SORTING MACHINE FOR AMLA FRUITS
(CLUSTER PRATAPGARH)

Problem: Sizes of Amla fruit typically varies from 30 to 55 mm diameter
Processing requires fruits to be sorted by size
More than 50 processors in and around Pratapgarh, other clusters
Hathras, Varanasi, Lucknow, Rajkot

Present status: Sorting is done by hand which is time consuming

Challenge: Design a sorting machine that will separate amla
Size range: less than 40 mm, between 40 and 45 mm, more than 45 mm
Amla should not fall and get bruised as it triggers rotting
SORTING STICKS FOR AGARBATTI MAKING
(KANPUR - KANNAUJ CLUSTER)

Background: Agarbatti making machines takes circular bamboo sticks one by one, and extrude them with agarbatti masala. The masala comprises of a thick paste of coal, jiget herbs and incense. The problem is that that machine takes sticks of 1 to 1.4 mm dia only. The thinner sticks get stuck in the machine.

Challenge: Design a sorting machine that can separate out bamboo sticks of less than 1 mm dia. The approximate length of one stick is 20cm.
GRATING MACHINE FOR AMLA FRUITS
(CLUSTER PRATAPGARH)

Workers grate Amla by holding it in hand and rubbing it on the KADDU KAS

• Time consuming
• Unhygienic
• Workers get cuts and scratches on their hands.

Problem: Amla is grated to make laddoos
> 50 processors around Pratapgarh,
and other clusters Hathras, Varanasi, Lucknow, Rajkot

Challenge: Design a sorting device that will grate amla inimize the loss
MACHINE TO DESEED AMLA FRUIT (CLUSTER PRATAPGARH-ALLAHABAD)

Amla fruits are steamed before deseeding operation is taken up. Amla fruits are steamed and while it is hot. The fruit is manually pressed in such a way that it breaks into six neat pieces, and seed comes out. Is pressed too hard, fruit will convert into pulp. The steaming or boiling is also done in such a way that fruit cooks evenly otherwise deseeding will require use of knife for slicing. The deseeding operation is tedious and time consuming. There is a need to have a machine to deseed the fruits.
EARTHEN COOLER

Objective: Cool chamber for transportation of vegetables

Problem: VEGETABLES ARE PERISHABLE & GO BAD QUICKLY
LOSS TO FARMERS IS REDUCED IF THEY’VE COOL STORAGE FACILITY

Challenge: Design a cool chamber using EVAPORATIVE COOLING
Use clay, sand dust, organic material (rice husk) & other local materials
Reduce temperature to enhance the shelf life
Working in humid environment
Low Cost
BAEL CUTTING MACHINE
(CLUSTER PRATAPGARH)

Problem: Bael is a medicinal fruit and Bael murabba is fast gaining popularity amongst health enthusiasts. For making Bael murabba, raw fruit is cut into slices, typically 2.5 cm thick. These slices are peeled and de-seeded.

Present status: The fruit is put on a flat base and is cut by hand using hacksaw. Some use hammer to pound on the flat blade of the knife to achieve a clean cut. Process is slow and hazardous because shell of the fruit is quite hard and slippery.

Challenge: Design a bael cutting machine
Cut slices of 2.5cm thickness
Manually operated
DESIGN AN IMPROVED KNEE PROSTHESIS JOINT

**Problem:** Legs callipers or braces are required by people whose legs are not able to sustain the body weight (usually affected by disease like polio). Such callipers that are commonly available in India are too bulky and the mechanism built in them get worn out and thus limiting their life. One such type of callipers has an additional problem of not allowing the person to bent the legs by more than 90 degrees. Imported callipers that are lighter in weight and can bend by larger amount are available.

**Challenge:** Improve the joint design so that it is able to turn upto 130 degree.