

# Enhancing Water Productivity and Improving Livelihoods Through Drip Irrigation and Better Market Integration in Cambodia



Photo: iDE

Farm Business Advisor, Sok Saren (right), with one of his clients in Svay Rieng Province

## HIGHLIGHTS

- ✓ Average net income increased by 33%
- ✓ Farmers' income from selling vegetables doubled from USD4.44 to USD10 per 100 sq metre area
- ✓ Farmers have a better understanding of the benefits from improved water productivity

## Outcome Stories

In his village in Svay Rieng Province, Cambodia, Sopheap Veasna supervised the harvesting of mustard green, chili, cucumber, and tomato at his farm where he had been using drip irrigation. He enthusiastically encouraged his brother and sons, who were helping him harvest the crops, to work faster. It looked like he was going to have a bumper harvest, and even as early as the previous month, a trader had promised to buy all his produce. He would be able to raise money to send his two sons to school.

### Modest investments

Relatively modest investments in local projects in Cambodia, focusing on achieving adoption of water and food technologies by small farmers, have

yielded a rich harvest of positive outcomes and lessons.

In Cambodia, the CGIAR Challenge Program on Water and Food (CPWF), through its Small Grants Program, supported iDE (an international non-profit development organization), in partnership with the World Vegetable Center (AVRDC), and the International Fertilizer Development Center (IFDC), to design a strategy to enable smallholders to benefit from effective market participation.

The strategy included the training of Farm Business Advisors (FBAs), who encouraged farmers like Sopheap to participate, guided them in their



Puth Saroeun (right), a Farm Business Advisor, records a seed order for high value vegetable varieties

cropping and connected them to suppliers of irrigation drip-kits and fertilizer briquettes.

### Market links

They also assisted farmers in establishing market links for their products. The incomes of target farmers more than doubled as a result. The market for vegetables is sustained by the rapidly increasing demand in urban markets for high value crops, so more producers do not cause a supply surplus, which would result in decreased prices.

The project in Cambodia employed a strategy that enabled Sopheap to become a more effective market participant through an initial investment in high quality fertilizer, and the planting of high value crops identified through market assessments.

Technical training in horticulture techniques was provided by Farm Business Advisors to farmers investing in drip irrigation. Almost 500 farmers

in Sopheap's area now produce five different high value crops for the market. After one year of the project, farmers' income from selling vegetables had more than doubled from USD4.44 to USD10 per 100 m<sup>2</sup>.

### Increased incomes

Before the project, vegetable production made up only 9 percent of family income on average. After one year of project implementation this increased to 19 percent of family income. Sixty-six farmers grew vegetables under drip irrigation and practiced fertilizer deep placement (FDP) that further improved their income by 27 percent, compared to traditional fertilizing practices. Farmers who combined drip irrigation with FDP and high value crops, with technical assistance, further increased their average net income by 33 percent. The Cambodia project brought about an increased understanding of how to achieve the maximum financial benefit from improved water productivity.

Eggplant growing in an FBA demonstration garden. Low-cost drip irrigation helps to improve water use efficiency resulting in water savings, lower labor requirements, and improved yields.

Photo: Nestlé – Sam Faulkner



### Drip irrigation

The original assumption was that poor water management was the major constraint in commercial farming in the project area, and drip irrigation was viewed as a solution. The project showed that the benefits of improved water management could be enhanced by combining it with attention to soil fertility, crop selection, and technical advice to farmers. The Farm Business Advisor (FBA) model was found to be a financially sustainable way to provide these supporting inputs.

Though drip irrigation is indeed water efficient and is a very effective labor saving strategy, under traditional farming practices, it was not cost effective on its own.

When it was used in conjunction with soil fertility improvement, planting of high value crops, and technical advice, Sopheap and his fellow farmers were better able to cover the cost of investment in drip

systems. This was the result of higher overall productivity from a more market-driven approach. Activities were oriented to market needs and assessments of the marketability of crops were performed in conjunction with technologies to optimize crop production.

An improved understanding of water productivity in agriculture, and of what is important to farmers, helped in designing key messages to promote greater uptake of water-productivity technologies.

### Mobile “retailers”

The project recruited respected farmers who were trained as FBAs to serve as mobile “retailers” of horticultural products and services and providers of competent technical advice. It facilitated business relationships among technology users, horticultural input suppliers, marketplace retailers, and the FBAs. It promoted the benefits of technology investments in drip

“A strategy of drip irrigation in conjunction with:

- improved soil fertility,
- high value crops,
- appropriate horticulture training for farmers, and
- better market integration

leads to enhancing water productivity and improving livelihoods.”

irrigation systems and encouraged their adoption. After the project was phased out, the FBAs continued to supply inputs and give technical advice to farmers, even after project stipends had been phased out. The continuing services were funded by the margins that FBAs charged on the products that they sold.

### Most significant innovation

The most significant innovation to emerge from the project was a better understanding of how to make the most of the benefits derived from improved water productivity.

Drip irrigation alone was not cost effective, but when implemented in conjunction with improved soil fertility, high value crops, and horticultural support, farmers were better able to cover the cost of irrigation investment.

### References

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### Project Partners

iDE  
World Vegetable Center  
International Fertilizer  
Development Center

### About CPWF Outcome Stories

The CPWF Outcome Stories document changes in knowledge, attitudes and practices that have emerged through CPWF-funded research. Outcomes occur when research outputs foster engagement processes that result in changes in practice or changes in behavior. These stories capture outcomes at a specific point in time; outcomes may have evolved since the completion of these projects.



Photo: Nestlé – Sam Faulkner

Andes • Ganges • Limpopo • Mekong • Nile • Volta

### About CPWF

The Challenge Program on Water and Food was launched in 2002. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF currently works in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

CPWF is a member of the CGIAR Water, Land and Ecosystems Research Program. The program focuses on the three critical issues of water scarcity, land degradation and ecosystem services, as well as sustainable natural resource management. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by the 15 research centers who are members of the CGIAR Consortium in collaboration with hundreds of partner organizations.

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