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Revolutionising irrigation

Micro irrigation systems introduced by the Jain family of Jalgaon have pioneered a new concept in Indian irrigation, particularly for farmers in arid and semi-arid areas, observes V J Pethe

THE farmer in the arid and uneven terrain of central Maharashtra, especially what was known as Khandesh, no longer depends on agriculture as only a seasonal occupation depending on the monsoons. He is now keeping himself and his family members busy, round the year, growing a variety of crops one after another or even side by side in the same plot of land.

For this, he owes his gratitude to 'Bhau' (brother) or Mr Bhavarlal Hiralal Jain as the latter is known to the world outside Jalgaon, the headquarters of the Jain group of industries.

Thanks to the enterprise and ingenuity of Mr Bhavarlal, farmers in the area have now at their disposal micro irrigation systems which help them not only plan their crop pattern but also diversify with ease. In fact, Mr Bhavarlal has redefined the concept of irrigation in this part of the country and in process set even agricultural experts in the developed countries thinking.

What made Mr Bhavarlal so agro-conscious?. Coming from a family of agriculturists, he had the first hand experience of the pitfalls farmers face in times of inadequate rains or uncertain availability of water from dams and other sources. But what dismayed him was that vast amount of water, when available, was being wasted on the crops, especially on orchard, horticulture and row varieties. His experience proved that such crops did not need water for all the twenty-four hours, but only for a couple of hours every day. Was there a way out?

In course of his visits abroad, Mr Bhavarlal came across an Italian company, James Hardie (Italy) SRL, the acknowledged leaders in micro irrigation systems (MIS). Impressed by what he saw and quick to realize the enormous potential of the system in a predominantly agricultural country like India, he decided to bring the system to India. Mr Bhavarlal established Jain Irrigation Systems Limited (JISL) in 1987 with a capital outlay of Rs 7.80 crore and enlisted the collaboration of the Italian company. The system was introduced to the agricultural market the same year. Right from inception, the growth of MIS or drip irrigation system, as it is known here, has been remarkable, i.e, from a meagre 1,500 acres to over 46,000 acres, last year, encompassing 32 different crops.

What is drip irrigation? It is possibly the most efficient irrigation technique wherein water is applied at a low flow rate over a long period of time at frequent intervals directly into the plant's root zone via a low pressure delivery system.

But a typical Jain irrigation system is headed by a filter unit followed by control valves. Water is passed through a network of PVC pipes buried under or laid over the ground, as per the requirement, and delivered to the plant through polythelene lateral lines with drippers or emission points spaced along their lengths.

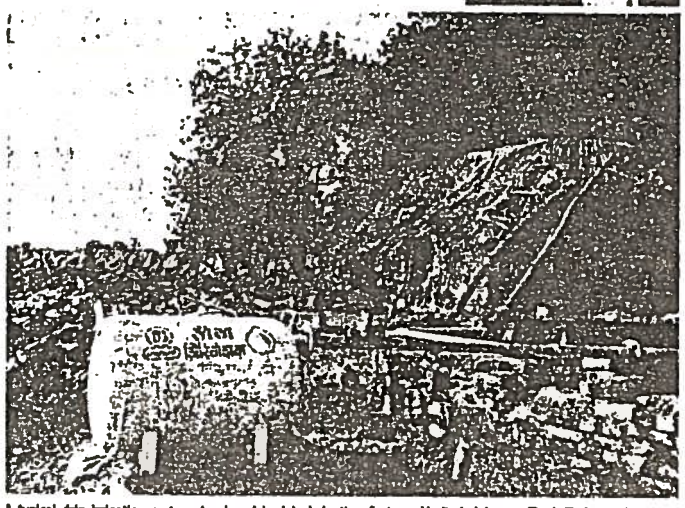
Each dripper or emission point delivers a small, precise, controlled and uniform quantity of water near the root zone of the plant. Water enters the soil from the emitters, moving into the root zone of the plant through combined forces of gravity and soil attraction.

The advantages of this system are that the plant's withdrawals of moisture and nutrients are replenished almost immediately ensuring that the plant never experiences water stress, thus maximising its ability to achieve optimum growth and yield. Besides, a venturi assembly is provided for application of fertilisers and chemicals through the system prior to the filter unit.

P D Patil, an agronomist and in-charge of the JISL's vast research and development farm spread over 120 acres ten km away from the factory premises, explains that each system is designed to take into account the specific water requirements of different crops in different soil types, in varying conditions of temperature, humidity and water quality. All these factors are weighed against available resources and the result is a completely customised system that is engineered for reliable operation and installed to the precise specification and needs of each field, crop and farmer.

This is one reason why the system cannot be sold on a predetermined price. "The price depends on individual requirements of farmers", says Anil Jain, a director of the company. He adds. The present R&D effort is just to examine how much more yield can be available from a farm and how much of the costs can be saved.

The R&D farm itself is a massive complex using drip irrigation and sprinkler irrigation methods. Says Patil: We have been experimenting with the system on 25 crops and succeeded to a remarkable extent. Can you imagine the types of crops we have been able to grow here? Have you ever heard of coconuts, arecanuts, mangoes, custard apple, guava, cloves, black pepper, nutmeg, cinnamon, coffee being grown in an arid area like Khandesh. For the first time in Jalgaon, grapes have been successfully grown at our farm and our experiment with cotton and groundnuts are showing promising results. "We have shown the way and as farmers take initiative in taking to these crops, very soon the face of the countryside will change totally", he added.



A typical drip irrigation system developed by Jain Irrigation Systems Limited, Jalgaon. (Top) Chairman Bhavarlal Jain ■ OPS

Patil further explained that "Our experiments with bananas have shown a yield of 28 kg per tree against the national average of 22 kg. Moreover, the pattern of pit plantation introduced by us helps cut operational costs by Rs 13,000 to 14,000 per acre."

Alongside the R&D activity, environment consciousness is equally uppermost in the minds of the enterprising Jains. J K Gohil, in-charge of the administration, points towards a hill saying "a few years ago this hill was barren and totally devoid of any vegetation. Now it has a thick green cover of some 50,000 eucalyptus trees. 'Bhau' is now persuading the state government to give to the company all the hills around so that teakwood and eucalyptus can be planted there."

Patil elaborates: "Our teakwood nursery is at an advanced stage. Stumps will be available from next year onwards. Once these are planted on the hills, in 20 years time they should be ready for harvesting."

Right from the time JISL introduced the systems in 1987, it has not looked back. In 1987-88, sales tugnover amounted to Rs 8.28 crore while net profit stood at Rs 7.8 lakhs. By 1990-91, the figures shot up to Rs 16.08 crore and Rs 3.08 crore respectively. For 1991-92 and 1992-93, sales have been projected still higher at Rs 35 crore and 85 crore respectively.

But what is interesting is that in the last couple of years, JISL has made a thrust in exports of the systems and allied products to the Middle East, South East Asia, North America, etc. Even its technical collaborators have begun to import PVC products from the company for their systems. Thus, from a meagre Rs 81 lakhs in 1990-91, exports have reached a phenomenal Rs 10 crore in 1991-92 and is projected to rise further to Rs 35 crore 1992-93. That means an export growth rate of 1,134 per cent in 1991-92 and 250 per cent in 1992-93.

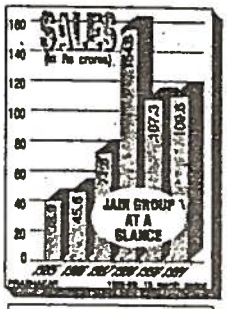
Very few corporate houses can stake claim to a performance of that sort. No wonder, JISL has earned the status of a blue chip company on the stock market where the Rs 10 paid up share is now quoted at around Rs 220.

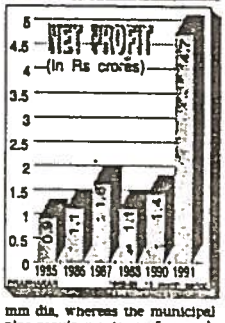
True, JISL is not the only company operating in the drip irrigation business. But what sets it apart from 70 others in the line, points out Anil Jain, is an integrated approach towards identifying the individual needs of the farmer and designing an ideal system. "We are not selling a product but supplying a system and helping in water conservation. This approach has helped us to garner around 70 per cent of market share in micro irrigation business", he remarks confidentially.

As far as the future outlook is concerned the potential is enormous. The Union Government planned to bring one lakh hectares under the micro irrigation systems by 1991-92 and five lakh hectares by the end of the Eighth Plan. "But all the suppliers of micro irrigation systems taken together have been able to bring barely 1,25,000 acres under the system. We have only scratched the surface", says Anil.

About new outlets for pipeline business, which remains the core activity for the Jain group, Anil says that the group has completed supply of 150 km of PVC pipeline for a project at Aurangabad district of Maharashtra. Besides, Sardar Sarovar authorities have shown interest in buying about 1,000 km length of PVC pipes.

On being asked whether the Bombay Municipal Corporation has approached the group for supply of pipes for their vast cement concrete pipe replacement programme, for drainage and water carrying purposes, Anil clarifies that "PVC pipes are ideal for low pressure water flow in open spaces. Moreover, it has not been possible so far to extrude pipes beyond 500 mm dia, whereas the municipal pipe requirements are for much more larger size pipes.





However, an exciting new project ready to take off in a few months will be the manufacture of Rib Lock pipes which will be 50 per cent chesper and capable of withstanding much more pressure of water flow. The novelty about this will be that pipes will be manufactured on site by a mobile plant. This apart, some other schemes being actively pursued are the manufacture of far superior drip irrigation systems and components; Timbron, a superior substitute for wood; and solar water heating systems. All these, when operational, should help the group turnover to rise to Rs 275-300 crore, of which Rs 85 crore will be from exports.

The future appears to hold only bright prospects for JISL and other players in the scene. The Government of Maharashtra is providing hundred percent subsidy for adoption of MIS by farmers. Even the Union Government has agreed to provide a sum of Rs 150 crore for promotion of MIS.

Meanwhile, Jains are aiming to put Jalgaon on industrial map of the world. There are plans to start a residential management institute which, in addition to providing MBA courses, will also provide courses for managing agro-based industries, cooperatives, etc. But for all practical purposes, the conservation of resources, whether natural or human, is going to remain the keyword for the Jains.

Diversification-the key word

THE Jain Group of Jalgaon is a conglomerate of ten manufacturing plants/divisions. The product lines boast of such items as refined papain, food products and chemicals, PVC pipes/fittings, speciality pipes, spirally-wounded pipes, PVC foot valves and ball valves, rigid and foam PVC sheets, micro irrigation systems, custom moulded products, and power transformers.

While the sales turnover of the group has jumped from Rs 1.1 crore in 1978 to Rs 109.6 crore in 1990-91, net profit has increased from Rs one lakh to Rs 4.7 crore. Reserves and surplus have gone up to Rs 11.7 crore and net worth to Rs 19.6 crore. The group's net current assets are valued at Rs 21.9 crore.

Bhavarlal Jain, the architect of the group, was born 54 years ago in a family of farmers at Vakod. After graduating in commerce along with a bachelor's degree in law, he entered the civil service, but soon left it to try his luck in business. Beginning with kerosene dealership, he shortly diversified into dealing in automobile products, farm implements, seeds, fertilisers, PVC pipes, electric motors, etc.

The entry into the manufacturing sector came in 1978 with the acquisition of a sick industrial unit designed to produce banana powder. He redesigned the plant to make papain, an enzyme from papaya, and soon made it a 100 per cent export-oriented unit. Bhavarlal was prompted into the manufacture of PVC pipes in 1980 when his suppliers could not meet his growing requirements of pipes. Since then, diversification of product lines and a near obsession with quality have become keywords for Jains. No wonder, the group has been winning awards for outstanding achievements from the state and Central governments and numerous other industry and trade organisations.

Conservation is one word very dear to Bhavarlal. When he pioneered the micro irrigation technique, it was to save water. Bhavarlal is now engaged in developing an altogether new wood substitute plastic sheet with a view to saving forest wealth. He is also striving for harnessing solar energy to conserve scarce electricity. In fact, conservation and exports are national priorities in the scheme of things envisages by Bhavarlal. But he has confined his activities to Jalgaon. With Jains influencing the many activities in the city, Jalgaon is also fondly called Jaingaon.