



“Chalakh” Mango Nipper

Consolation

Madhav Shrikrishna Mahajan

Ratnagiri, Maharashtra

Background

Madhav Mahajan (48) has made an efficient, lightweight device to harvest mangoes without damage. It is a small but significant improvement over the existing mango nippers.

He has studied up to higher secondary in commerce stream, and has a wife, daughter and son in his family. His house, which is 108 years old, is almost like a heritage building. His father, who had a supari (areca nut) and coconut garden, was a very reputed social worker. For the past fifteen years, they have started growing mango apart from supari.

Being a man of multiple talents, Mahajan is an agriculturist, a poet, and an advocate of organic farming. He is also engaged in fruit processing and runs a small-scale industry unit for production of Ayurvedic medicines along with his brothers. He has been practicing and promoting organic farming for past twelve years.

He has written many poems in Marathi published

in local papers in magazines. Some of his collections include *Nivadnukicha San (Festival of election)*, *Chhalamagun Balakade*, *Vidhilkhit*, *Mee Kon (Who am I)*. He has written an article in Marathi entitled ‘*Harit Kranti*’, which reveals the negative effects of chemical fertilizer in agriculture, and compares it with the advantages of organic farming.

He has been playing a vital role in his community as a sarpanch, founder member of the Dr Khankoje Organic farming group, member of Farmers Advisory Committee under ATMA, Ratnagiri and SMD Mango Growers Group.

He has also built some portion of the approach road to his village using a novel technology developed by him, which he claims, gives it a wear proof surface and durability for years.

Genesis

Harvesting of mangoes in trees with average height of forty feet and canopy width of twenty-four feet or more in an efficient manner is a problem for orchard owners. Besides, they need skilled manpower to

pick each individual fruit without any damage.

Many of the mango varieties that go for export need to have petioles retained to sufficient length so that there is no oozing of sap, which damages the fruit.

Being a precise yet repetitive operation, the mango nipper should easily cut the fruit in swift single action without any discomfort due to twist of wrist to user or damage of fruit, because of falling on the ground. The cut should retain the petiole length, efficiently handle fruits in upright branches and enable selecting and disengaging a single fruit from a bunch.

All this is to be achieved while delivering fastest productivity per hour.

The *Chalakh* mango nipper, developed by him has the novel design to take care of all these requirements, which are not being met by existing nippers. They are heavy and deliver lower productivity with greater percentage of damaged fruits as compared to the innovative nipper.

Chalakh in Marathi means something, which works very fast or is clever. In this case, it works fast because of the design, shape and use of lightweight material.

He started trying out design modification on traditional nippers twelve years back. A lot of time got wasted because in order to verify his design improvisations he had to wait till the next mango season. Also, he had to go to the city to get these changes done in the nipper, as he had no in-house facilities. It was only two years ago that he was able to build a small workshop in his home and hire a worker to build things for him. It saved him a lot of time and money because then he was no longer dependent on the fabricator to turn his ideas into prototypes. The *Chalakh* nipper came to its final stage two years ago.



Innovation

This modified nipper consists of of twin replacable cutting blades with a rubber stopper in the middle, mounted on a steel oval ring fitted with nylon mesh fruit-receiving basket. This oval ring is at a unique angle to the handle. The holder connects this ring to the bamboo handle, of the desired height, to maneuver while standing on the ground.

The cutting action is by impact where the handle is pulled after positioning the ring and holding basket around a single spotted fruit. The twin cutting blades hit the petiole and deliver a cut fruit with three-inch petiole into the collection basket.

When the blades become dull, fresh blades can be replaced to keep the cutting action clean and fast.

Its oval shape, lead angle and lightweight make it novel over the existing devices¹. US patent No. 2002/0020161 A1, dated Feb. 21, 2002 describing a manual fruit-harvesting tool having handle, which carries U shaped head and fruit is harvested by applying a sharp downward jerk motion to the pole.



By design, it eliminates fruits falling to ground, can cut mangoes from upright branches efficiently and delivers upto 300 fruits/hour. It costs 105 rupees a piece. Apart from mango, the nipper can harvest other fruits also, such as sapota, lemon, guava and orange.

The patent has been filed for this novel cutting and harvesting mechanism.

¹ Impact type, impact-cum-shear type and shear type mango harvesting devices are common in art www.dbskkv.org/agri_engg_tech.htm, www.shinorin.co.jp, agricoop.nic.in/dacdivision/Machinery1/chap5a.pdf and NIF database). All are manual in operation. However, oval shape, lead angle and lightweight of the proposed device make it novel over the existing devices.