Farmers in the Indian state of Andhra Pradesh often experience extreme water scarcity, which puts their food security and incomes at risk. Huge rainfall variability, in both quantity and distribution, during the growing season is a major challenge affecting the agricultural prospects. Constructing low-cost farm ponds is proving to be a suitable water storage solution that can help mitigate drought-related losses.

**Key messages**

- Drought-related losses threaten farmers’ livelihoods
- Farm ponds are a low-cost, highly suitable water storage solution
- Increased access to water for critical irrigation checks yield losses
Droughts leave farmers wanting for water

In the Indian state of Andhra Pradesh farmers rely on rainfall to grow fodder for livestock and food for people and markets. But frequent droughts lead to yield and asset losses, causing food insecurity and persistent poverty, and the long dry spells leave farmers vulnerable to external shocks. Climate change is projected to cause even more such extreme weather, further aggravating water scarcity and increasing the vulnerability of farmers.

Finding ways to increase water availability is key to intensifying agricultural production in the region. Construction of farm ponds, for example, has proved a promising option for rainwater storage that allows for critical and life-saving irrigation of traditional crops as well as other activities, such as planting of fruit trees, that can supplement diets and incomes.

Small investments boost agricultural productivity

In 2014, scientists launched a strategy to promote participatory construction of small-scale farm ponds for rainwater conservation in Andhra Pradesh.

They hypothesized that relatively small investments into farm ponds could significantly increase farmers’ productivity and incomes. First, this boost would allow farmers to prevent crop losses during dry spells. Second, it would also give them enough security to be able to take risks in diversifying activities and experimenting with crop intensification, such as by taking on a second, post-rainy season crop, something that’s key to a sustainable future for dryland farmers.

“Water conservation at the farm-scale, in small, low-cost ponds, can change the face of dryland production systems and smallholder livelihoods,” agree Dr. Y Reddy of AF Ecology Centre (AFEC) and Dr. Padmalatha of Acharya NG Ranga Agricultural University (ANGRAU), who represent local project partners.

Farmers were asked to contribute labor, while a consortium of researchers provided support in the form of machinery as well as help with properly locating, designing and engineering the construction of farm ponds. During 2014 and 2015, 40 smallholders volunteered to construct ponds on their farms.
Water storage prevents drought-related losses

During 2015, rainfall was poor in Andhra Pradesh. This was a misfortune that served to illustrate the important role farm ponds can play in mitigating the consequences of droughts: the constructed ponds allowed farmers to irrigate crops like groundnut, foxtail millet and pigeonpea, checking yield losses up to 20–30 percent and saving the season.

“The construction of a small farm pond – 10 × 10 × 2.5 meters – lined with about one centimeter of concrete costs about US$300, and it is an effective scalable technology for storing water, even in red soil where water storage is otherwise problematic,” says Dr. Girish Chander, senior scientist on natural resource management of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Red soils are very common in Andhra Pradesh, and in the semi-arid tropics in general, and due to their high infiltration rates, it is necessary to line ponds to effectively store water.

Scientists and local partners also supported farmers to take advantage of the pond bank area, encouraging the planting of small vegetable gardens or fodder production areas.

Farm ponds allow farmers to diversify

A total of 40 farmers participated in trialing the farm pond technology during 2014 and 2015. The ponds secured their access to water during time of crises, allowing them to irrigate crops that would have otherwise been lost.

The construction of farm ponds also enhanced farmers’ risk-taking abilities, and a subset of ten farmers established mango plantations and small vegetable gardens on one or two hectares adjoining their ponds. In this way, farmers have been able to diversify their income sources and enhance family nutrition, in turn strengthening their resilience.

The communities in which these pilots took place have been recognized as learning sites for other farmers and for policy makers. The concept of small-scale farm ponds has sensitized and convinced policy makers at the district and state level, who visited the farm pond sites, and a favorable policy for monetary and technical support for scaling out small-scale farm ponds to a large number of farmers in the state has been put in place.
Acknowledgement

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References


Outcome Story Coordinates

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<td>Region:</td>
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<td>Rainfed</td>
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<td>SDG 1: No poverty</td>
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