kept searching for other rainguns. It was then that he got to know of the Chandraprabhu raingun. He visited Anna Saheb's farm and saw for himself the system design and performance. He then installed the system with Anna Saheb's assistance.

Initially, he used the Chandraprabhu raingun only for its water saving benefits and got back 80 per cent of the investment in one year. It was only with time that he realised its other benefits. Now, he feels the rainguns have a lot of benefits to offer – he says even people with lots of water are now considering use of the Chandraprabhu raingun, because it helps apply the required amount of water and thus prevents damage to soil resulting from application of excessive water.

Ajit Khemlapure, Cane Farmer, Bellad Baigewadi, Chikodi, Belgaum:

Mr. Khemlapure has 18 acres of land. With flood irrigation, only fourteen acres could be cultivated. If they cultivated all 18 acres with the available water, they found that the entire crop suffered due to a shortfall in irrigation. They were looking for technologies, which would help them overcome this issue, when they came across the Chandraprabhu raingun. After studying the system, they decided to implement the raingun irrigation system in their fields.

With the raingun system, they found that they could irrigate all 18 acres. Further, for this acreage of cultivation, they now need only one labourer whereas earlier they would have needed two labourers. What is more, after 3 years of use, they feel that the raingun keeps the soil good. The yield has also gone up from 40 tonnes per acre to 50 tonnes per acre. With a well-designed system, the Chandraprabhu raingun sprayed water to a radius of 100 feet. The one problem they experience is that the spraying gets affected when the wind is strong. It is interesting to note that a different raingun they have installed in the same field has proved unsuitable for irrigation

With the raingun, they find another benefit. They can cultivate the 4th ratoon also whereas with flood irrigation they could cultivate only 3 ratoons with acceptable yields. This also represents attractive savings.

ESTABLISHING A RAINGUN MICRO-ENTERPRISE: HANDHOLDING ANNA SAHEB

RIN saw in the Chandraprabhu raingun a lot of potential, as it could not only play a key role in the irrigation sector with the water savings it offered but also make a crucial difference to the cane economy. We received first hand confirmation of the potential when we exhibited the raingun at leading exhibitions such as KISAN 2001, Agri Intex 2001, Krishi India 2002, Agri Fair 2002 in Bangalore, Coimbatore, Trichy and Erode respectively

To support commercialization of the raingun, Rural Innovations Network tried various routes. The first attempt was to present the raingun to EPC Industrie Limited, a national irrigation company. They were extremely satisfied with the performance of the raingun. In subsequent discussions, we were keen on a technology transfer while they were keen on a marketing arrangement. As a result, the discussions did not meet with success. Later, a marketing tie-up was facilitated between Anna Saheb and International Development Enterprises (IDE), a not for profit micro irrigation company (regional team at Bangalore) Anna Saheb supplied twenty-two rainguns to the company. However, problems with respect to product quality cropped up in the exchange and the tie-up reached a stalemate.

RIN, based on these experiences, came to the conclusion that it was better to strategise a different arrangement to realize the potential of the innovation and reward the innovator. More clearly, the idea was to find an entrepreneur to manufacture and market the raingun with a licence from Anna Saheb

THE BUSINESS MODEL

RIN enabled the search for potential entrepreneurs based on the opportunities it offered. A business plan was developed to pitch the product to various entrepreneurs. With time, we attracted Servals Automation Ltd, a private company in Chennai. An agreement was then facilitated between Anna Saheb and Servals Automation in April 2002, whereby Anna Saheb would license the technology and Servals would manufacture and market



As the raingun needed fresh investment, discussions with Aavishkaar India Micro Venture Capital Fund (AIMVCF) were

initiated. A draft business plan for three years was presented to AIMVCF. Detailed discussions saw the business plan being developed for a five-year period, during which time, it is proposed to sell 3500 rainguns, starting year 2003. After intense examination which looked at the entrepreneur's track record, the technology and its promise, the market scenario, and the human resources to be put on the raingun enterprise, AIMVCF has invested in the raingun enterprise

As the venture negotiations were underway, RIN test marketed the raingun in Tamilnadu and have received encouraging signals from the market about its potential. A statewide launch is planned for January 2003.

This business model, the first of its kind in the country will create a surge in rural based micro-enterprise venture investments