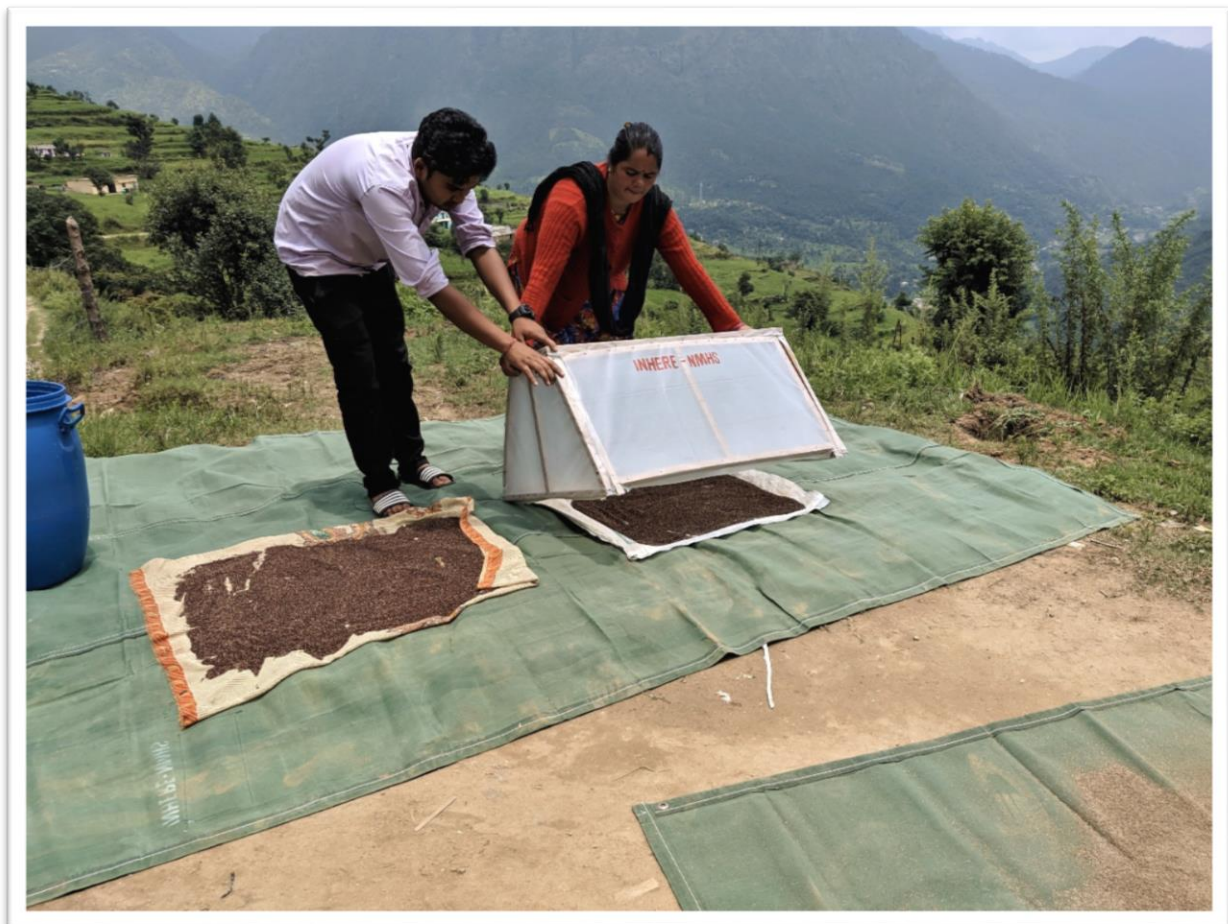


## List of innovative technical expertises developed and made available by the INHERE for mountain family farmers-

*Portable Solar Dryers (Cold and Warm drying), Designed detachable Potable Poly hand dryers, Portable Tunnels, Low cost Dry Toilet, Degradable Solid Waste Bio-digester, Portable Small Honey Processor, Hand operated Sieves introduced for cleaning Small and Pseudo- Millets, introduced Small Millet Hulling Machine by adding different sieve in small Paddy Hulling Machine etc*

- 1) **Solar Dryer (Warm):** Specially designed for small and marginal farmers considering its utility in the Mountain regions, these multi-functional portable Solar Dryers make the drying faster and protect the crops from climate change effects. Since, excess moisture presence and rising temperature in the atmosphere for longer periods cause high bacterial, fungal and pest attacks leading to more damage to crops in fields and stored grains. Solar Dryer, simultaneously, protects the produce kept for drying from attack by wild animals, rain and cold breeze. With a reasonable pricing, portable design and a multi-purpose usage, these driers have been of great help to the farmers and adds to value addition and sustainable livelihood.



**Image of a portable Solar Dryer (Warm).**

2) **Solar Dryer (Cold):** This multi- purpose dryer has been developed for faster drying but by keeping the temperature of the produce normal (a product which is not delicate and any of its property to lose in direct sun drying). Its basic functionality is that the hot air inside the dryer is pulled out along with moisture that helps the product retain its texture and colour to a certain level and simultaneously dry the product faster. The 4 fans attached alongside are powered by solar energy with the help of a solar panel.



**Image of a Solar Dryer (cold).**

- 3) **Small Honey Processor:** This processor is developed to provide high quality and value to farmer's honey at village level. The value addition in this processor can be done in small quantity depending either on household consumption or for marketing purposes. Low in cost and efficient in terms of its utility, its design is suitable for small farmer producers which aims to add Bee Rearing as an additional source of their livelihood.



**Image of a small Honey Processor.**

- 4) **Dry Toilets:** These have been useful where there is lack of water availability. In Mountain areas, where due to geographical limitations, water is collected while travelling large distances, dry toilets use very less water (normally for personal hygiene only) due to its design but very small quantity is required to clean toilet seat when desired. It does not require water to flush out the human excreta. Its cost is also less as compared to normal household toilets commonly made in this part of Mountain villages.



**Image of a Dry Toilet.**

- 5) **Poly Tunnels:** Useful especially in hill areas where uncertain climatic conditions are common and wild attacks are universal, these durable, light weight structures have been designed not only to provide suitable conditions for vegetable seedlings and fruit plants saplings for growth but also to protect the same from its aerial predators and wild animals . Its low cost, portable size and utility makes it suitable for mountain farmers



**Image of a portable Poly Tunnel**

- 6) **Degradable Solid waste Bio Digesters** :Pertaining to the waste problem in rural areas which gets generated due to either social rituals or at the household level, Solid waste Bio-Digesters have been specifically designed in order to minimize pollution caused by organic waste during decomposition. It further decomposes the organic waste material into compost which can further be used on kitchen gardens and flowering pots around houses.



**Image of a Degradabl Solid waste Bio- digester (SILO).**

- 7) **Hand Sieves for small and Pseudo Millets:** Due to lack of technology and poor processing techniques in mountain regions, soil and dust particles have been common in raw agricultural produce. In order to separate those from fine grains, hand operated sieves of wood and metal have been specially designed to ease women farmers in processing.



**Hand operated Sieves being used by a women farmer for demonstration**

- 7) **Waste water recycling and cleaning unit:** Using nature's technology of water purification, this system of recycling and cleaning has been developed in order to treat waste household water generated through everyday household activities. Water is passed through a series of stone, sand and soil filters made in each tanks and then gets recollected into a separate tank where it is reused for flushing and gardening.



**Image of a Waste water recycling and cleaning unit**



**8) Roof rain water harvesting unit:** In order to conserve run-off roof water, rain water harvesting unit has been designed and developed in order to meet institute's daily requirements such as cleaning utensils, gardening and in washrooms. Run-off water on the rooftop has been channelized through a network of pipes and drums which then gets collected in tanks of an average capacity of 200litre. With 12 such tanks collected in a row, 2400 litre of run-off rainwater gets stored in every rain that is then further utilized for everyday usage.



**Image of a roof rain-water harvesting unit installed at INHERE's main office.**

- 9) **Paddy Hulling Machine converted into Small Millet Hulling Machine:** Design modification have been done in machines available in the market for hulling of Paddy to be then used for Small Millets hulling. Sieve for hulling of the same has been procured after a long market search and correspondence in the international market.



**Image of a Small Millet Hulling Machine at work.**