Replicable innovation for rural farming: a solution to cassava harvesting challenges in Kerala and beyond

Innovators, Jose V and Jose Cheriyan, with their cassava harvesting tools.

Credit: Abhishankar MD

Cassava is one of the major crops cultivated in Kerala, India, especially in hilly areas. Kerala is the second largest producer of cassava in India. At present, all the cassava farmers in Kerala use the conventional practice of harvesting. Manual harvesting of cassava is tedious, and it involves a lot of drudgery. Back pain from bending to harvest cassava is a common problem among cassava farmers, who are usually women. Manual harvesting also causes loosening of topsoil, which makes it prone to erosion during rainfall, and which also promotes weed growth.

Weeding of cassava fields is also carried out manually and this process has a high labour demand. Because of these difficulties, many farmers just cut the stems of the weeds above the soil surface and do not remove them completely. However, this is not a permanent solution for weeds as more vigorous sprouting of branches occurs from the remaining stem.

Prompted by these problems, Mr Jose VV and Mr Jose Cheriyan – farmers from Thodupuzha, Idukki district of Kerala – have developed a cost-effective plucking tool for uprooting the weeds and the cassava roots. The tool is very simple, light weight and is easy for a single person to operate. The operation involves clamping the plant stem (weed or cassava) between the jaws of the tools and tilting the handle backwards gently. This results in the smooth uprooting of the plant with minimum effort. The tool can be used on plants with plants that have stem diameters up to 5-6 cm, and the jaws can be expanded according to the stem size.

The product is simple and sturdy and can be used effortlessly without leaning forward or bending over. There is also no need for digging to loosen the earth for harvesting and zero damage to the cassava tuber. The tool can uproot a minimum of two cassava plants and four deep-rooted weeds in a minute and is also suitable for use by both men and women. The tool is an ultimate solution for addressing the labour shortage. The tool has been developed by the innovators themselves after several iterations and modifications, ultimately resulting in two different types of tools, one for cassava harvesting and one for weed uprooting.

The innovators have already established a small business unit for the production and supply of the tools and more than 2000 tools have been sold already. After using the tools, many of the farmers were of the opinion that the tools have reduced their drudgery and efforts and lessened the incidence of back pain related to harvesting cassava. A few farmers mentioned that, since the tools could be used effortlessly by both women and children, it also supports

The cassava harvesting tool can be used by both men and women farmers.

Credit: Arun S, Chandran Creativiti council

Farmer, Jose, with cassava roots that have been harvested with the tool.

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the concept of family farming. They also mentioned that use of tools has prevented soil erosion in their fields. Furthermore, farmers that collect medicinal plants shared that the tool is good for harvesting the medicinal plant known locally as 'Kurunthotti" (*Sida cordifolia*).

The innovation has tremendous potential for replication in cassava-growing areas of Africa, Southeast Asia and Latin America, where harvesting is done manually, and it could also be used for other crops after due modifications and improvements.

The Prolinnova network, which recognises the ability of farmers to innovate to solve their challenges and promotes farmer-led joint innovation processes, also offers an excellent network for diffusion and deployment of the tools in cassava-growing African and south Asian counties. Through events where innovations are shared, there is the possibility that rural entrepreneurs will see the tools and can be trained to manufacture them, adapting them for use under local conditions. On option is that the original innovators who developed the tools could be involved in training other people to make them and a possible benefit-sharing mechanism could be explored. Publication of pamphlets and brochures and demo videos are other suggested methods for dissemination of the tool. The tools offer opportunities for creating small businesses that can create jobs in rural areas and also address a major problem in cassava cultivation.

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