Drought season irrigation for fruits and vegetables

Background:

Homestead farming is often a female managed farming system, although homestead land may belong to men. Women have relatively more control of homestead farm and it's irrigation effort. Therefore, any kind of technology introduced in homestead farm irrigation must be gender sensitive.

Figure1: Pitcher irrigation in a small brinjal farm of Shatkhira

Women in coastal area usually struggle to bring water from channels and ponds for farming activities and drinking purposes, particularly during dry season. Women farmers in Kaligonj and Shyamnagor (sub-districts) found to have grown brinjal (Figure 1), bottle gourd chili etc. in their homestead farm. Rain water captured during rainy season in the ponds and channels were used for their farm irrigation. And if those sources dried up, women have to collect water from far places. Understanding such context, women farmers in our target coastal communities were trained and supported on pitcher irrigation techniques to irrigate their brinjal, bottle gourd and lemon trees. Pitcher irrigation is a method where crop is irrigated through a small hole made in the bottom of earthen pitcher. Water seeps out of the buried pitcher through wicks onto the plant. Pitcher irrigation, a traditional system of irrigation alternative to drip, is the latest advancement of localized method of irrigation and found suitable where salinity of irrigation water and soil becomes the constraint besides water scarcity.

While consulting with women, this technology appeared to be more suitable for them to reduce hard labor and time in collecting water.

Generally, pitcher irrigation is thought as a drip irrigation system, but farmers must manually supply the water into pitcher. In the current context of pitcher irrigation, a cover with straw or dry leaves was used as a moisture reserve mulch medium for plants. The system is termed as 'Pitcher Irrigation', where earthen pitcher is using with jute rope to supply steady irrigation. In pitcher irrigation system, plants get smooth supply of waters, which fulfill the water requirements of plants in drought areas. The pitcher irrigation technology has a scope to fit into the drought prone areas and saline prone areas where poor people live on faraway water sources.

Purpose:

Main purpose was to keep small farming system low cost and efficient to combat climate

challenges. Support to small farms in marginal areas are important for family nutrition and increasing women's income. This approach of irrigation was labor saving and simple.

The Innovation:

Picher irrigation to address scarcity of irrigation water for vegetables and fruits plants in saline and drought prone areas to increase productivity of land. An earthen pitcher, a jute rope and an earthen lead were used as materials. Women run this practice between November to December 2021. The farmers of Kurigram and Satkhira were happy to see the simple technique which saved water irrigating their crops. They experienced that it saved their time and labor to collect water from far-way places in dry season. This technique could be used for one to two decimal land for better management. Vine type crops (Bottle gourd, pumpkin, cucumber, etc) or fruit saplings (lemon, mango, litchi etc.) which planting distance is more than 5 feet is more suitable for this technique compared to planting distance less than 2 feet (tomato, cabbage, cauliflower, etc.).

The result:

Practical Action Bangladesh worked with 200 participating households in four upazilas of Satkhira (saline prone) and Kurigram (flood prone) district on installing such techniques. The women farmers were trained on pitcher irrigation system installation and planting vegetables. Every household installed a pitcher irrigation system in their homestead for cultivation of vegetables and fruits. The species grown included sweet gourd, bottle gourd, Indian spinach, brinjal, chili, country bean, lemon and wood apple. The input materials were available in the village market. To introduce them with input materials, project supplied inputs to women farmers to establish the system. Besides, registered farmers were received early warning message on flood and cyclone as well as voice messages on agro-advisories on selected agro-enterprises, Krishi Call Center received queries of farmers mostly on pest control, fertilizer applications and source of good varieties.

It was found that the growth of vegetables was satisfactory at the start up. Farmers got some hope in drought prone areas and salinity affected areas in lean season. Major investments on this process were pieces of small earthen pitcher, jute rope, and earthen lead which price was 40 BDT. It was easy to install in any household farm area where women farmers could play a vital role to manage the technique.

Lessons:

During the start up some lesson learnt were -

• The cost seemed to be lower than drip and other irrigation methods perhaps suitable for poor women farmers. Reference from other sources suggests that cost is around 4500 BDT per acre. For a small five decimal homestead farm a women need such type of 60 earthen pitchers costing around BDT 2000,

• This system needs clean fresh water to pass through ropes. Accessing huge fresh water is a big challenge in saline prone areas or when canals, ponds dried out in dry season in drought prone areas.

- Average lifespan of a pitcher would be maximum of 2-3 years. But it is diffcult to refix. Not suitable for all crops and largefarm area
- The technique so far was found simple, cheap and water saving, enabled women farmers to grow various types of crops. *We found women do not need to allocate time every day for homestead irrigation in their plants and use that time for her leisure or engaging with her relatives.*

Figure 2: 1 Pitcher Irrigation installation in ring

Way Forward:

Before going to sophisticated drip irrigation small scale farmers in dry area or in salinity affected area can try with such low cost efficient pitcher irrigation for their food and cash crops. This technique could be a great solution for off-season tree sapling plantations.

Reference:

Altaf AH, Abro ZA & AG Siyal, Use of pitcher irrigation for sustainable crop production in water scarce areas, International Conference on Water & Flood Management, 2007.

Adhikary R, Kumar S, Pal A & M Bera, Pitcher irrigation in salinity management for production of brinjal crop in coastal soil of West Bengal, India, Eco. Env. & Cons. 26 (August Suppl. Issue) : 2020; pp. (S179-S183)