The great aim of education is not knowledge, but action ~ *Herbert Spencer*

Every drop counts

PETER FRYKMAN, A STUDENT OF STANFORD UNIVERSITY, HAS INVENTED A MANUFACTURING TECHNOLOGY TO HELP MAKE AFFORDABLE DRIP IRRIGATION FOR SMALL-PLOT FARMERS IN DEVELOPING COUNTRIES. MALINI SEN REPORTS

A third of the world's population suffers from water scarcity. Without access to affordable water efficient irrigation, small-plot farmers are unable to grow crops during much of the year.

As part of a Stanford University course in Entrepreneurial Design for Extreme Affordability, Peter Frykman travelled to Ethiopia, where he witnessed first-hand the hardships caused by the worst drought Ethiopia had experienced in 20 years. The farmers he met had no means to grow crops with their scarce water resources. Locally available drip irrigation products were too expensive and seldom worked properly.

Recognising the need for less costly and more effective ways for small-plot farmers to use their meagre water supplies efficiently, Frykman returned to Stanford and invented a manufacturing technology, and launched his company, Driptech, which makes affordable drip irrigation for small-plot farmers in developing countries.

Describing the technology behind Driptech, Frykman says there are two important parts to the technology. "The first part is the attention we paid to small-scale farmers and how they work that allowed us to design the system specifically to meet their needs. We learned the importance of making our systems simple in order to reduce installation and maintenance costs. We learned that highly uniform water application is essential, even with low pressure, so we designed Driptech tubing with the very precise, clean, consistent holes that make this possible. We learned that small plots come in many configurations, and made our system modular by designing parts that continue to function well even if it scales up or down," he elaborates.

Stanford graduate Peter Frykman explains his invention to farmers in India

CASE STUDY

The second part is that Driptech is able to manufacture this product anywhere in the world using existing plastic bag machinery. "We developed small, inexpensive machines that reliably produce tubing to the high level of quality that we require. This 'distributed manufacturing' model allows us to customise products to meet local needs, minimise transportation costs, and create jobs in nearby communities," adds Frykman.

Compared to flood irrigation, Driptech irrigation increases crop yields by 20% to 90%, improves product quality, saves water by 30% to 70%, and reduces the required labour, energy costs for pumping, and fertiliser. Driptech systems operate on very low water pressures as well.

As a graduate student in mechanical engineering at Stanford, Frykman attended the Summer Institute for Entrepreneurship, and he found the programme "exhilarating" and "highly beneficial."

"I applied for the programme because I needed help developing my underlying passion for entrepreneurship. I relied on lessons that I had learned during the programme to launch my company Driptech. Even without a formal business background I had the confidence to launch my own venture and lead it."

Currently Frykman and his team are working with farmers in Maharashtra and Karnataka and last year, Driptech launched commercially in India by partnering with one of the largest manufacturing and retail conglomerates in the country. Driptech's systems sell directly to farmers through retail and local distribution channels.