

INDIGENOUS FISH PROCESSING INTERVENTIONS-CIFT DESCALING MACHINE

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Fisheries in India has emerged as an important economic sector with varied resources and potentials. Apart from engaging about 14 million people in different activities, the sector plays a significant role in meeting the nutritional security of the country. Despite the bountiful fishery resources, the demands of the consumers are seldom met in terms of availability of fish. A major factor contributing to this scenario is the post-harvest losses, which in fisheries is around 18%. To alleviate these losses, improvement in processing measures involving cold storage lines during storage and transportation, drying and value addition should be enhanced.

Of the various problems faced by fish processing sector, removal of scales from fishes is a major one. Generally scales of fishes are removed manually by knives, which is laborious and time consuming. Hence, an attempt was initiated by ICAR- Central Institute of Fisheries Technology, Kochi, to design and develop machines for descaling of fishes. These descaling machines are accepted among industrial as well as domestic sector as a boon against the existing tedious method of removing scales. Moreover,

mechanical descaling minimises the physical damages to the cleaned fish and are sensorily more appealing. Also, the scales can be accumulated and collected for the development of high value end products. CIFT descaling machine is designed in three different variants, viz. the high end model with variable drum speed, table top model with fixed drum speed and a basic hand operated variant.

All these models are capable of removing scales from small and medium sized fishes ranging from marine to fresh water species like sardine, anchovy, rani fish, rohu, tilapia, etc. Separate provisions are given for washing and collecting the removed scales. The machine takes only 3-5 minutes to clean 6 kg fish depending on the size. The scale removal efficiency is 95-100% depending upon species. Deskinning of squid was also attempted and it was observed that upto 90% removal efficiency of squid was noted. Since there is some entangling of tentacles of squid species, the machine can be used for deskinning of squid tubes.



Fish de-scaling machine



Fish de-scaling machine with variable drum speed

Apart from removing the scales of fishes like Tilapia, Pearl Spot etc, the process improves the appearance of these dark skinned fishes. Agricultural products like Chinese potato and ginger which are difficult for de-skinning can also be successfully cleaned in this machine. This machine is used for standardising the descaling conditions like rpm and time requirement for various species and conditions so that low cost machine specific for each species was developed. The hand operated model is designed specifically for reducing the production and operating costs involved and also to make the technology reachable in areas suffering lacunae in supply of electricity. A handle is fitted in the side to rotate the drum manually. This machine is specially suited for roadside fish vendors and hotels.

The units were supplied to different factories for testing the performance under industrial conditions. Excellent performance of the unit has been reported by M/s Parayil Exports, Aroor, Kerala and Ms. Vijetha Exports, Bhimavaram, Andhra Pradesh. Savings of 50-75% on labour while using the CIFT machine has been reported. This definitely will enhance the quality of the product due to short time for processing and handling and also will reduce other input cost like ice and resulting in better quality product.

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The use of descaling machines serves not only the purpose of cleaning the fish but also it keeps the process and surroundings clean without spilling of scales. They mainly aims at reducing human drudgery involved in removing the scales from fishes. Also, scales that amount to about 3-7% of the fish weight are good source of collagen and hydroxyapatite which is used in medicinal and nutraceutical fields. Six units of low cost machines have been transferred to entrepreneurs and found to have excellent performance in terms of scale removal and easy maintenance. The machines are under patenting of ICAR-CIFT.



Fish de-scaling machine with fixed drum speed