

Big Change Comes in Small Kits

Drip irrigation kits are providing women and disadvantaged farmers in Nepal with new livelihood opportunities

By Melissa Howell Alipalo

Consultant Writer (Cooperation Fund for the Water Sector)

RAM BAZAR, KASKI DISTRICT, POKHARA

To reach the poorest and most marginalized groups, seeing is believing. So, to convince women and low-caste farmers in Nepal highlands to invest in low-intensity, high-return drip irrigation kits, workers from an Asian Development Bank (ADB) pilot project took target beneficiaries to meet Sabitri Bhandari.

Ms. Bhandari is a 25-year-old mother of two in Ram Bazar, a farming community at the foot of the Kaski district uplands outside the lakeside town of Pokhara. It is the site of a Pilot and Demonstration Activity (PDA) on drip irrigation for marginalized farming households.

Ms. Bhandari is not your typical drip-irrigation farmer, though. She is literate, a high school graduate, owns a small but prime lowland plot, and is from a higher caste. Those differences, however, did not matter as much as what she had to show—the windfall growing in her backyard since investing in a micro-drip irrigation kit.

In the first 6 months of using the simple drip kit, she earned a year's worth of income. She now grows during the dry season, buys seeds for valuable cash crops, and sends her children to a better school. The garden that once supplied only her kitchen is now a profitable and expanding market enterprise.

"Before, our food was our income," she says. "We couldn't sell what we grew. It was just for personal consumption."

Ms. Bhandari was a beneficiary-participant in a project by the International Development Initiatives (IDE), an international nongovernment organization (NGO) spearheading the development and introduction of micro-drip irrigation technology.

Drip as Pro-Woman, Pro-Rural

In September 2003, ADB initiated the

PDA in two communities in Kaski district. The PDA from the Cooperation Fund for the Water Sector—an ADB program that offers \$50,000 grants for fast-track implementation and testing of innovative ideas for possible scaling up—tested the effectiveness of drip irrigation and its adoption among women and disadvantaged farmers. The pilot and demonstration project was implemented over 7 months.

Drip is especially suitable for women because it capitalizes on the traditional role of women and vegetable gardening. "Rural poverty has a woman's face," says Rajendra Shrestha, the project director and senior agricultural and resource economist.

In Nepal, about 90% of women are engaged in agricultural activities compared with 64% of men. "Women's role in irrigated agriculture will assume more importance as increasing numbers of poor men leave their homes to seek employment elsewhere," Mr. Shrestha says.

Places like Kaski's upland farms are perfect for drip irrigation. These farms do not have access to surface irrigation from streams, and flood irrigation is not suitable for sloped hill terraces. They typically rely on rainwater. Where irrigation is available, farmers mainly use inefficient traditional methods. The rural situation has also become increasingly stressed from an ongoing Maoist insurgency.

"Female-headed households and farm-related work burden has increased dramatically because male members are migrating either to escape the insurgents or to seek employment," Mr. Shrestha says.

Selling Drip

Recruiting ideal participants for the PDA—woman and low caste—became the first challenge for the project team.

"The farmers targeted are very poor and they could not invest in the kit," says Prabha Basnyat Adhikari, a project organizer for the PDA. Unlike IDE projects that require beneficiaries to purchase the drip kit, ADB's pilot project offered a 60% subsidy to disadvantaged farmers. Benefi-



HARD LIFE Rural poverty has a woman's face in Nepal as well as elsewhere

ciaries had to come up with the remaining balance.

Despite the subsidies, lower caste households remained reluctant to try the system. Demonstrations were still not enough to quell their high adversity to risk. The project adjusted and pushed through with participants from a variety of economic statuses, not just the lowest caste members. Women remained a primary participant group, which organized a government-registered group.

IDE's Gambar Singh Thapa has been training Nepal farmers in drip irrigation since 1998 and was initially skeptical of a project that required project beneficiaries to buy in. "Their initiative and excitement, though, was enough to make it happen," he says. Also, "it is an immediate-result program. So when the results start coming, they believe it is the best thing they have seen. It's only a matter of time then before more farmers come forward to adopt the method."

Reaping from Drip

At evaluation time, participants reported a two- to threefold increase in income since installing the drip kit. They were growing more valuable crops than traditional legumes and cereals. They were also saving time and energy, as well as noticing a better quality of soil produced from using the drip kits.

Before the project, only 20% of farmers grew vegetables compared with 100% of project farmers now. A third of these are consumed, and the rest are sold in the market. "Most drip farmers will use their additional income on education for their kids or home improvements—better roofs and floors, cooking utensils," IDE's Mr. Thapa says.

While project beneficiaries reported great savings in time and energy, a field visit to Kaski in May 2005 gave women beneficiaries a chance to talk about the remaining challenges. For one, they were unable to maximize the drip kits because of a separate water issue—water supply.

Distance from a water source is a key

determinant for drip adoption. Most drip users in Kaski live less than a half kilometer away from a water source. However, the most disadvantaged farmers—the *dalits*—generally live twice as far from a water source. Most users must also haul water from tap stands to fill the drip kit's overhead tank. Drinking water then becomes irrigation water. Women estimate that each household would have to spend 4 hours daily hauling water if drip kits were used at full capacity. And the bulk of that hauling would rest on their shoulders.

"In our homes and on our farms, there is a vast imbalance between us women and the men," says Prabha Adhikary, one of the beneficiaries. "Yes, men say 'Sure, you can work and do the project.' But we still have to do all the household chores. That's not practical. And they may say one thing in a meeting but another thing at home."

"It's heavy to carry all that water, but it's women's work," her daughter, Sarnila, 19, says. "If there are no women in the home, the men will do it. Otherwise, they are sit-

ting, eating, and meeting." The women look to larger rainwater harvesting tanks as one solution to their water supply problem.

The Future of Drip

IDE and some Nepal nongovernment organizations are promoting drip irrigation to about 20,000 farmers in seven districts in the country's west and midwest regions. Under this program, 3,400 farmers are from the disadvantaged hill districts. ADB is also currently designing a project to up-scale the pilot and demonstration project.

Drip users themselves represent the future of this technology. Organized into registered users' associations, they introduce the method to new farmers and help erase its perceived risks.

In helping other farmers, the beneficiary women in Kaski district found power in numbers. "[The project] has brought solidarity among ourselves," Ms. Adhikary says. "If we do this individually, there is a burden financially and physically. It is easier if we share it. This is our pride now." ■

Drip Irrigation Makes Its Way to Small-scale Farmers in Nepal

Until the 1990s, drip irrigation was beyond the reach of common farmers in developing countries. It was primarily and widely used in the United States, Australia, Europe, and India to boost production of high-value crops.

In 1994 though, micro-drip irrigation experienced real momentum in Nepal when the Asian Development Bank (ADB) teamed up with the International Development Initiatives (IDE) to develop a simpler, cheaper, micro version of the drip system. IDE soon became the leading developer and promoter of micro-drip systems.

Farmers in Nepal, usually in project areas, can purchase an IDE drip irrigation kit in three sizes, with costs ranging between \$13 and \$32. The kit includes a 50-liter overhead tank and a system of hoses for lining a garden. The crops are watered through pin-sized holes in the hose. The overhead tank that supplies the water may be connected to a water source or filled by hauling water from the nearest tap stand.

IDE and development partners, such as ADB, help farmers install the kit and train them on maintenance and repairs. A kit takes 3–5 days to install, with 1 day of training and demonstration. Most farmers can then help others install their kits.

Five conditions optimize drip irrigation:

- Availability of water sources for supplying the overhead tank
- A minimum of 177 square meters near user's home
- Availability of family labor for intensive vegetable-cultivation activities
- Awareness about the benefits of vegetable farming
- Availability of local markets

In the past 10 years in Nepal, drip irrigation has spread to 32 hill districts (mostly in western and midwestern regions), covering 5,638 farm householders. It is still uncommon in the more impoverished and extremely remote regions of central, eastern, and far-western districts, where terrain can be impassable and dangerous because of a Maoist insurgency there. ■



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