

## New addition to 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 to post harvest operations viz. pre-processing and processing techniques, packaging and cold chain systems is required.

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, Cochin, 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 minimizes 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 freshwater species like sardine, anchovy, pink perch, 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. De-skinning of squid was also attempted and it was observed that up to 90% removal efficiency is obtained. Since there is some entangling of tentacles of squid species, the machine can be used for de-skinning of squid tubes more effectively.

Apart from removing the scales of fishes, the process improves the appearance of the dark skinned fishes like tilapia, pearl spot etc.



Squids for de-skinning

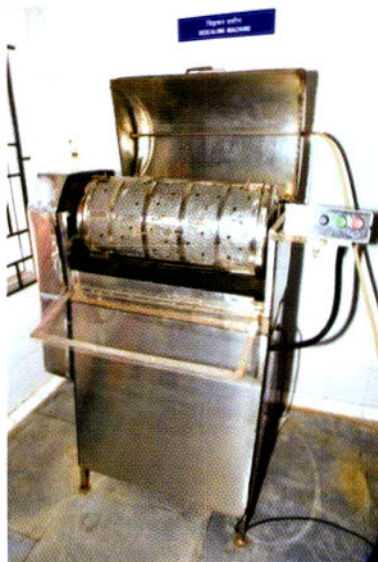


Squids in de-scaling machine

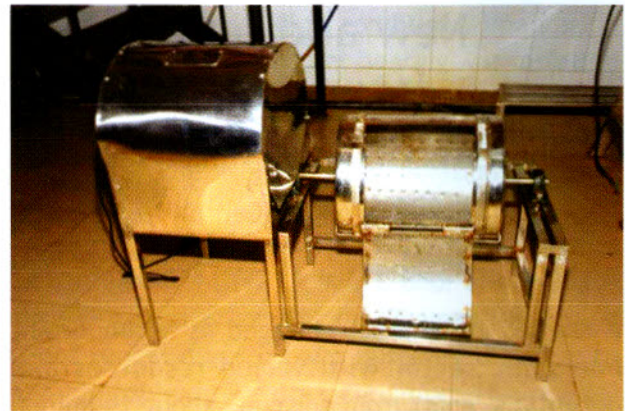


Agricultural products like Chinese potato and ginger which are difficult for de-skinning can also be successfully cleaned in this machine. This machine is used for standardizing the descaling conditions like rpm and time required for various species and conditions so that low cost machine specific for each species could be 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 at the side to rotate the drum manually. This machine is specially suited for road-side fish vendors and hotels.

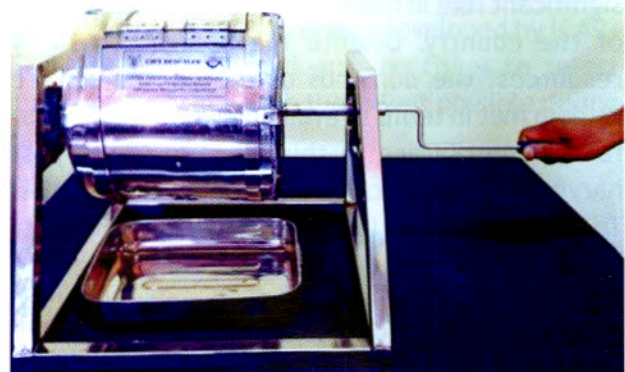
The use of descaling machines serves not only the purpose of cleaning the fish but also keeps the process and surroundings clean without spilling



Fish de-scaling machine with variable drum speed



Fish de-scaling machine with fixed drum speed



Hand operated fish de-scaling machine

of scales. They mainly aims at reducing human drudgery involved in removing the scales from fishes. Also, scales that amount upto 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 before and after de-scaling