

Dynamic life with diet consolidating fruits & vegetables - an opportunity for poor farmers in Bihar, India

Our target population – families of marginal and small holders in Bihar, India, especially fruit and vegetable growers.

Rationale for choice – This choice is made because marginal farmers in India are virtually at the bottom end of a long supply chain nested with intermediaries and vulnerable to micronutrient malnutrition, they are still not able to afford the sustainable and healthy food. The lack of awareness of opting for the sustainable dietary pattern has burdened their families due to pretransition nutrition deficiency disorders and infectious diseases as well as post-transition chronic degenerative diseases associated with overweight and obesity.

Case - India seems to be a victim of thirty years of agricultural policy with an exclusive focus on spreading HYV seed-fertilizer technology in a few potential regions for achieving food self-sufficiency. The government has large food security and anti-poverty programs, but there are critical gaps in terms of inclusion and exclusion errors. Families of marginal and small holder farmers are particularly disadvantaged due to awareness of healthy diet, non-accessibility and non-affordability of F&V.

Solution: Equipping farmer cooperatives with high-pressure processing (HPP) equipment for post-harvest value addition of F&V and enhancing their perishable life with inclusion of micro-cold-transport systems.

Especially under-utilized F&V are of concern such as Moringa, tapioca, jackfruit, karonda. It is so because they require less inputs to grow and easily affordable for farmers and due to high nutritional significance post-harvest addition followed by selling in urban markets will help them in earning well.

This could be helpful even more if the cooperatives get the equipment at a subsidized price. India is a second largest producer of F&V, and still find our produce being dumped. The perishability of the F&V produce (to be transported at long distances) can be extended by promoting cold storage points at certain checkpoints on highways near petrol pumps for long distance Reefer trucks, so that spoilage is reduced. Enabling battery-operated AC refrigerated cold carts is another option to raise the shelf-life of produce in a country like India where food loss is high due to lack of cold storages. This is going to help both the fruit and vegetable vendors and farmers who lose their price by selling altogether to middlemen to get rid of the low price.

This innovation needs technological interventions and spreading more awareness of consumption pattern at the local scale. Subsidizing farmers cooperatives will make them self-reliance and self-sustainable in adding the value to their fruits and vegetables. They produce more than enough produce to meet the urban demands but couldn't get the fair price for their produce and that can be done with the help of post-harvest value addition.

How to apply at a local scale –

1. Create and distribute low-cost economic battery operated refrigerated storage to farmers where they can store their produce extend the perishability of their fruits and vegetables and low cost economic refrigerated mobile push carts/stalls to vegetable vendors. A refrigerated vegetable cold cart has 20 compartments lined in packets of cooled ethylene glycol, the same chemical used in mobile ice cream carts and to transport the polio vaccine.
2. Setting up of High-Pressure Processing machines for fruits and vegetables in farmer's cooperative centers (especially for mangoes, banana, spinach, and lemons) center with the help of governments. Post-harvest value addition of underutilized crops such as Moringa, tapioca, jackfruit, karonda to be done in form of edible flours, leaves. This does not need much inputs to grow along with the inclusion of women entrepreneurs. Processing machines are responsible to gather the demands from the other districts in a state.

This strategy can be developed in a time-period of 2 months. Quality food processing at rural farm cooperatives will curb the micronutrient deficiencies of rural families along with generating women empowerment and impacting the livelihoods of the rural population of Bihar, India. This innovation can be achieved with the help of food processing industries, better use of government policies along with the inclusion of unemployed young agricultural graduates from the state and unemployed skilled labor and families of the rural villages.