Doubling Farmers Income through Solar Irrigation with Half acre Model

More than 85% of farmers in Koraput District depend on rain fed agriculture or their livelihood. The rainy season starts from June and continues up to October, with dry conditions for the rest of the year. Climate change is affecting rainfall patterns, which in turn is causing increased crop failures and lower yields. Expanding irrigation is a key mitigation strategy for the smallholders. Irrigation can assist in agricultural diversification, enhance food self-sufficiency, increase rural incomes and provide employment opportunities.

Irrigation allows smallholder farmers to increase their yields and to grow two or even three crops of high-value vegetables throughout the year, enabling them to get regular income. Though the farmers use diesel water pumps, but fuel purchase and transport costs are significant (typically 20000 to 25000 per 3-month season for one acre); as a result farmers cannot afford, diesel irrigation and hence crop coverage is less and so the income earned. The replacement of diesel pumps by solar pumps shows an increase in gross profits of up to 175% to 200% within one to two crop seasons.

Pragati, Koraput has demonstrated 0.5 HP solar pumps for 8 farmers along with half acre models in different villages of Koraput District of Odisha.

Raghunath Gadaba, a tribal farmer of B. Ghatrala village in Kotpad block has installed a 0.5 HP solar pump along with half acre model with support of Pragati, Koraput. Raghunath is a small farmer who lives in B.Ghatrala village with his family consisting of 8 members. He has 2.3 acres of land, out of which 1.3 acre has access to irrigation and 1 acre is rain fed. In the irrigated land he grows paddy during both Kharif and summer for household consumption. During Kharif he used to cultivate millets and vegetables in half acre and earned net profit of Rs 30,000 per year.

After the installation of the solar water pump in February 2019, Raghunath has stopped using the diesel pump. He has taken up three crops in a year and demonstrated half acre model with permanent crop like Papaya in 0.10 decimal, creeper vegetable in 0.10 decimal and seasonal vegetables in 0.30 decimals. Since then he has harvested in three cropping cycles earning net profit of 86000 in a year. Earlier he used to get Rs 30,000 to 40000 per year. He has now expanded his area of cultivation to one acre, diversified crops (4 to 5 crops) and also started aquaculture in the farm pond.

All the 8 farmers who have installed 0.5 HP solar pumps have enhanced their income by 175% to 200 within one year. The installation of these pumps has helped farmers to shift from one crop to three crops in a year irrigating 12 acres of land. These have huge annual saving of Rs 200000 per year which was spent on use of diesel powered pumps and contributed substantially for reduction of 24 tons of carbon dioxide per year.
Adapting to Climate Change for Increased Farm Income with Eco-Friendly Solar Irrigation

Kamalu Gadaba, is a young tribal farmer of Bandiguda village in Bandiguda Gram Panchayat of Borigumma Block. He depends solely on agriculture for managing his family consisting of 7 members. He owns 3 acres of land, out of which he cultivates paddy in 2 acres, Millet in 0.5 acre and vegetables in 0.5 acre.

Since last 5 years Kamalu has started feeling the impact of erratic monsoon which affects crops during the critical stages leading to low productivity and crop loss. He has a farm pond excavated under MGNREGS which serves in harvesting of rainwater and also used for irrigating vegetables during the long dry spell and also for Rabi crops. He used a diesel powered pump for lifting water. “I spend around Rs 25000 for purchase of diesel every year” says Kamalu. “When I calculate the net profit it is hardly Rs20,000 which is quite desperate, says Kamalu with a heavy heart. But I do not have any alternate option. This is not only the story of Kamalu, the experiences are similar for most of the farmers in the village.

Kamalu came to know about the solar pump from Pragati, Koraput during his exposure to Pragati field areas. As Kamalu planned for his half acre model farm, he approached the field team of Pragati for solar pump so that he can lift water with less investment. He paid a farmer’s initial contribution of Rs 10,000 for installation of the solar pump and agreed to pay the rest amount of Rs 55000 in installments to his producer group in the village.

After the installation of solar pump, Kamalu has adopted the half acre model farm. He has planted papaya in 10 decimals, creeper crop (Little gourd) in 10 decimals, seasonal vegetables i.e. cauliflower, brinjal, and tomato in 30 decimals. He has learnt to prepare and use organic manures. He has earned a net profit of Rs 43,850 during the 1st Rabi season. During the summer he has got net income of Rs 34000/- . Thus he could get net profit of Rs 77850/ during the first year only.

Due to lifting of water by solar pump, he saved Rs 19,000 during the two cropping cycles which he used to spend in diesel. He could repay Rs10000 to the Producer group and purchased a pair of bullocks.

Kamalu will now grow vegetables throughout the year and hopes to earn more than 1.5 lakh per year. Kamalu has also started fish farming in his farm pond.