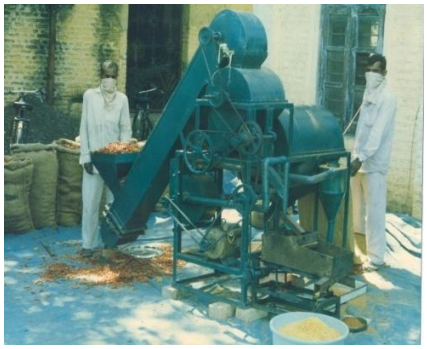
3. Horticultural Crops: Machinery/Equipment/Tool

i	**Name of the Technology**	:	PKV Chilli Seed Extractor
ii	**Application/ Use**	:	Extraction of seeds from dried red chilli pods
iii	**Description of Technology** : Chilli is grown on about 58,700 ha in Vidharbha, which requires about nine tones chilli seed for raising seedling. Presently the chilli seed is extracted by filling in bags and beating with wooden sticks. This is a tedious method. Inhalations of fine particles result in continuous sneezing and irritation of labor's body. Due to this, it is difficult to get the labor for this operation. The problem becomes more severe on large scale i.e. in seed processing plants, seed companies, etc. This method has low output and efficiency. To avoid this drudgery, a chilli seed extractor was developed with 100-125 kg/h capacity operated by 2.0 hp single phase electric motor. The recovery of seed from chilli fruits is about 94-99% at 9-10% m.c. (wb) with no deterioration on seed germination. It being a closed system minimizes the sneezing and body irritation. The cost of machine is Rs. 43000/-.The unit is commercially available. 		
iv	**Input/raw material**		Red dried chilli
	a. Overall dimension		1.42 X 2.44 X 1.78 m
	b. Weight		413 kg
	c. Prime mover		2 hp single phase electric motor
	d. Man power		1 skilled and 1 unskilled
	e. Land		25 m^2
	f. Investment		Rs. 43,000/-
v	**Output capacity**		100-125 kg/h
vi	**Unit cost**		Rs. 43,000/- (including prime mover)
vii	**Suitability for crop/ commodity**	:	Dried chilli pod
viii	**Efficiency**	:	94-99% seeds from chilli fruits (at 9-10%m.c (wb))
ix	**Unit cost of operation**	:	64 Rs/q
x	**a) No. of Licensees**	:	01
	b) Addresses of Licensees or Manufacturer	:	1. YMB Agri Machineries, W/37-38, Phase 3 MIDC Akola (MS) (M) 09850303202 (O) 0724-2258184
xi	Contact Address		Research Engineer, AICRP on PHT College of Agricultural Engineering Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, AKOLA - 444 104 (Maharashtra)

i	**Name of the Technology**	:	PDKV Fruit grader
ii	**Application/ Use**	:	Grading of spherical fruits
iii	**Description of Technology** *:* The roller type fruit grader having four pairs of rollers (PVC pipes) of 100 mm diameter and 1500 mm length rotating (opposite and outward) at 80 rpm with adjustable diverging gap between each pairs of roller has been developed. The grader is useful for grading Nagpur mandarin, Sweet lime and sapota (spherical varieties) into 3 to 4 grades with 70 to 85 % grading efficiency. 		
iv	**Input/raw material**		Not graded spherical fruits
	a. Overall dimension		2.30 X 1.50 X 1.50 m
	b. Weight		365 kg
	c. Prime mover		1 hp single phase electric motor
	d. Man power		2 unskilled
	e. Land		25 m^2
	f. Investment		Rs. 57,500/-
v	**Output capacity**		10 - 12 tonnes/day
vi	**Unit cost**		Rs. 57,500/- (including prime mover)
vii	**Suitability for crop/ commodity**		Grading of spherical fruits (Mandarin, sweet lime and sapota)
viii	**Efficiency**		70-80% grading efficiency (3 to 4 grades)
ix	**Unit cost of operation**		40 Rs/q
x	**Contact Address**		Research Engineer, AICRP on PHT College of Agricultural Engineering Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, AKOLA - 444 104 (Maharashtra)

i	**Name of Technology**	:	PKV Waste fired dryer
ii	**Application/ Use**	:	Drying of Chilli, grains, pulses etc, using agricultural waste
iii	**Description of Technology** : Waste fired dryer consists of three components; blower, furnace with heat exchanger and drying bin. Furnace is constructed from brick masonry and soil as mortar. Grate is provided for burning of fuel over which the heat exchanger is placed. Flue gases flow out through the chimney at top. The atmospheric air sucked by blower passes through heat exchanger where it gets heated and further enters in the plenum chamber. The drying bin with six quintals capacity is divided in two parts by inclined steel mat, the lower being plenum chamber and upper grain bin. Hot air removes grain moisture and thus drying takes place. The drying air temperature is controlled by burning the agricultural waste material in furnace under controlled rate. Electric heater can also be provided instead of furnace. The dryer can also be used for other crop produce such as cobs, grains, pods, etc.		
iv	**Input/raw material**		Agricultural waste @ 12-13 kg/h
	Overall dimension		1.35 X 1.35 X 1.00 m
	Weight		-
	Prime mover		1 hp single phase electric motor
	Man power		1 unskilled
	Land		25 m^2
	Investment		Rs. 18,000/-
v	**Output capacity**		200 kg/batch of red chili in 10 sliding trays
vi	**Unit cost**		Rs. 18,000/- (including prime mover)
vii	**Suitability for crop/ commodity**		Drying of chilli, grains, pulses also for drying of cobs, pods etc.
viii	**Efficiency**		Chilli dried from 73% m.c (wb) to 16 % m.c (wb)
ix	**Unit cost of operation**		42Rs/q
x	**Contact Address**		Research Engineer, AICRP on PHT College of Agricultural Engineering Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, AKOLA - 444 104 (Maharashtra)

I	**Name of the Technology**	:	Turmeric slicer
ii	**Application/ Use**	:	Slicing/cutting of turmeric rhizomes, potato, ginger into slices of desired thickness
iii	**Description of Technology :** The power operated turmeric cutting cum slicing machine has been developed using locally available materials as shown in Plate 3.1. The machine consists of the feeding unit, slicing mechanism, driving mechanism, frame and the housing. Centrifugal action principle with fix SS blade is adopted. The washed turmeric rhizomes fed through hopper are subjected to centrifugal force and strikes on the stationary SS blade fixed on the casing. The machine cuts the turmeric rhizomes into slices of desired thickness from (2 to 5 mm). The slices are collected through outlet provided below the blade. The components of the machine include striking unit, rhizome cutting unit and frame & power transmission unit. 		
iv	**Input/raw material**	:	
	a. Overall dimension (L x B x H mm)	:	610 (L) x 458 (W) x 1205 mm (H) mm
	b. Weight	:	70 kg
	c. Prime mover	:	Motor operated
	d. Power (hp)	:	1 hp
	e. Man power	:	1
	f. Land	:	-
	g. Investment	:	Rs. 60,000/-
V	**Output capacity**	:	380 kg/h
Vi	**Unit cost (per machine)**	:	Rs. 60,000/-
Vii	**Suitability for crop/ commodity**	:	Turmeric rhizomes, potato, ginger
Viii	**Efficiency**	:	74.74%
Ix	**Unit cost of operation**	:	Rs. 22/q OR Rs. 220/ton
X	**Patent obtained/applied**	:	Nil
Xi	**Commercialization status**	:	MoU is in process
	a) No. of Licensees	:	-
	b) Addresses of Licensees or Manufacturer	:	-
Xii	Contact Address	:	Research Engineer, AICRP on PHT College of Agricultural Engineering Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, AKOLA - 444 104 (Maharashtra)

i	**Name of the Technology**	:	**Pilot plant (100 kg/day capacity) for making cherry/tutty-fruity**
ii	**Application/ Use**	:	For preparation of Cherry/tuity-fruity from pumpkin and papaya
iii	**Description of Technology :** A pilot plant (100 kg/day capacity) inclusive of Peeler, Hand cutter, Slicer and Cuber for making cherry/tutty-fruity from pumpkin was developed. The plant can be used alternatively for making cherry from papaya or other fruits.		
iv	**Input/raw material**	:	
	a. Overall dimension (L x B x H mm)	:	1430 mm(L) x 1130 mm (W) x 770 mm (H)
	b. Weight	:	3 q
	c. Prime mover	:	Motor operated
	d. Power (hp)	:	2 hp
	e. Man power	:	2 labours
	f. Land	:	-
	g. Investment	:	-
v	**Output capacity**	:	1.08 q/day
vi	**Unit cost (per machine)**	:	1,50,000/-
vii	**Suitability for crop/ commodity**	:	Pumpkin, papaya
viii	**Efficiency**	:	82.27
ix	**Unit cost of operation**	:	Rs. 35/kg
x	**Patent obtained/applied**	:	-
xi	**Commercialization status**	:	MoU is in process
	a) No. of Licensees	:	-
	b) Addresses of Licensees or Manufacturer	:	-
xii	Contact Address	:	Research Engineer, AICRP on PHT College of Agricultural Engineering Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, AKOLA - 444 104 (Maharashtra)

i.	**Name of the Technology**	:	Pricking machine for *Petha* preparation
ii.	**Application/ Use**	:	Ease the process of pricking of petha for petha sweet preparation
iii.	**Description of Technology** : In *petha* industry, most of the operations such as cutting, pricking, etc. are done manually which is labour intensive, time consuming, and also involves drudgery. Besides, manual cutting and pricking is unhygienic and shelf life is short. With the background, Hisar and Aligarh centres have developed jointly *petha* cutting and pricking machine using stainless steel needles. Suitable mould/ dies are required for uniform shape and size of petha sweet. This machine is helpful in increasing the capacity of production besides maintaining quality and hygienic conditions. 		
iv.	**Input**		
	a) Raw material		
	b) Machinery		
	Overall dimension		1220mm x 610mm x 990mm
	Weight		100 kg
	Prime mover		1.5 h.p. single phase motor with gear box
	c) Man power		One
	d) Land		Depends on the project scale of operation
	e) Investment		Depends on the project scale of operation
v	**Output capacity**		200 kg/h
vi	**Unit cost (per machine)**		Rs 50,000
vii	**Suitability for crop/ commodity**	:	Petha
viii	**Efficiency**	:	Pricking efficiency 95%
ix	**Unit cost of operation**	:	Rs 1.50/kg
x	**Patent obtained/applied**	:	No
xi	**Commercialization status**	:	Ready for commercialization
	a) No. of Licensees	:	1
	b) Addresses of Licensees / Manufacturer	:	M/s Moti Engg Works, Hisar Plot No. 42-43, Gali No. 1, Ganesh Nagar, Industrial Area, Hisar.
xii.	Contact Address		**AICRP on PHT at Hisar and Aligarh centres** 1) Research Engineer, AICRP on PHT College of Agril Engineering CCS Haryana Agricultural University, Hisar-125 004 (Haryana) 2) P I, AICRP on PHT, Deptt. of Post Harvest Engg. & Tech. Aligarh Muslim University, Aligarh- 202002 (UP)

i.	**Name of the Technology**	:	White Pepper Machine
ii.	**Application/ Use**	:	Production of white pepper corns from freshly harvested mature green pepper berries; Can also be used for black pepper with additional microbial retting technique.
iii.	**Description of Technology** : The machine removes outer pericarp from steeped fresh mature pepper berries (also from black pepper) to get white pepper kernels. It consists of a rotor shaft attached with 4 nylon brushes that rub the steeped pepper berries against the perforated metallic concave cylinder. During the operation continuous water supply is provided to the pulping chamber so that the loosened pulp (pericarp) is washed away by water through the sieve and the natural white pepper kernels are collected at the far end. The product should be further dried to the storable moisture content. All the contact parts of the machine where the pepper move are made up of food grade materials. 		
iv.	**Input/raw material**	:	Fresh green pepper berries soaked in water for 4-5 days/Black pepper berries steeped in water with microbial culture for a week
	a) Overall dimension	:	83x74x105 cm
	b) Weight	:	45 kg
	c) Power	:	Electric motor, 0.5 hp
	d) Prime mover	:	One skilled and one unskilled person
	e) Man power	:	
	f) Land	:	Building (100 sft)
	f) Investment	:	Rs. 75,000 but depends on quantity of to be processed
v.	**Output capacity**	:	125-150 kg/h
vi.	**Unit cost (per machine)**	:	Rs 25,000 (without motor)
vii.	**Suitability for crops/commodity**	:	White pepper
viii.	**Efficiency**	:	
ix.	**Unit cost of operation**	:	
x	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee or Manufacturer		M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
x.	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the Technology**	:	Manual Arecanut Dehusker
ii.	**Application/ Use**	:	Suitable for dehusking freshly harvested mature green areca nut. Developed to replace the traditional dehusking tool which is involves drudgery.
iii.	**Description of Technology** : It is a manually operated unit where four persons can dehusk arecanuts simultaneously. The unit is made of mild steel body mounted on angle iron stand. The dehusking assembly consists of two sharp edged blades, one being stationary and the other movable, operated by a pedal through a linkage mechanism. The unit has a hopper to hold 20 kg raw nuts and the raw nut freely flows to the dehusking tray by gravity. The outer shell of freshly harvested nut is pierced by pressing the nut against the sharp edge of the blade and the leg pedal is operated to split the husk. About 2-3 strokes are required to completely dehusk a nut.		
iv.	**Input/raw material**	:	Freshly harvested mature green arecanuts
	a) Overall dimension	:	68 x 68 x137 cm
	b) Weight	:	40 kg
	c) Power	:	Manual
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	Two labours
	g) Land	:	Not required
	f) Investment	:	Rs. 4500/-
v.	**Output capacity**	:	160 kg raw nut per day / person
vi.	**Unit cost (per machine)**	:	Rs.4500/-
vii.	**Suitability for crops/commodity**	:	Arecanut
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee /Manufacturer		M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
xi	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the Technology**	:	Tamarind Dehuller-Cum-Deseeder
ii.	**Application/ Use**	:	Dehulling of freshly harvested matured dry tamarind fruits and then expelling seeds from dehulled fruits
iii.	**Description of Technology** : This is a composite unit consisting of a tamarind dehulling unit and a deseeding unit. The dehulling unit consists of serrated mild steel rings mounted on two parallel shafts which rotate in opposite directions. Small pins welded on to the surface of the rings act as beaters to break and separate the brittle tamarind shell. The deseeder consists of a rotating fluted stainless steel roller and a stationary rasp bar. When the dehulled dry tamarind fruits pass between the fluted roller and the rasp bar, the seeds are squeezed out of the tamarind pulp. The expelled seeds are then separated manually. 		
iv.	**Input/raw material**	:	Freshly harvested and well dried tamarind fruits
	a) Overall dimension	:	68 x 68 x137 cm
	b) Weight	:	40 kg
	c) Power	:	Manual
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	One labour
	g) Land	:	Not required
	f) Investment	:	Rs. 4500/-
v.	**Output capacity**	:	Dehulling - 600 kg/h or Deseeding - 45 kg/h
vi.	**Unit cost (per machine)**	:	Rs. 30,000/- (without motor)
vii.	**Suitability for crops/commodity**	:	Tamarind
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee / Manufacturer		M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
xi	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the Technology**	:	Pedal Operated Coconut Dehusker
ii.	**Application/ Use**	:	For dehusking coconut with ease and minimal effort; Can be conveniently used both by men and women
iii.	**Description of Technology** : The dehusking assembly consists of two sharp edged blades, one being stationary and the other movable - operated by a foot pedal through linkage mechanism. The twin-blades are mounted on a tubular stand. The unhusked coconut is pierced on the wedge like blade and then the foot pedal is pressed to split open and separate a portion of the husk. The operation is repeated 3-4 times until complete dehusking is done.		
iv.	**Input/raw material**	:	Coconuts
	a) Overall dimension	:	45 x 15 x 85 cm
	b) Weight	:	6 kg
	c) Power	:	Manual
	d) Prime mover	:	-
	e) Man power	:	One labour
	f) Land	:	Not required
	f) Investment	:	Rs. 600/-
v.	**Output capacity**	:	**50-60 nuts /h**
vi.	**Unit cost (per machine)**	:	Rs. 600/-
vii	**Suitability for crops/commodity**	:	Coconut
viii	**Efficiency**	:	-
ix	**Unit cost of operation**	:	-
x	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee or Manufacturer		M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
xi	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the Technology**	:	Bulk Onion Curing Unit
ii.	**Application/ Use**	:	Curing freshly harvested onions in bulk
iii.	**Description of Technology** : The onion curing unit is a forced hot air dryer modified to cure freshly harvested onions in bulk. The unit consists of a curing chamber with a perforated vertical hot air distribution duct and laterals. The walls of the chamber are actually fabricated with perforated sheet so that moisture laden air escape at all sides. An electrical heat bank and a blower supply of hot air at about 45°C for curing onions. The curing chamber is provided with two doors: one at the top for loading onion bulbs and the other in the front for unloading onions after the curing process. The electric heat bank consists of four 600 W finned heaters to obtain an inlet curing air temperature ranging from 30 to 80°C. 		
iv.	**Input/raw material**	:	
	a) Overall dimension	:	100 x 100 x100 cm + heat bank & motorized air blower
	b) Weight	:	-
	c) Power	:	0.5 hp blower; Heater - 3 kW
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	One labour
	g) Land	:	Not required
	f) Investment	:	Rs. 4500/-
v.	**Output capacity**	:	Cures 500 kg of freshly harvested onions
vi.	**Unit cost (per machine)**	:	Not available
vii.	**Suitability for crops/commodity**	:	Onion
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x.	**Contact Address**		Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**a. Type of Technology**	:	Post Harvest Gadget
	b. Technology developed	:	Mango Harvester
ii.	**Application/ Use**	:	To pluck mango fruits from the tree without fruit damage
iii.	**Description of Technology** : The gadget is a simple and maintenance free unit comprising of a metal ring with a fixed knife edge at one end for cutting the petiole of the fruit. Nylon net is fixed to the metal ring to hold the plucked fruits. The unit needs to be fixed to a long pole of suitable length to reach the fruits on the tree.		
iv.	**Input/raw material**	:	
	a) Overall dimension	:	37 x 24 x 2 cm
	b) Weight	:	0.40 kg
	c) Power	:	Manual
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	One labour
	g) Land	:	Not required
	f) Investment	:	Rs. 90/-
v.	**Output capacity**	:	750 fruits / h
vi.	**Unit cost (per machine)**	:	Rs. 90/-
vii.	**Suitability for crops/commodity**	:	Mango
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	Not applied
xi.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee / Manufacturer		M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
xii.	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**a. Type of Technology**	:	Post Harvest Gadget
	b. Technology developed	:	Sapota Harvester
ii.	**Application/ Use**	:	To pluck Sapota fruits from the tree without fruit damage
iii.	**Description of Technology** : The gadget is a simple and maintenance free unit comprising of a metal ring with a fixed knife edge at one end for cutting the petiole of the fruit. Nylon net is fixed to the metal ring to hold the plucked fruits. The unit needs to be fixed to a long pole of suitable length to reach the fruits on the tree. 		
iv.	**Input/raw material**	:	
	a) Overall dimension	:	35 x 17 x 3 cm
	b) Weight	:	0.35 kg
	c) Power	:	Manual
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	One labour
	g) Land	:	Not required
	f) Investment	:	Rs. 90/-
v.	**Output capacity**	:	-
vi.	**Unit cost (per machine)**	:	-
vii.	**Suitability for crops/commodity**	:	Sapota
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	Not applied
xi.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred		One
	(b)Selected Addresses of Licensee / Manufacturer		1. M/s Dollar Engineering Industries Pvt. Ltd. #3, Adjacent to BIS, Tumkur Road, 1st Stage, Peenya, Bangalore - 560 058, India.
xii.	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**a. Type of Technology**	:	Technology for RTS beverage from jackfruit
	b. Technology developed	:	Ready-to-Serve Beverage from Jackfruit
ii.	**Application/ Use**	:	Production of Ready-to-Serve jackfruit beverage, a new product to the market; New avenue for food processing industry; contributes towards enhancing the farm income of rural people.
iii.	**Description of Technology** : Well matured and ripe deseeded minimally processed jackfruit bulbs are mashed in a blender-mixer grinder to get pulp. Required quantity of pulp (12%), sugar (13%), citric acid (0.2%) are blended with boiling water (75–80 %) in a container and boiled for 15 minutes at 80-85°C. The contents are cooled and filtered through muslin cloth or filters. Potassium meta-bisulphate, the chemical preservative 100 mg per litre is added to the cooled, filtered juice. The juice is then filled into clean heat-sterilized glass bottles and sealed with cork using cork sealing machine. Cork sealed bottles are pasteurized in a water bath at 85–90°C for 20 minutes. The developed RTS beverage (13° Brix and 0.2% acidity) is ready to be served. The RTS beverage can be stored for 2 months under room temperature and 4 months under low temperature.		
iv.	**Input/raw material**	:	Minimally processed jackfruit deseeded bulbs, sugar, citric acid, potassium meta bi-sulphite (KMS)
	a) Overall dimension	:	N.A.
	b) Weight	:	N.A.
	c) Power	:	N.A.
	d) Machinery	:	Machinery required for pulp extraction, juice filtration, pasteurization of the bottles and cork sealing Machine
	e) Prime mover	:	
	f) Man power	:	N.A.
	g) Land	:	N.A.
	f) Investment	:	Depends on quantity of RTS bottles produced
v.	**Output capacity**	:	
vi.	**Unit cost (per machine)**	:	Approx. Rs 3/- per bottle of 200 ml
vii.	Suitability for crops/commodity	:	Jackfruit
viii.	Efficiency	:	-
ix.	Unit cost of operation	:	-
x.	**Patent obtained/applied**	:	Not applied
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred	:	Nil
	(b)Selected Addresses of Licensee / Manufacturer	:	Nil
xii.	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the of Technology**	:	Cardamom Dryer
ii.	**Application/ Use**	:	To dry freshly harvested cardamom capsules in cardamom plantations
iii.	**Description of Technology** : It is basically a convective dryer. The vertical drying chamber is made-up of wood with wooden drying trays / racks. Hot air generated with electrical heaters is pushed through the trays containing freshly harvested cardamom capsules from bottom of the dryer using an electrical blower. The exhaust is at the top for the moisture laden air. With this drier, it is possible to reduce the moisture content of fresh cardamom capsules from 90% to 12% in about 10 hours. 		
iv.	**Input/raw material**	:	Freshly harvested cardamom capsules
	a) Overall dimension	:	165 x 105 x 225 cm (including heat bank, air blower with motor)
	b) Weight	:	-
	c) Power	:	Electrical blower - 0.5 hp; Electrical heaters – 3 kW
	d) Machinery	:	Nil
	e) Prime mover	:	-
	f) Man power	:	One labour
	g) Land	:	Not required
	f) Investment	:	Rs. 30,000/-
v.	**Output capacity**	:	Dries 10 kg of fresh cardamom capsules
vi.	**Unit cost (per machine)**	:	Rs. 30,000
vii.	**Suitability for crops/commodity**	:	Cardamom
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x.	**Contact Address**	:	Research Engineer, AICRP on PHT University of Agricultural Sciences, J- Block, GKVK Campus, BANGALORE - 560 065 (Karnataka)

i.	**Name of the Technology**	:	Tubular aeration system for improved on-farm storage of potato
ii.	**Application/ Use**	:	The Tubular Aeration System is useful in reduction of storage losses during Kharif potato in Southern Karnataka (Mean temperature: max. 32°C & min. 15°C; Mean RH: Max. 89% & min. 42%; Average annual rainfall 893 mm). The physiological and rotting losses were reduced by 2.1% and 2.8% respectively when compared to traditional pit storage system over 2-3 months of storage.
iii.	**Description of Technology**: The tubular aeration system consists of a horizontal perforated duct with vertical tubular risers. The main duct is made up of 100 mm diameter PVC pipe with 13 mm diameter perforations at a pitch distance of 50 mm along the axial direction. The length of the pipe will be equal to length of the potato heap. The hole-to-hole distance in the lateral direction (along the circumference) is 50 mm. There are air vents (risers) at a distance of 1 m between them. The vents are 60 mm in diameter and 1.2 m long PVC pipes whose bottom ends are connected to the main horizontal aeration duct and the top ends emerge out of the potato heap to the atmosphere. The vents basically help the warm air get collected inside the main duct to go up to the atmosphere. The main duct is placed horizontally along the length of potato heap at the centre, 0.30 m above the bottom surface and the ends of the duct protrude slightly outside the heap by about 50 mm. A gentle slope of about 2^{o} to the horizontal is kept for the duct so that moisture, if any, that may condense, run down the slope of the duct and go out of the potato heap. The aeration system is designed in such a way that the main duct filled with warm air in the vicinity inside the potato heap goes out through air vents (risers) due to natural convection. The entire aeration system is placed inside the traditional potato heap or pit as explained earlier to reduce tuber losses during storage.		
iv.	**Input**	:	
	a) Raw material		PVC pipes required to make aeration system to store 1 tonne of potato tubers: 100 mm – 3 m length, 1 no.; 60 mm – 1.2 m, 2 nos
	b) Machinery/ equipment		
	Overall dimension	:	For 1 tonne storage, tuber heap length and width will be about 3.0 m and 1.5 m, respectively and the length can be increased to store more quantity of tubers.
	c) Investment	:	About Rs 600/- for new PVC pipes per tonne of tuber storage. The pipes can be reused for at least 10 years.
v.	**Output capacity**	:	-
vi.	**Unit cost**	:	Rs 600/t of potato storage
vii.	Suitability for crops/commodity	:	Potato
viii.	Efficiency	:	Reduction in physiological and rotting loss by 2.1% and 2.8% during storage (2-3 months) of potato tuber
ix.	Unit cost of operation	:	Depends on storage capacity.
x.	Contact address		Research Engineer, AICRP (PHT), University of Agricultural Sciences, GKVK, Bangalore – 560065 (Karnataka)

i	**Name of the Technology**	:	Multipurpose Poly house Solar Dryer
ii	**Application/ Use**	:	Drying of quality chillies- free from external contamination, unforeseen rains. Nursery raising and production of leafy vegetables can also be taken up in off season
iii	**Description of Technology** :  The dryer essentially consists of an arch type poly house to hold chillies on two different tiers. The tiers are made of wire mesh trays fitted to a frame assembled by nuts and bolts. 2.5 tons capacity poly house solar dryer having a size of 12 x 7.8 x 2.4 m (L x B x H), arch type model with a tray area of 1600 sft (147 m^2) has been developed. The whole frame structure is covered with a UV stabilized 150-gsm cross-laminated semi transparent polyethylene sheet. The poly sheet is provided with suitable ventilators both at the bottom and top to facilitate movement of air. Temperature of about 15-17°C higher than the ambient temperature was observed inside the dryer. Drying of hybrid such as BJ 304 can be completed in 6 to 7 days compared to 13-14 days in open yard sun drying (OYSD) method. The drying of LCA-334 variety was only 4 to 5 days in poly house when compared to 10 days in OYSD. The moisture was reduced from an initial value of 78-80% to 10% (w b). The color of the pods is much superior than that dried in the open yard method. The percentage white pods are only 2-3% in comparison to 8-9% in OYSD. Poly house can be used to raise nursery during July to October by replacing the poly sheet with 50% shade net and dismantling the trays.		
iv	**Input/raw material**	:	Chilli
	a) Overall dimension	:	12000 x 7800 x 2400 mm
	b) Weight	:	-
	c) Prime mover	:	-
	d) Power		One person
	e) Man power	:	-
	f) Land	:	-
	f) Investment	:	
vi	**Output capacity**	:	7 qtl. dry chillies / batch
vi	**Unit cost (per machine)**	:	Rs. 1,14,000-00
vii	**Suitability for crop/ commodity**	:	Chilli
viii	a) No. of Licensees	:	One
	b) Addresses of Licensees or Manufacturer	:	M/s. Arfa Agro Products, D.No: 25-11-31 G.T.Road, Guntur-4, Ph:0863-5534386 Mr kareemulla, 09849788786
ix	**Contact Address**	:	Research Engineer, AICRP on PHT Acharya N. G. Ranga Agricultural University, Bapatla-522101 (AP)

i	**Name of the Technology**	:	Mobile Stream Boiler for Turmeric
iii	**Application/ Use**	:	Improved Quality turmeric rhizomes with good colour, high curcumin, aroma and product free from microbial load, physical contamination. Blackening of the rhizomes can be avoided and subsequent drying time can be reduced significantly due to steam cooking in comparison to traditional method.
iv	**Description of Technology** : Turmeric steam boiler consists of four drums each having a capacity of 125 kg of turmeric rhizomes per batch, a water tank, diesel burner, boiler, feed pump and a control panel for regulating water, pressure, and temperature. All the components are fixed on a tractor trolley to move the equipment from field to field. The water gets heated with diesel burner and the steam with a pressure of 2 kgf/cm^2 is sent to the drums. At a time the steam can be supplied to two drums, it takes 7 to 10 minutes to boil the rhizomes and the valves are changed to divert the steam into next two drums. In this way one ton rhizomes can be cooked in an hour. 		
i.	**Input/raw material**	:	Raw Turmeric rhizomes
	a. Overall dimension	:	4500x1800x4500
	b. Weight	:	-
	c. Prime mover/ machine	:	1 hp for boiler feed pump, ¼ hp for diesel burner
	d. Man power	:	Four persons
	e. Land	:	-
	f. Investment	:	6 lakh
v	**Output capacity**	:	2 tons/ h (cooked rhizomes) 300 kg/ h (final dried produce)
vi	**Unit cost (per machine)**	:	Rs. 6 lakh
vii	**Suitability for crop/ commodity**	:	Turmeric
viii	**Efficiency**	:	100% (cooking efficiency)
ix	**Unit cost of operation**	:	Rs.0.92 /kg raw rhizomes
	a) No. of Licensees	:	02
	b) Addresses of Licensees or Manufacturer	:	1. Best Engg. Technologies, Plot No:69/A, H.No: 5-9-285/13, Rajiv Gandhi Nagar, Industrial Estate,Kukatpalli, Hyderabad-37 Ph:040-65908498 Srinivasarao: 09391057812/09440344335 2. South East Farm Equipment (P) Ltd Thrichi Main Road, Thammapatti P.O-6136113 Gangavalli Taluka, Salem, Tamilanadu
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Acharya N. G. Ranga Agricultural University, Bapatla-522101 (AP)

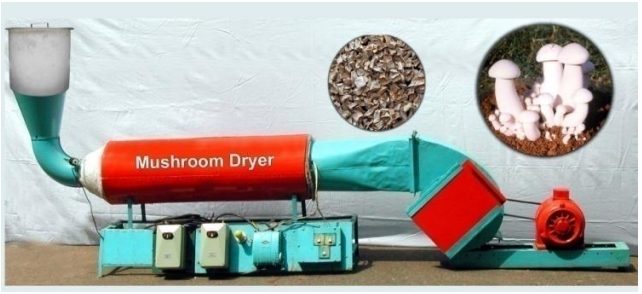
i	**Name of the Technology**	:	Barn Drying of Chillies
ii	**Application/ Use**	:	Drying of quality chillies, free from external contamination, protection from unforeseen rains
iii	**Description of Technology** : Ten to twelve quintals of ripe chillies can be loaded in the existing tobacco barns to dry chillies. The barn can be converted to dry chillies by small modifications such as providing GI trays on the existing tiers of the barn. Galvanized iron wire mesh trays of size 105x75x7.5 cm (LBH) are suitable to hold chillies on the existing tiers of the barn. About 100 to 120 trays are required to load chilli depending upon the size of the barn, initial moisture content and type of chilli. The output of the dried produce is about 3 quintals per batch. Drying time required to reduce moisture from 75 to 9%(w.b) varied depending upon whether the chilli is hybrid or variety. Hybrid chillies require about 50 hours to dry whereas the other varieties require about 40 hours. The temperature and ventilator operation regimes are important to get good quality uniform dried produce. The operating regimes are optimized to dry both hybrids and varieties of chillies.		
iv	**Input/raw material**	:	Ripe Chilli
	g) Overall dimension	:	6000x6000x7500
	h) Weight	:	-
	i) Prime mover/ machine	:	Existing tobacco barns
	j) Man power	:	One person
	k) Land	:	-
	f) Investment	:	-
v	**Output capacity**	:	300 kg of dried chilli / batch
vi	**Unit cost (per machine)**	:	Rs.14,000/-
vii	**Suitability for crop/ commodity**	:	Chilli
x	**Patent obtained/applied**	:	Applied
xi	**Commercialization status**	:	ITC has implemented in 5 barns
	a) No. of Licensees	:	
	b) Addresses of Licensees / Manufacturer and contact person	:	M/s. Arfa Agro Products, D.No: 25-11-31 G.T.Road, Guntur-4, Ph:0863-5534386
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Acharya N.G. Ranga Agricultural University, Bapatla-522101 (AP)

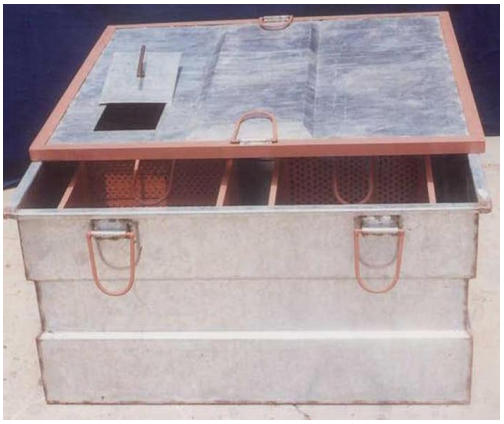
i.	**Name of the Technology**	:	Turmeric/Ginger Washer
ii.	**Application/ Use**	:	Washing of turmeric/ginger
iii.	**Description of Technology** : Vertical cylindrical chamber having rotating base and provision of water spray through a perforated pipe fitted at the inside of the chamber. Description ? 		
iv.	**Input/raw material**	:	M.S.Angle, M.S.Flat,G.P.Sheet
	a) Overall dimension	:	1 h.p. Single Phase A.C.Motor
	b) Weight	:	
	c) Prime mover	:	1 HP
	d) Man power	:	One
	e) Land	:	
	f) Investment	:	Rs. 15,000/-
v.	**Output capacity**	:	3 q/h
vi.	**Unit cost of operation**	:	Rs. 0.10 per kg
vii.	**Suitability for crops/commodity**	:	Ginger, Turmeric
viii.	**Efficiency**	:	90%
ix.	**Unit cost (per machine)**	:	Rs. 20,000/-
x.	**Patent obtained/applied**	:	Nil
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b) Selected Addresses of Licensee / Manufacturer		-
xii.	**Contact Address**	:	Research Engineer, AICRP on Post harvest Technology College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar- 751 003

i.	**Name of the Technology**	:	Dehumidified Air Dryer
ii.	**Application/ Use**	:	Drying of high value fruits and vegetables
iii.	**Description of Technology** : Samples can be dried at low temperature and low humidity condition to maintain the quality. The dryer is associated with heat pump to remove the moisture from exhaust air at the evaporator surface and recirculating the air to the dryer after heating to the desired level at the condenser. 		
iv.	**Input/raw material**	:	M.S.Angle, M.S.Flat, G.P.sheet, Thermocoal Sheet
	a) Overall dimension	:	Compressor, Condensor, Evaporator, Heaters etc
	b) Weight	:	1kW
	c) Prime mover	:	
	d) Man power	:	One
	e) Land	:	-
	f) Investment	:	Rs. 1,10,000/-
v.	**Output capacity**	:	20kg/batch
vi.	**Unit cost (per machine)**	:	Rs. 1,50,000/-
vii.	**Suitability for crops/commodity**	:	Fruits, vegetables, spices, aromatic and medicinal plants
viii.	**Efficiency**	:	90%
ix.	**Unit cost of operation**	:	Rs.2 to3/- per kg (depending on product)
x.	**Patent obtained/applied**	:	Patent filed
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b) Selected Addresses of Licensee / Manufacturer		-
xii.	**Contact Address**	:	Research Engineer, AICRP on Post harvest Technology College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar- 751 003

i.	**a. Type of Technology**	:	Equipment
	b. Technology developed	:	Bael Slicer
ii.	**Application/ Use**	:	To slice the raw bael fruit for further processing of it.
iii.	**Description of Technology** : The raw bael is fixed within a tunnel and a motor operated circular saw slices the bael fruit. The spring and lever action shifts the fruit to the bottom of the saw for cutting at a desired thickness. 		
iv.	**Input/raw material**	:	M.S.Angle, Flats, Spring, Circular Saw
	a) Overall dimension	:	A 0.25 hp motor
	b) Weight	:	-
	c) Prime mover	:	-
	d) Man power		-
	e) Land	:	-
	f) Investment	:	-
v.	**Output capacity**	:	20kg/batch
vi.	**Unit cost (per machine)**	:	Rs 12,000/-
vii.	**Suitability for crops/commodity**	:	Bael (stone apple)
viii.	**Efficiency**	:	98%
ix.	**Unit cost of operation**	:	Rs. 0.70 per kg
x.	**Patent obtained/applied**	:	Patent filed
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b) Selected Addresses of Licensee / Manufacturer		Nil
xii.	**Contact Address**	:	Research Engineer, AICRP on Post harvest Technology College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar- 751 003

i.	**a. Type of Technology**	:	Equipment:
	b. Technology developed	:	Hand Operated Low Cost Aloe-Vera Gel Extractor
ii.	**Application/ Use**	:	To extract aloe-vera gel for further processing
iii.	**Description of Technology** : The unit consists of one pair of wooden rollers with S.S. lining. Each roller is fixed tightly with the help of bush and frame arrangement on both the sides. The rollers are tapered continuously from one end to other with a slope in order to have varying clearance to allow the leaves of varying thickness to be squeezed properly. The rollers are rotated with the help of a handle attached to the shaft. The bottom roller moves in clockwise direction and 2 numbers of wooden rollers while upper roller in anticlockwise direction. The whole assembly is fixed on a base frame which supports the unit during operation. 		
iv.	**Input/raw material**	:	M.S.Angle, flat, M.S.Sheet
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Prime mover	:	-
	d) Man power	:	one
	e) Land	:	-
	f) Investment	:	-
v.	**Output capacity**	:	20 kg/ hour
vi.	**Unit cost (per machine)**	:	Rs 5,000/-
vii.	**Suitability for crops/commodity**	:	Aloe-vera leaves
viii.	**Efficiency**	:	95%
ix.	**Unit cost of operation**	:	Rs. 0.60 per kg
x.	**Patent obtained/applied**	:	Nil
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred	:	Nil
	(b) Selected Addresses of Licensee / Manufacturer	:	Nil
xii.	**Contact Address**	:	Research Engineer, AICRP on Post harvest Technology College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar- 751 003

i.	**a. Type of Technology**	:	Equipment
	b. Technology developed	:	Fluidized Bed Dryer for Mushroom
ii.	**Application/ Use**	:	To dry the oyster and milky mushroom
iii.	**Description of Technology** : The fluidized bed dryer consists of a centrifugal blower, holding bin, heating coils, motor and thermostat control. The blower is run by a 3 hp, three phase motor. The delivery of the blower is connected to the heater drum, provided four numbers of fin type electrical heaters of each 500 watts and controlled through a stem type thermostat. At the other end of the heater drum, the drying chamber is placed. Hot air of 50 to 90ºC temperature at a flow rate of 9 to 32 m^3 / minute can be obtained in this dryer. The whole assembly is placed on a suitable frame made of mild steel. 		
iv.	**Input/raw material**	:	Milky/ Button Mushroom
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Prime mover	:	-
	d) Power		3 hp electric motor; 2000 W for heaters
	e) Man power	:	1 person
	f) Land	:	Nil
	f) Investment	:	Nil
v.	**Output capacity**	:	6 kg/batch
vi.	**Unit cost (per machine)**	:	Rs.40, 000/-
	Suitability for crops/commodity	:	Mushroom
vii.	**Efficiency**	:	-
viii.	**Unit cost of operation**	:	Rs.50/kg of dry mushroom
ix.	**Patent obtained/applied**	:	No
x.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred		5 Nos. Farmer –cum-Processor/ Entrepreneur
xi.	(b)Selected Addresses of Licensee or Manufacturer		1. M/s. Valampuri Industries, New Thillai Nagar, Behind Bimetal Bearings, PN Pudur, Coimbatore 2. M/s. AG Industries, 1/460, Balaji Complex, Thoppampati Pirivu, Mettupalayam Road, Coimbatore - 641 031 3. M/s. SSM Machinery and Fabrication 43, NBC Nagar, G.N Mill (post), Coimbatore -641 029 M/s. Universal Agro Industries, S.F.No.374/5, Near Bimetal Bearings, Maruthamalai Road, PN Pudur, Cimbatore - 641 041
xii.	**Contact Address**	:	Professor and Head, Agricultural Machinery Research Centre, Tamil Nadu Agricultural University, Coimbatore - 641 003. Phone: 0422- 6611272; FAX: 0422-6611455; e-mail: processing@tnau.ac.in

i.	**a. Type of Technology**	:	Equipment
	b. Technology developed	:	Improved Farm Level Turmeric Boiler
ii.	**Application/ Use**	:	To boil the turmeric rhizomes under hygienic condition
iii.	**Description of Technology** : It consists of one rectangular, larger size, solid outer container, made out of 20 SWG thick galvanized iron sheet to hold water and two to three inner containers to hold rhizomes. Washed rhizomes are loaded in the inner cylinder and required quantity of water is added in the outer cylinder. Rhizomes are boiled by the steam liberated from the boiling water. Sodium bicarbonate is added in the boiling water to ad colour. The inside containers which hold turmeric can easily be taken out without wasting boiling water, which can be reused and thereby fuel requirement can be considerably reduced. 		
iv.	**Input/raw material**	:	Turmeric Rhizomes
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Plant and Machinery	:	Turmeric boiler
	d) Prime mover	:	-
	e) Power		10 kg. of fire wood / batch
	f) Man power	:	Three person
	g) Land	:	Nil
	f) Investment	:	Rs.14, 000
v.	**Output capacity**	:	225 kg per batch
vi.	**Unit cost (per machine)**	:	Rs.14, 000
vii.	Suitability for crops/commodity	:	Turmeric
	Efficiency	:	-
viii.	Unit cost of operation	:	Rs.6/h
ix.	**Patent obtained/applied**	:	No
x.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred	:	5 Farmer –cum-Processor/ Entrepreneur
	(b)Selected Addresses of Licensee /Manufacturer	:	1. M/s. Valampuri Industries, New Thillai Nagar, Behind Bimetal Bearings, PN Pudur, Coimbatore – 641 041 2. M/s. AG Industries, 1/460, Balaji Complex, Thoppampati Pirivu, Mettupalayam Road, Coimbatore - 641 031
xi.	**Contact Address**	:	Professor and Head, Agricultural Machinery Research Centre, Tamil Nadu Agricultural University, Coimbatore - 641 003. Phone: 0422- 6611272; FAX: 0422-6611455; e-mail: processing@tnau.ac.in

ii.	**a. Type of Technology**	:	Equipment
	b. Technology developed	:	Aonla Pricking Machine (Manually operated)
iii.	**Application/ Use**	:	It has application in pricking of aonlas for the preparation of murabba (preserves)
iv.	**Description of Technology** : Aonla fruits are highly perishable in nature, and most difficult to store or transport over long distances. Still in industry, traditional method of hand tools are being used. This existing method of pricking is tiresome, time consuming and costly. Preparation of aonla preserve (Murabba) is very common practice to use and enhance shelf life. For making the preserve (Murabba), the pricking of aonla fruits is carried out. This is operated by pushing the handle manually. 		
v.	**Input/raw material**	:	Aonla
	a) Overall dimension	:	400 mm x 220 mm x 400 mm
	b) Machinery	:	Aonla Pricking Machine
	c) Weight	:	15 kg
	d) Prime mover	:	NA
	e) Power		Manual
	f) Man power	:	One
	g) Land	:	NA
	h) Investment	:	Rs. 10000/-
	i) Operational efficiency	:	90%
v	**Output capacity**	:	15-20 kg/h
vi	**Unit cost (per machine)**	:	Rs. 5000- 6000
vii	Suitability for crops/commodity	:	Aonla
viii	Efficiency	:	Pricking efficiency 95% with 2mm thick needles
ix	Unit cost of operation	:	Rs. 1.50 (when the cost of labour is Rs. 150 per day)
x	**Patent obtained/applied**	:	Yes
xi	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred	:	3
	(b)Selected Addresses of Licensee / Manufacturer and contact address	:	1. M/s Swarojgar Yojna Kendra (Regd.), Hisar 2. M/s North Eastern Industrial and Technical Consultancy Org. Ltd., Guahati) 3. M/s Moti Engg. Works, Plot No. 42-43, Gali No. 1, Ganesh Nagar, Industrial Area, Hisar
xii	Contact Address	:	Sr. Research Engineer Deptt of Agril. Processing and Energy College of Agricultural Engineering & Technology CCS Haryana Agricultural University Hisar -125004

i.	**c. Type of Technology**	:	Equipment
	d. Technology developed	:	Continuous Carrot Washer (Bahabalpur)
ii.	**Application/ Use**	:	It has application in washing of carrots
iii.	**Description of Technology** : Carrots are removed from earth and hence not safe for consumption. For its consumption the sellers clean/ wash carrots with the help of this machine. 		
iv.	**Input/raw material**	:	Carrots
	a) Overall dimension	:	3000 mm x 1200 mm x 1200 mm
	b) Machinery	:	Washing machine
	c) Weight	:	500 kg
	d) Prime mover	:	Diesel Engine
	e) Power		5 h.p.
	f) Man power	:	Four
	g) Land	:	NA
	h) Investment	:	Rs. 1,00,000/-
	i) Operational efficiency	:	95%
v	**Output capacity**	:	1,000 Kg/h
vi	**Unit cost (per machine)**	:	Rs. 80,000/-
vii	Suitability for crops/commodity	:	Carrots
viii	Efficiency	:	95%
ix	Unit cost of operation	:	Rs. 0.30 (when the cost of labour is Rs. 150 per day)-
x	**Patent obtained/applied**	:	Nil
xi	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred	:	One
	(b)Selected Addresses of Licensee / Manufacturer and contact address	:	M/s Sanjeev Jangra Engg. Works (c/o Mistry Krishan Kumar Jangra) village Badopatti, Bus stand Bahbalpur (Hisar) Haryana
xii	Contact Address	:	Sr. Research Engineer Deptt of Agril. Processing and Energy College of Agricultural Engineering & Technology CCS Haryana Agricultural University Hisar -125004

i	**Name of the Technology**	:	HAU Aonla pricking machine (power operated)
ii	**Application/ Use**	:	Pricking the aonlas for the preparation of murabba
iii	**Description of Technology :** Aonla pricking machine is developed to prepare murabba. 		
iv	**Input/raw material**	:	
	h. Overall dimension (L x B x H mm)	:	135 x 50 x 154 cm
	i. Weight	:	90 kg
	j. Prime mover	:	Electric motor
	k. Power (hp)	:	1 hp
	l. Man power	:	1 person
	m. Land	:	270 x 100 x 308 cm
	n. Investment	:	Rs. 60,000/-
v	**Output capacity**	:	80 kg/hr
vi	**Unit cost (per machine)**	:	Rs. 60,000/-
vii	**Suitability for crop/ commodity**	:	Aonla (gooseberries)/
viii	**Efficiency**	:	90%
ix	**Unit cost of operation**	:	Rs. 0.10 per kilogram
x	**Patent obtained/applied**	:	yes
xi	**Commercialization status**	:	
	a) No. of Licensees	:	one
	b) Addresses of Licensees or Manufacturer	:	NRDC
xii	Contact Address	:	http://www.nrdcindia.com/english/

i	**Name of Technology**	:	Pineapple Harvester
ii	**Application / Use**	:	Harvesting pineapple in hilly slope areas of NEH
iii	**Description of Technology:**  A manually operated pineapple harvester is fabricated with mild steel rod of 30 mm diameter and 1500 mm length. A sharp cutting blade of 125 mm diameter made of mild steel is attached at the end of the main frame which is used to cut the stalk of the pineapple. Rotation of the cutting blade (125mm) is obtained through a transmission from a 1.5 hp petrol engine through a spiral rotating shaft. When the operator pulls the lever of the cranking wheel of engine mounted at the back of the operator which is connected to the cutting blade, the blade starts rotating and cuts the stalk just beneath the pineapple. The cut pineapple is held with the finger provide just above the cutting blade. The detached/cut pineapple will be shifted to a basket kept on the ground. A single operator is required for cutting the pineapple and putting it in the basket as well. The total weight of the machine is 9 kgs. The cutting blade can be sharpened or replaced when damaged.		
iv	**Input / raw material**	:	
	a. Overall dimension (L×B×H mm)	:	1500(L) x 130 (B)
	b. Weight	:	9 kgs.
	c. Prime mover	:	Petrol engine
	d. Power (hp)	:	1.5 hp
	e. Man power	:	Single operator
	f. Land	:	Hilly terrains/terrace land of NEH
	g. Investment	:	Rs.10,000/-
V	**Output capacity**		Field capacity is in the range of 250 to 280 harvested fruits per hour
Vi	**Unit cost (per machine)**		Rs.10,000/-
Vii	**Suitability for crop / commodity**		Suitable for **pineapple** harvesting a. This tool replaces the conventional chopping method which easily damages pineapples and injures the harvester. b. The conventional method is not only time consuming and laborious but also causes backache as harvesters have to stoop while harvesting. c. Harvesters will not suffer from sharp pricks of the pines or back pain because they need not bend to harvest.
viii	**Efficiency**		70.44% (actual capacity =0.048 ha/day & theoretical cap.=0.068 ha/day) and fruit damage <5%
ix	**Unit cost of operation**	:	Rs.1.5 per harvested fruit
X	**Patent obtained / applied**	:	NIL
Xi	**Commercialization status**	:	The developed pineapple harvester is well designed based on the field condition of hilly terrain region of NE states. It is now ready for commercialization.
	a) No of licensees	:	NA
	b) Addresses of Licensees or Manufacturers	:	NA
xi	**Contact Address**	:	P.I., AICRP on PHET, Directorate of Research, Central Agricultural University, Imphal-795004.

i.	**Name of the Technology**	:	Water Chest Nut Decorticator (Manual)
ii.	**Application/ Use**	:	The kernel of water chestnut contains 60-68% carbohydrates, 8-12% proteins, 2-6% sugar, 3-4% minerals and less than 1% fat. In Indian villages, it is generally used in breakfast. It has significant importance in manufacturing of starch and alcohol and therefore, this valuable crop has potential and needs to be exploited
iii.	**Description of Technology :** At present water chest nut decortication is done manually by the growers which is slow, laborious and tiring one. Keeping in view the problems of the water chestnut growers, a manually operated water chestnut decorticator was developed. Hand operated water chestnut decorticator consists of a hopper and an oscillating shoe. Hopper is made from MS angle iron (25mm x 25mm x 3mm) having a sieve (slot of 44mm x 15mm size) in the bottom and two MS sheets on the sides. Oscillating sector consists of MS flat having three wooden rollers on the top which acts as handle and three cast iron shoes mounted at the bottom. The decortication of water chestnuts involves cracking and rubbing under pressure in between screen and the shoe. The screen is stationary whereas the shoe rotates. While rotating the shoe, the water chestnuts get cracked due to the frictional and rubbing action between the oscillating sector and the perforated concave sieve. Decorticated kernels along with husk pass through the screen and collects at the bottom of the unit For this study, looking toward the size of water chestnuts, the screen was developed so that only dehusked kernels along with husk may pass through the screen. To avoid kernel damage, developed decorticator was operated at about 35 OPM. The capacity of water chestnut decorticator is determined as 60 kg/hr with about 99% efficiency. The cost of the machine is computed as Rs. 2500/-. The machine has been developed and can be purchased from AICRP on PHT, College of Agricultural Engineering, Jabalpur.		
iv.	**Input/raw material**	:	
	a) Overall dimension (L × B × H mm)	:	250 x 500 x 1100 mm
	b) Weight	:	26 kg.
	c) Prime mover	:	-
	d) Power (HP)	:	Manual
	e) Man power	:	1+1
	f) Land	:	10 x 10 ft.
	g) Investment		Rs. 5000.00 + Operational Expenditure.
v.	**Output capacity**	:	60 kg. per hour.
vi.	**Unit cost (per machine)**		Rs. 2500.00
vii.	**Suitability for crop/ commodity**		Water chest Nuts
viii.	**Efficiency**		99%.
ix.	**Unit cost of operation**		Rs. 40.00 per hour.
x.	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	1
xi.	**Contact Address**	**:**	Research Engineer, AICRP on PHT College of Agricultural Engineering, Jawaharlal Nehru Krishi Viswa Vidyalaya, Jabalpur - 482 004 (Madhya Pradesh)

i.	**Name of the Technology**	:	Fruit Grader(Manual)
ii.	**Application/ Use**	:	Sorting and Grading of Fruits
iii.	**Description of Technology :** The main component of multi fruit grader includes; feed trough, intermediate hopper, separating trough collecting platform and mainframe. Multi-fruit grader is designed on the principle of size basis and it is tested for guava, mosambi and orange. The multi-fruit grader is also an adjustable multi-fruit grader, which can be adjusted for a variety of spherical and oval shaped fruits. Multi-fruit grader can separate as small as 50mm size and as large as 130 mm fruits. The moisture content of fresh fruits was determined as 78% in guava, 85% in mosambi and 89% in orange. Fruits were fed into the feed trough in batches. The position of baffles was decided on the basis of size of fruit and their rolling on that surface. Fruits were conveyed from feed trough to separating trough intermediate hopper, which is attached to the main frame. When the fruits were dropped in the separating trough they roll along with the length of separation trough due to the inclination. Separating trough is divided into four sections (i.e. 0-500, 500-1000, 1000-1500 and 1500-2000mm,) where fruit were separated into four grades (i.e. A: 50-70, B: 70-90, C: 90-110 and D: 110-130 mm.) Smaller fruits were separated out first while larger fruits rolled further and dropped according to their size in the larger opening provided for the purpose. Graded fruits were collected in the collecting boxes placed on collecting platform. Grading took place due movement under gravity over the variable opening slit and there is no need of any electrical or mechanical power. The capacity for multi fruit grader is 93%, 95% and 90% for mosambi, guava and orange respectively. The cost of the grader is Rs.15,000/- The machine has been developed by AICRP on PHT, College of Agricultural Engineering, Jabalpur.		
iv.	**Input/raw material**	:	Fruits & Vegetables like Citrus fruits, Potatoes, Onion etc
	a) Overall dimension (L × B × H mm)	:	2100 x 300 x 1650 mm
	b) Weight	:	63 kg.
	c) Prime mover	:	Manual
	d) Power (HP)	:	Not required
	e) Man power	:	1
	f) Land	:	12 x 10 ft.
	g) Investment		Rs. 10,000.00 + Operational Expenditure
v.	**Output capacity**	:	1200 kg per hour
vi.	**Unit cost (per machine)**		Rs. 10,000.00
vii.	**Suitability for crop/ commodity**		Fruits & Vegetables like Citrus fruits, Potatoes, Onion etc.
viii.	**Efficiency**		90 – 95%
ix.	**Unit cost of operation**		Rs. 40 per hour.
x.	**Patent obtained/applied**	:	Not yet.
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	1
	b) Addresses of Licensees or Manufacturer	:	-
xii.	**Contact Address**	**:**	Research Engineer, AICRP on PHT College of Agricultural Engineering, Jawaharlal Nehru Krishi Viswa Vidyalaya, Jabalpur - 482 004 (Madhya Pradesh)

i.			
	Name of the Technology	:	Power Operated Pea Shelling Machine
ii.	**Application/ Use**	:	Shelling of Green Peas.
iii.	**Description of Technology :** Manual removal of kernels form green pea pods take a lot of time (3-3.5 kg of green peas in one hour) and it is laborious and tiring job. Therefore, it was felt necessary to develop a suitable power operated green pea pod sheller to meet the requirement of the pea growers. The sheller consisted of feeding hopper, roller, concave, frame and a 0.25 hp electric motor. The roller is fixed on a central shaft supported on two bearings. The roller rotates in the concave. The roller and concave assembly is mounted on a frame. The concave consists of galvanized iron sheet punched with holes of 16 mm dia. at a center to centre distance of 26 mm. The pods were fed through the hopper fro shelling operation. Green pea pods were shelled by uniform feeding at constant speed. The feed rate was controlled by the delivery leaver and clearance was adjusted slightly less than the pod size. Pods with higher moisture content were shelled prior to the pods having lower moisture content. The pea pods get shelled due to friction between the roller, whose surface is abrasive made of punched sheet and concave and also due to impact developed during the rotation of roller. After completion of peeling operation, the different fractions of the shelled sample like whole kernels, damaged kernels and unshelled pods were collected cautiously. The capacity of the power operated pea shelling machine is 60 kg/hr with about 98% efficiency. The cost of the machine is computed as Rs. 20,000/- The machine has been developed by AICRP on PHT, College of Agricultural Engineering, Jabalpur.		
iv.	**Input/raw material**	:	Green Pea Pods
	a) Overall dimension (L × B × H mm)	:	1040 x 380 x 1240 mm.
	b) Weight	:	105 kg.
	c) Prime mover	:	Electric Motor
	d) Power (HP)	:	0.5 hp.
	e) Man power	:	1
	f) Land	:	12 x 10 ft.
	g) Investment		Rs. 15,000.00 + Operational Expenditure.
v.	**Output capacity**	:	60 kg per hour.
vi.	**Unit cost (per machine)**		Rs. 15000.00
vii.	**Suitability for crop/ commodity**		Green Peas
viii.	**Efficiency**		98%
ix.	**Unit cost of operation**		Rs. 40 per hour.
x.	**Patent obtained/applied**	:	Not yet.
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	1
	b) Addresses of Licensees or Manufacturer	:	-
xii.	**Contact Address**	**:**	Research Engineer, AICRP on PHT College of Agricultural Engineering, Jawaharlal Nehru Krishi Viswa Vidyalaya, JABALPUR - 482 004 (Madhya Pradesh)

i.	**Name of the Technology**	:	Power Operated Green Bengal Gram Pod Stripping Machine
ii.	**Application/ Use**	:	Shelling of Green Peas
iii.	**Description of Technology :**  Fresh Bengal gram is an intermediate product and is consumed as a vegetable in the northern states of the country. A Bengal gram stripper was developed at Jabalpur centre of AICRP on Post Harvest Technology by using spike tooth type stripping roller. The length of the roller was 300mm and height of the spikes was kept as 50mm. The spikes were fastened on mild steel flat of 25 mm x 4mm at a distance of 15mm. Each such flat was mounted on two plates of 110mm diameter. A bunch of green Bengal gram plants is held in front of the stripping machine in such a way that pods and leaves are projected towards the stripping loop and on rotation of the stripping cylinder, the pods are detached from the plants. In this way pods from entire plants can stripped in two or three bunches. The detached pods along with broken twigs and leaves while falling pass through a separating trough fitted on the lower part of the machine. Here the leaves and twigs are separated from the pods and pods can be collected separately. To calculate the stripping efficiency, weight of un-stripped pods, weight of stripped pods, weight of stem, and weight of leaves were recorded. Considering the effect of plant's moisture content and speed of machine, the best efficiency of the machine was obtained as 98.82% at 350 rpm of the machine and 61.41% moisture content (wb). At this point the capacity of the machine was computed as 100 kg/hr. The cost of machine is calculated as Rs. 25,000/-. The machine has been developed by AICRP on PHT, College of Agricultural Engineering, Jabalpur		
iv.	**Input/raw material**	:	Green Pea Pods
	a) Overall dimension (L × B × H mm)	:	1040 x 380 x 1240 mm
	b) Weight	:	105 kg.
	c) Prime mover	:	Electric Motor
	d) Power (HP)	:	0.5 hp.
	e) Man power	:	1
	f) Land	:	12 x 10 ft.
	g) Investment		Rs. 15,000.00 + Operational Expenditure.
v.	**Output capacity**	:	60 kg per hour.
vi.	**Unit cost (per machine)**		Rs. 15000.00
vii.	**Suitability for crop/ commodity**		Green Peas
viii.	**Efficiency**		98%
ix.	**Unit cost of operation**		Rs. 40 per hour
x.	**Patent obtained/applied**	:	Not yet.
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	1
	b) Addresses of Licensees or Manufacturer	:	-
xii.	**Contact Address**	**:**	Research Engineer, AICRP on PHT College of Agricultural Engineering, Jawaharlal Nehru Krishi Viswa Vidyalaya, Jabalpur - 482 004 (Madhya Pradesh)

i	**Name of the Technology**	:	Ber Grader
ii	**Application/ Use**	:	Grading of ber
iii	**Description of Technology :** Manually operated ber grader is simple in design, easy in operation and low cost for grading of mixed lot others into three sizes i.e. > 35mm to 25mm and < 25mm has a capacity of 500-600 kg/h. The screen area is 0.48m^2. The screens are provided with rubber sheet of 3 mm to avoid bruising of ber. There is a provision for change in angle of Screens (top 0-15^o, middle: 0-20 ^{o} and Bottom 5 ^{o} slope) and for collection of graded material from each screens. The oscillation motion is provided to the two screens through single step V-belt arrangement. The complete unit is mounted on an angle iron frame and provided with flywheel with handle for operating the machine.		
iv	**Input/raw material**	:	
	l) Overall dimension (L x B x H mm)	:	-
	m) Weight	:	-
	n) Prime mover	:	-
	o) Power (hp)	:	N.A.
	p) Man power	:	One
	q) Land	:	-
	r) Investment		-
v	**Output capacity**	:	500-600 kg/ h
vi	**Unit cost (per machine)**		Rs.10,000/-
vii	**Suitability for crop/ commodity**	:	Ber
viii	**Efficiency**	:	
ix	**Unit cost of operation**		-
x	**Patent obtained/applied**	:	No
xi	**Commercialization status**	:	Transferred to Farmers
	a) No. of Licensees	:	Nil
	b) Addresses of Licensees or Manufacturer	:	Nil
xii		:	Director, Central Arid Zone Research Institute Jodhpur - 342003 (Rajasthan)

i.	**Name of the Technology**	:	Cleaner-cum-Grader for Cumin
ii.	**Application/ Use**	:	Cleaning and grading of cumin seed and can be used for other seeds just by changing the sieves.
iii.	**Description of Technology** : The reciprocating type cumin cleaner cum grader consits of feed hopper, sieve box, blower and power transmission and drive unit and frame. Description?		
iv.	**Input/raw material**	:	Cumin seed
	a) Overall dimension	:	1210 x 1000 x 1000 mm
	b) Weight	:	-
	c) Prime mover/ Plant & Machinery	:	-
	d) Man power	:	2
	e) Power	:	1 HP (0.746 Kw), Single phase
	f) Land	:	
	g) Investment	:	Rs. 35,000 + Material cost
v.	**Output capacity**	:	50 kg / hour
vi.	**Unit cost (per machine)**	:	Rs. 35,000
vii.	**Suitability for crops/commodity**	:	Cumin
viii.	**Efficiency**	:	-
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	No
xi.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred	:	2
	(b) Selected Addresses of Licensee/Manufacturer	:	1. Shri Tadka Pipliya Seva Sahkari Mandli Limited Tadka Pipliya ,Taluka – Bhesan, Distt. Junagadh, Gujarat 2. M/s. Emerald Aqua Private Limited, Village Naliya Mandvi (Diu – Delwada – Una road) P. O. Delwada – 362510 (Taluka – Una, Gujarat) 3. Research Engineer, AICRP on PHT Rajasthan Agricultural University, Durgapura, Jaipur (Rajasthan)
xii	Contact Address		Research Engineer, AICRP on PHT College of Agricultural Engineering, Junagadh Agricultural University, Junagadh - 362 001 (Gujarat)

i.	**Name of the Technology**	:	Development of Shell Fired Copra Dryer
ii	**Application/ Use**	:	For production of quality copra for coconut oil extraction
iii	**Description of Technology :** A shell fired copra dryer was designed and developed to dry coconut in 24 h which works on indirect heating and natural convection principles using coconut shell as fuel. The capacity of the dryer developed was 1000 nuts per batch. The drying air temperature in the drying chamber was 80 ^{0}C. The unique burner designed generated heat for 5 hours without tending and the heat is retained for one more hour. No electrical energy is used in this dryer making it farmer friendly. Once the fuel is charged it produces heat for 6 hours thereby allowing the farmer to do other useful work as compared to other dryers where in fuel is loaded once in 15-20 minutes. Smoke does not come into contact with the copra; hence the copra produced is of good quality. About 100 grams of shell charcoal is also produced during the final phase of heating.		
iv	**Input/raw material**	:	
	s) Overall dimension (L x B x H mm)	:	22500x1500x15000
	t) Weight	:	125kg
	u) Prime mover	:	NA
	v) Power (hp)	:	NA
	w) Man power	:	One
	x) Land	:	100 sqm
	y) Investment		75000
v	**Output capacity**	:	1000 Nuts / batch
vi	**Unit cost (per machine)**	:	45000
vii	**Suitability for crop/ commodity**	:	Coconut and Arecanut
viii	**Efficiency**	:	24.48% (Thermal)
ix	**Unit cost of operation**	:	0.90/ nut
x	**Patent obtained/applied**	:	Applied
xi	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	30
	b) Addresses of Licensees or Manufacturer	:	Die Tech Industries, Industrial area, Vidyanagar Kasaragod, Kerala-671121
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute Kasargod - 671124 (Kerala)

i.	**Name of the Technology**	:	Tender Coconut Punch and Cutter
ii	**Application/ Use**	:	For making a hole in tender coconut and for cutting it in to two halves
iii	**Description of Technology :** A simple tender nut punch has been developed. It mainly consists of a square base made of MS angle of 40 cm length. The tender nut is placed on the nut holder which is a circular and hollow in shape with a diameter of 10 cm. The tender nut can be placed on the nut holder and by operating the lever mechanism a hole of 12mm diameter is made in just 4-5 seconds. A straw is put in the hole and one can drink the nut water. A simple Tender Coconut Cutter was developed. It mainly consists of a wooden base of 50 cm length, a stand, a knife and a hand lever. The stand is mounted on the base. The cutting blade is mounted concentric to the stand and retained at a height of 15-20 cm.  		
iv	**Input/raw material**	:	
	z) Overall dimension (L x B x H mm)	:	5000x1500x1500
	aa) Weight	:	15kg
	bb) Prime mover	:	NA
	cc) Power (hp)	:	NA
	dd) Man power	:	One
	ee) Land	:	9sqm
	ff) Investment		15000
v	**Output capacity**	:	20 nuts/ h
vi	**Unit cost (per machine)**		12500
vii	**Suitability for crop/ commodity**		Coconut
viii	**Efficiency**		20 nuts/ h (Efficiency has to be in percentage)
ix	**Unit cost of operation**		0.15/nut
x	**Patent obtained/applied**	:	No
xi	**Commercialization status**	:	Ready for commercialization
	a) No. of Licensees	:	2
	b) Addresses of Licensees or Manufacturer	:	Die Tech Industries, Industrial area, Vidyanagar Kasaragod, Kerala-671121
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute Kasargod - 671124 (Kerala)

i	**Name of the Technology**	:	Coconut De-Shelling Machine
ii	**Application/ Use**	:	For separating coconut shell and kernel after partial drying
iii	**Description of Technology :** Traditionally after partial drying of split coconut, the kernel and copra is separated using a traditional wooden mallet by taking the individual cups in hand. To overcome this problem, a power operated coconut de-shelling machine was designed and developed. The capacity of the machine was 400 half cups per batch. The optimum average moisture content for maximum de-shelling efficiency (92.16 %) was 35 % d.b. The optimum speed of the de-shelling machine is 10 RPM and the time taken for de-shelling was 4 minutes per batch.		
iv	**Input/raw material**	:	
	a. Overall dimension (L x B x H mm)	:	5000x1500x1500
	b. Weight	:	15kg
	c. Prime mover	:	NA
	d. Power (hp)	:	NA
	e. Man power	:	One
	f. Land	:	9 sq m
	g. Investment		Rs. 150000/-
v	**Output capacity**	:	5000 nuts/ h
vi	**Unit cost (per machine)**		Rs 50000/-
vii	**Suitability for crop/ commodity**		Coconut
viii	**Efficiency**		20 nuts/ h
ix	**Unit cost of operation**		0.15/nut
x	**Patent obtained/applied**	:	No
xi	**Commercialization status**	:	Ready for commercialization
	a) No. of Licensees	:	Nil
	b) Addresses of Licensees or Manufacturer	:	
xii	Contact Address	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute KASARGOD - 671124 (Kerala)

i	**Name of the Technology**	:	Coconut slicing machine
ii	**Application/ Use**	:	Slicing coconut kernal
iii	**Description of Technology :** The machine consists of two stainless steel slicing blades fixed on a circular blade supporting disc, a feeder to insert coconut endosperm for slicing, an exit guide to guide the sliced coconut chips towards the outlet and an electric motor as a prime mover. The electric motor rotates the blade supporting disc using a V-belt. Coconut endosperm is pressed to the surface of the rotating wheel through the slot provided on the feeder at the top of the machine. When it comes in to contact with the blades the coconut endosperm gets sliced and chips are produced. The sliced coconut chips are then guided towards the outlet by the exit guide and are collected in a container. Coconut chips of uniform and required thickness could be produced using this machine. Capacity of the machine is 50 coconuts per hour. Fabrication cost of the machine is Rs.50,000/-		
iv	**Input/raw material**	:	
	a) Overall dimension (L x B x H mm)	:	500X 210X450
	b) Weight	:	20kg
	c) Prime mover	:	Electrical motor
	d) Power (hp)	:	0.5
	e) Man power	:	One
	f) Land	:	Nil
	g) Investment		Rs.50,000/-
v	**Output capacity**	:	50 coconuts per hour
vi	**Unit cost (per machine)**		Rs.50,000/-
vii	**Suitability for crop/ commodity**		Coconut, Banana, tuber crops, vegetables
viii	**Efficiency**		50 coconuts per hour
ix	**Unit cost of operation**		Rs.0.5 per coconut
x	**Patent obtained/applied**	:	Applied
xi	**Commercialization status**	:	Commercialized
	a) No. of Licensees	:	One
	b) Addresses of Licensees or Manufacturer	:	NRDC, Bangalore
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute KASARGOD - 671124 (Kerala)

i	**Name of the Technology**	:	Coconut slicing machine
ii	**Application/ Use**	:	Slicing coconut kernal
iii	**Description of Technology :** The machine consists of a stainless steel slicing blade fixed on a circular blade supporting disc, a specially designed curved feeder to insert coconut endosperm for slicing, an exit guide to guide the sliced coconut chips towards the outlet and a pedal operated mechanism similar to that of a sewing machine to operate the slicing machine. Power is transferred from the pedal to the blade by belt and pulley. One person, the operator, sitting on a chair in front of the machine operates the machine by pedaling. The blade supporting disc gets rotated along with the blade because of this. Coconut endosperm, the kernel obtained after the removal of husk and shell, is fed to the surface of the blade supporting disc through the slot provided in the feeder by the operator. When the blade supporting disc rotates the kernel pieces are pressed towards its surface. When it comes in to contact with the slicing blade coconut kernel gets sliced. The sliced kernel, coconut chips, is guided towards the outlet by the guide. Coconut chips coming out through the outlet is collected in a tray. Coconut chips of required thickness could be made by adjusting the clearance between the slicing blade and the blade supporting disc. Approximately 25 coconuts can be sliced in one hour using this machine. Fabrication cost of the machine is Rs. 15,000/-		
iv	**Input/raw material**	:	
	h) Overall dimension (L x B x H mm)	:	800X550X1050
	i) Weight	:	40kg
	j) Prime mover	:	Manual
	k) Power (hp)	:	Nil
	l) Man power	:	Manual
	m) Land	:	Nil
	n) Investment		Rs. 15,000/-
v	**Output capacity**	:	25 coconuts per hour
vi	**Unit cost (per machine)**		Rs. 15,000/-
vii	**Suitability for crop/ commodity**		Coconut
viii	**Efficiency**		25 coconuts per hour
ix	**Unit cost of operation**		Rs.1 per coconut
x	**Patent obtained/applied**	:	Applied
xi	**Commercialization status**	:	Applied
	a) No. of Licensees	:	Commercialized
	b) Addresses of Licensees or Manufacturer	:	One, NRDC, Bangalore
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute KASARGOD - 671124 (Kerala)

i	**Name of the Technology**	:	Coconut Testa Removing Machine
ii	**Application/ Use**	:	Removing coconut testa
iii	**Description of Technology :** The machine consists of a circular wheel covered with an emery cloth or water paper. This friction wheel is rotated using an electric motor. Coconut kernel is pressed to the surface of the rotating friction wheel either by hand or using a fork. Removed testa is collected at the bottom. The emery cloth/ water paper needs to be replaced periodically when the surface gets smoothened. One person can remove testa of about 75 coconuts per hour. Fabrication cost of the machine is Rs.25,000/-		
iv	**Input/raw material**	:	
	o) Overall dimension (L x B x H mm)	:	750X550X950
	p) Weight	:	60kg
	q) Prime mover	:	Electrical motor
	r) Power (hp)	:	1hp
	s) Man power	:	Manual
	t) Land	:	Nil
	u) Investment		Rs. 25,000/-
v	**Output capacity**	:	25 coconuts per hour
vi	**Unit cost (per machine)**		Rs. 15,000/-
vii	**Suitability for crop/ commodity**		Coconut
viii	**Efficiency**		25 coconuts per hour
ix	**Unit cost of operation**		Rs.0.30 per coconut
x	**Patent obtained/applied**	:	Applied
xi	**Commercialization status**	:	Applied
	a) No. of Licensees	:	Commercialized
	b) Addresses of Licensees or Manufacturer	:	One, NRDC, Bangalore
xii	**Contact Address**	:	Research Engineer, AICRP on PHT Central Plantation Crop Research Institute KASARGOD - 671124 (Kerala)

i	**Name of the Technology**	:	Honey processing unit
ii	**Application/ Use**	:	Integrated honey heating cum filtration system is used for processing of raw honey without deteriorating its quality. The machine cost is low as compared to commercially available, and easy to handle.
iii	**Description of Technology**: The commercially available heating cum filtration units are very costly and small entrepreneurs could not buy. The small entrepreneur can process honey in production catchment itself with heating cum filtration unit designed by Ludhiana centre. The heating section consists of a double walled cylinder and two electric heating elements filled with water and attached with a pump for recalculate the water for maintaining uniform temperature profile throughout the heated honey. The heated honey is passed to the filtration unit through the hole provided at the bottom of the inner cylinder and extended through a pipe having gate valve. The filtration cylinder consists of lid of four layered muslin cloth. The operator was comfortable while working with the machine.		
iv	**Inputs**	:	
	a) Raw material	:	-
	b) Machinery	:	
	• Overall dimension • (L x B x H mm)	:	686x686x524 mm
	• Weight	:	80 kg (approximately)
	• Prime mover	:	0.25 hp motor
	c) Man power	:	One
	d) Land	:	N.A.
	e) Investment	:	Rs. 35000/ (cost of the machine only, as the machine is proposed for existing entrepreneurs)
v	**Output capacity**	:	50 kg/ batch
vi	**Unit cost (per machine)**	:	Rs. 35000
vii	**Suitability for crop/ commodity**		Honey
viii	**Efficiency**	:	99 %
ix	**Unit cost of operation**	:	Rs. 2/ kg
x	**Patent obtained/applied**	:	No
xi	**Commercialization status**	:	Ready for transfer and commercialization
	a) No. of Licensees	:	No
	b) Addresses of Manufacturer	:	M/S H V Industries, K- 105 Focal Point, Phase VII, Dhandhari Kalan, Ludhiana (Punjab)
xii	Contact Address	:	Research Engineer, AICRP on PHT Department of Processing and Food Engineering, College of Agricultural Engineering and Technology PAU Ludhiana- 141 004 (Punjab)

i.			
	Name of the Technology	:	Hand operated wild apricot decorticator
ii.	**Application/ Use**	:	Decortications of wild apricot
iii.	**Description of Technology:** Apricot decorticator (hand operated) is used to decorticate the bitter apricot pit into husk (stone) and kernels. Decortications of apricot stone (pit) is done by passing them in between two cylindrical rollers moving in inward direction. 		
iv.	**Input**	:	
	a) Raw material	:	
	b) Machinery	:	
	Overall dimension	:	62x80 cm^2 floor area and 112 cm height
	Weight	:	80 kg
	Prime mover	:	NA
	c) Power		NA
	d) Man power	:	2
	e) Land	:	NA
	f) Investment	:	Rs 8700
v.	**Output capacity**	:	60 kg/h
vi.	**Unit cost (per machine)**	:	Rs 8700
vii.	**Suitability for crops/commodity**	:	Apricot and other nuts (plum, almond, etc.) can be decorticated
viii.	**Efficiency**	:	87% for decortications
ix.	**Unit cost of operation**	:	Rs. 0.40/kg apricot stone
x.	**Patent obtained/applied**	:	No
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b) Selected Addresses of Licensee or Manufacturer	:	Nil
xii.	**Contact address**	:	Head Department of Process and Food Engg, College of Tech., G. B. Pant University of Agriculture & Tech., Pantnagar - 263 145 (Uttaranchal)

i.	**Name of the Technology**	:	Apricot stone grader
	Application/ Use	:	To grade the bitter apricot pits according to their size
	Description of Technology: Machine is used to grade the bitter apricot pits on the basis of size. Pits are graded in four grades using three sieves of different sizes and one pan at bottom. The grader is pedal operated.  		
	Input	:	
	a) Raw material		
	b) Machinery		
	• Overall dimension	:	88x34 cm^2 floor area and 100 cm height
	• Weight	:	42 kg
	• Prime mover	:	NA
	c) Man power	:	2
	d) Land	:	NA
	e) Investment	:	Rs 4000.00
v	**Output capacity**	:	150 kg/hr
vi	**Unit cost (per machine)**	:	Rs 4000.00
vii	**Suitability for crops/commodity**	:	Bitter apricot pit, apricot pit, almond
viii	**Efficiency**	:	86 %
ix	**Unit cost of operation**	:	Rs 6500.00 per month
x	**Patent obtained/applied**	:	-
xi	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred	:	Nil
	(b) Selected Addresses of Licensee or Manufacturer	:	Nil
xii.	Contact Address	:	Head Department of Process and Food Engg, College of Tech., G. B. Pant University of Agriculture & Tech., PANTNAGAR - 263 145 (Uttaranchal)

i.	**Name of the Technology**	:	Pedal operated Fig Pressing Machine
ii.	**Application/ Use**	:	Fig fruits are highly perishable in nature and can be kept for only a week at 0°C at 90% RH. The shelf-life of fig fruit can be enhanced by proper drying and can be stored for a longer period. The fig fruits are pressed by hand or by some crude country vice after drying in order to reduce their bulk for convenience of transportation. The developed fig pressing machine can be used to press the dried fig fruits locally and can replace the imported (from Afghanisthan) figs in the local market. The capacity of the machine is 25 kg of dried fruits per hour. The pressed fruit can be stored in HDP pouches for about 3 months at ambient condition.
iii.	**Description of Technology :** The pedal operated fig fruit pressing machine is basically a sewing machine. The machine consists of a base plate fixed on plywood top and an upper movable plate for pressing the dried fruits. By operating the pedal of the machine, the crank wheel converts rotary motion into reciprocating motion and is transferred to the movable plate. The gap between the pressing plates is set at 70mm so as to allow the operator to keep the dried fruit on the base plate. At the end of pressing stroke, 7mm gap is provided to avoid damage to the fruit. One complete revolution of the crank gives the desired reciprocating motion. The time required for one revolution is 3 seconds. The capacity of the machine is 25 kg of dried fruit per hour. 		
iv.	**Input/raw material**	:	Sewing machine, pulleys, plates
	a) Overall dimension	:	880 x 620 x 1170 mm
	b) Weight	:	40 kg
	c) Prime mover/ Plant & Machinery	:	Nil
	d) Man power	:	One person
	e) Power	:	Manual
	f) Land	:	Nil
	g) Investment	:	Rs. 1,500 / -
v.	**Output capacity**	:	25 kg per hour
vi.	**Unit cost (per machine)**	:	Rs. 3,500/-
vii.	**Suitability for crops/commodity**	:	Fig
viii.	**Efficiency**	:	95 – 98 **%**
ix.	**Unit cost of operation**	:	Rs. 0.52 / kg
x.	**Patent obtained/applied**	:	Nil
xi.	**Commercialization status**	:	Ready for Commercialization
	(a) No. of Licensees to whom the technology has been transferred		56 Farmers
	(b) Selected Addresses of Licensee/Manufacturer	:	-
xii.	**Contact Address**	:	Sr. Scientist & PI, AICRP on Post Harvest Technology Dept. of Processing and Food Engineering, College of Agricultural Engineering, UAS Raichur

i.	**Name of the Technology**	:	Natural Convection Solar Dryer [Mini-multi rack solar dryer]
ii.	**Application/ Use**	:	Traditionally, the food products are dried by spreading in open sun in thin layer. Though this method is economical and simple, it has the draw backs like; no control over the rate of drying, non-uniform drying, chances of deterioration and loss due to exposure of products to rain, dust, storm, birds, rodents, insects and pests. Whereas, solar drying system overcomes all those problems and ensures better quality of dried products, there by fetching higher price for the dried products.
iii.	**Description of Technology:** The mini-multi rack solar dryer consists of a transparent glass cover for transmitting solar radiation, aluminium trays (five numbers] for loading the produce, GI sheet coated with dull black paint to absorb maximum solar radiation, a wooden cover with saw dust as insulating material to minimize the thermal losses and a main cabinet made out of wood for housing different parts of the dryer. The fresh air enters the cabinet through the holes made in the bottom of the dryer. The solar radiation falling on the dryer is transmitted by the transparent glass, which is absorbed by the absorber plate. Then the air gets heated and rises upwards as it becomes less dense. The hot air while moving upward removes the moisture from the product kept on the trays and exits through the holes made at the top of the dryer. This dryer saves 40 per cent of drying time with superior quality dried products over open sun drying.		
iv.	**Input/raw material**	:	Wood, G.I. Sheet, Aluminum sheet, Glass, Wire Mesh
	a) Overall dimension	:	1360 x 600 x1455
	b) Weight	:	65 kg
	c) Prime mover/ Plant & Machinery	:	Nil
	d) Man power	:	1 person
	e) Land	:	3 square meter
	f) Investment	:	Rs. 2000/-
v.	**Output capacity**	:	15 kg of horticulture produce dried per batch
vi.	**Unit cost per machine**	:	Rs. 4500/-
vii.	**Suitability for crops/commodity**	:	Fruits & vegetables, fish, medicinal plants, snack foods
viii.	**Efficiency**	:	85-90%
ix.	**Unit cost of operation**	:	Rs. 1.0 – 1.5 per kg
x.	**Patent obtained/applied**		Nil
xi.	**Commercialization status**		Ready for commercialization
	a) No. of Licensees		One fabricator and 12 farmers
	(b) Selected Addresses of Licensee/Manufacturer	:	-
xii.	**Contact Address**		Sr. Scientist & PI, AICRP on Post Harvest Technology Dept. of Processing and Food Engineering, College of Agricultural Engineering, UAS, Raichur.

i.	**Name of the Technology**	:	Forced Convection Solar Drying System
ii.	**Application/ Use**	:	Traditionally, the food products are dried by spreading the products in open sun in thin layer. Though this method is economical and simple, it has the draw backs like; no control over the rate of drying, non-uniform drying, chances of deterioration due to exposure of products against rain, dust, storm, birds, rodents, insects and pests which results in poor quality of dried products. Whereas, the forced convection solar drying system developed ensures the uniform drying and control over the rate of drying. Also this system avoids deterioration and logs of products due to dust, birds, rodents, insects and pests and ensures better quality of dried products, there by fetching higher price for the dried products.
iii.	**Description of Technology :** The forced convection solar drying system consists of six air heaters, conveying unit, auxiliary heating unit, blower and two drying chambers. The solar radiation is transmitted by the glass cover of the air heater in which the air gets heated. This hot air is conveyed by an A.C. driven centrifugal blower into the drying chambers in which the products are kept on the trays. An electric heater is provided to supplement the heat during low solar radiation and for continuous drying during night period if required. This system ensures uniform drying of products and saves 50 per cent of drying time with superior quality dried products over open sun drying 		
iv.	**Input/raw material**	:	Wood, G.I. Sheet, Aluminum sheet, Glass, Mesh, PVC pipe
	a) Overall dimension	:	725 x 600 x 1800
	b) Weight	:	60 kg
	c) Prime mover/ Plant & Machinery	:	Blower, Heater
	d) Power	:	3 Phase power/supply
	e) Man power	:	2 to 3 persons
	f) Land	:	40 m^2 area of land for installation of the system
	g) Investment	:	Rs. 2,00,000/-
v.	**Output capacity**	:	70-80 kg of horticultural produce/ batch
vi.	**Unit cost (per machine)**	:	Rs. 60,000 /-
vii.	**Suitability for crops/commodity**	:	Cereals, Pulses, Fruits and vegetables
viii.	**Efficiency**	:	82 per cent
ix.	**Unit cost of operation**	:	Rs. 2.5- 3.0 per kg
x.	**Patent obtained/applied**	:	No
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred	:	One Farmer and one entrepreneur
	(b) Selected Addresses of Licensee/Manufacturer	:	-
xii.	**Contact Address**	:	Sr. Scientist & PI, AICRP on Post Harvest Technology Dept. of Processing and Food Engineering, College of Agricultural Engineering, UAS, Raichur.

i.	**Name of the Technology**	:	Dried Apricot grader
ii.	**Application/ Use**	:	For grading of Apricots on the basis of size particularly in Ladakh region.
iii.	**Description of Technology:** In Ladakh division, it was observed that the dried Apricots are sold as a mixed lot without any grade specification. Need was felt for size grading of dried apricots for better returns to the people involved in the trade. In this context a manually operated Apricot grader with 200-250 kg/h capacity was fabricated by Srinagar centre. The dimensions of sieve holes are: 1st Sieve = 3.8x3.8cm, 2nd Sieve = 2.54x2.54cm, 3rd Sieve = 2.10x2.10cm. The height of the grader above ground is 110 cm (body= 66 cm and base 43 cm) and length of the handle (arm) is 20 cm. Apricot can be graded into four grades base on the size of apricot. The specifications (i.e., length and breadth) of the grades are given as: Grade 'A' =29.73 x28.60 mm Grade 'B' = 26.34x22.66 mm Grade 'C' = 23.30x20.44 mm Grade 'D'= 18.33x15.26 mm		
iv.	**Input/**	:	.
	a) Raw material		Un-graded dried Apricots
	b) Machinery		
	Overall dimension	:	Body (56x51 cm), Sieves (41x41 cm)
	Weight	:	45kgs.
	Prime mover/ Power	:	Hand operated
	c) Man power	:	2 persons/day for 8 hours
	d) Land	:	Can be operated with a space of 8x10 feet
	e) Investment	:	Rs 2800/-
v.	**Output capacity**	:	200-250 kg/h
vi.	**Unit cost (per machine)**	:	Approx. Rs 3500-4000/=
vii.	**Suitability for crops/commodity**	:	Most suitable for grading of dried Apricots.
viii.	**Efficiency**	:	81.4 - 92.5 %
ix.	**Unit cost of operation**	:	Rs 40/qtl.
x.	**Patent obtained/applied**	:	-
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b)Selected Addresses of Licensee /Manufacturer		NA
xii.	Contact Address	:	PI, AICRP on PHT Sher-e-Kashmir University of Agri. Sciences and Technology, Shalimar Campus, SRINAGAR – 191 121 (J&K)

i.			
ii.	**Name of the Technology**	:	**Walnut dehuller**
iii.	**Application/ Use**	:	Walnut dehuller was developed to suit the hilly regions of J&K state.
iv.	**Description of Technology:** After harvesting green walnuts are heaped under the tree for 10-15days to get the hulls loosen due to heat generation. The heaped green walnuts are then subjected to manual dehulling by either rubbing the green walnuts with one other or by beating them by wooden logs. The juglone dye (5-hydroxy-1, 4-naphthalenedione) present in the hull gets permanently stained on the hands of workers, which takes not less than two months to go off. In order overcome the above mentioned problems the Srinagar Center AICRP on PHET has developed a walnut dehuller and also standardized the pre – chemical treatment for hull dehiscence.  The walnut dehuller was found to be most effective when green walnuts were sprayed with ethephon (0.3%) as a pretreatment for hull dehiscence and were subjected to dehulling 4 days after spraying.		
v.	**Input/**	:	.
	e) Raw material		Green walnuts
	f) Machinery		
	Overall dimension	:	Front View:1375 mm x 880 mm Side view: 1375 mm x 480 mm
	Weight	:	65 kgs.
	Prime mover/ Power	:	Power operated (1 HP Motor)
	g) Manpower	:	1 person for 4hrs dehulling the one ton of green walnuts -one person is required for 4hrs.
	h) Land	:	Can be operated with a space of 3.4×2 feet
vi.	**Output capacity**	:	250 kg/hour
vii.	**Unit cost (per machine)**	:	Approx. Rs 45,000/-
viii.	**Suitability for crops/commodity**	:	Suitable for dehulling of green walnuts
ix.	**Efficiency**	:	95.97%
x.	**Unit cost of operation**	:	Rs. 102/Tonne
xi.	**Patent obtained/applied**	:	NA -
xii.	**Commercialization status**	:	Commercialized
	(a) No. of Licensees to whom the technology has been transferred		02
	(b)Selected Addresses of Licensee /Manufacturer		1. PI, RKVY sponsored project, SKUAST (K). 2. Mr. Sanaullah Fruit Company, Khaag, Budgam
xii.	Contact Address	:	PI, AICRP on PHET Sher-e-Kashmir University of Agri. Sciences and Technology, Shalimar Campus, SRINAGAR – 191 121 (J&K)

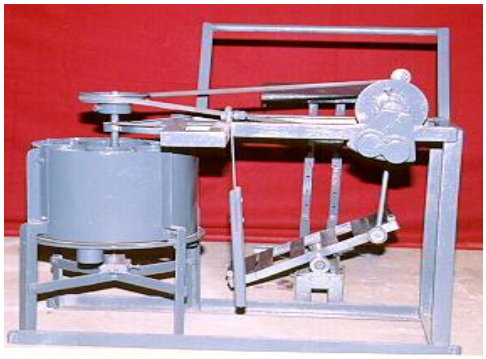
i.	**Name of the Technology**	:	**Walnut bleacher- cum-washer**
ii.	**Application/ Use**	:	For bleaching and washing of dehulled walnuts
iii.	**Description of Technology:** Inshell walnut quality depends upon shell colour, shell thickness, suture seal, kernel size, kernel colour, taste flavor and freeness from fungal infection and rancidity. Presently the manually dehulled walnuts are washed under running water from streams, and tap water by keeping them in half cut used water drums, troughs or woven vicker baskets. Nuts are stirred by wooden logs of 5-6 feet length or trampled by feet under running water, such practices break the shell seal results in moisture ingress which subsequently leads microbial growth, darkening of kernel and causes rancidity, despite being laborious and time consuming. Further some portion of hull remains on the nuts. The post harvest losses due to manual washing are in the range of 1.5-3%. In order overcome the above mentioned problems the Srinagar Center AICRP on PHET has developed a walnut bleacher-cum-washer. 		
iv.	**Input**	:	.
	a) Raw material		Dehulled Walnuts
	b) Machinery		
	Overall dimension	:	Front view:133.5cm × 121cm Side view: 59cm × 121cm
	Weight	:	73 kgs.
	Prime mover/ Power	:	1 HP motor for Rotating Drum 50 Watt for Fluid Discharge
	c) Manpower	:	1 person for 8hrs dehulling the one ton of dehulled walnuts - one person is required for 8hrs.
	d) Land	:	Can be operated with a space of 3.5×2.5 feet
v.	**Output capacity**	:	130 kg/hour
vi.	**Unit cost (per machine)**	:	Approx. Rs 48,000/-
vii	**Suitability for crops/commodity**	:	Suitable for bleaching-cum-washing of dehulled walnuts
vii	**Efficiency**	:	94.47%
ix.	**Unit cost of operation**	:	Rs. 186/tonne
x.	**Patent obtained/applied**	:	NA
xi.	**Commercialization status**	:	Ready to commercialize
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b)Selected Addresses of Licensee /Manufacturer		NA
xii.	Contact Address	:	PI, AICRP on PHET Sher-e-Kashmir University of Agri. Sciences and Technology, Shalimar Campus, SRINAGAR – 191 121 (J&K)

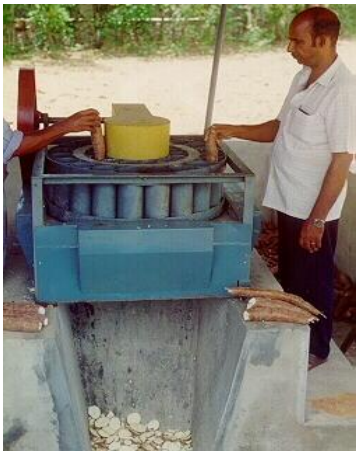
i	**Name of the Technology**	:	Black Pepper Decorticator
ii	**Application/ Use**	:	For producing white pepper from black pepper
iii	**Description of Technology :** The developed black pepper decorticator decorticates the presoaked berries by the combined effect of churning and centrifugal action. Water is jetted inside the decorticating drum to enhance the removal of the outer pericarp of the berries. The developed decorticator has the following parts: feed hopper, decorticating drum, main shaft, water supply system, collecting tray and outlet arrangement. The main functional part of the machine is the decorticating drum which houses the main shaft. In order to facilitate the efficient decortication, sixteen spikes are fixed in staggered arrangement on the shaft. The shaft rotates at a speed of 142rpm. This horizontal shaft is connected to a reduction gear unit having a gear ratio of 5:1 through a flanged coupling. The gear unit is coupled with 0.5 hp single phase motor of 1440 rpm through a V-belt and pulley system.  		
iv	**Input/raw material**	:	Black pepper
	o. Overall dimension (L x B x H mm)	:	60cm X 30cm X 50cm
	p. Weight	:	40kg
	q. Prime mover	:	Nil
	r. Power (hp)	:	0.5 hp electric motor
	s. Man power	:	One person
	t. Land	:	1800sqcm
	u. Investment	:	Rs.1,00,000/-
v	**Output capacity**	:	20kg/hr
vi	**Unit cost (per machine)**	:	Rs.45,000/-
vii	**Suitability for crop/ commodity**	:	NA
viii	**Efficiency**	:	91.8%
ix	**Unit cost of operation**	:	-
x	**Patent obtained/applied**	:	Nil
xi	**Commercialization status**	:	Ready for commercialization
	a) No. of Licensees	:	N A
	b) Addresses of Licensees or Manufacturer	:	N A
xii	Contact Address	:	Research Engineer, AICRP on PHT Kerala Agricultural University Kelappaji College of Agricultural Engineering and Technology, TAVANUR, Kerala – 679573

i.	**Name of the Technology**	:	**Cassava rasper**
ii.	**Application/ Use**	:	The cassava rasper is efficient and an economical equipment for small scale processing of cassava roots.
iii.	**Description of Technology:** The rasper consists of a crushing cylinder made up of a mild steel pipe with blades sets fixed on the circumference. The crushing cylinder is fixed on a shaft which rotates inside bearing, which is fixed on a trapezoidal angle iron frame, fixed to the floor by foundation bolts. The power is provided by 3 hp (3 phase electric motor) with belt and pulley. The drum is rotated inside the crushing chamber which is made up of two halves, the upper being rectangular shape and the bottom half portion acts as outlet for the crushed mash. Gap between the blade set and crushing chamber is adjusted by providing wooden planks fixed to it. A changeable sieve plate is provided in the bottom half to filter the starch pulp without any bigger pieces. While feeding the tubers, the tubers are expelled from the feed inlet and to avoid that a slanting projection was given at inlet point of the hopper.		
iv.	**Input**	:	
	i) Raw material		Cassava tuber and water
	j) Machinery		
	• Overall dimension	:	800 mm x 800 mm x 1000 mm
	• Weight	:	135 kg
	• Prime mover/ Power	:	3 phase electric motor
	k) Man power	:	One
	l) Land	:	-
	e) Investment	:	
v.	**Output capacity**	:	800 -1000 kg/h
vi.	**Unit cost (per machine)**	:	Rs.45,000/-
vii.	**Suitability for crops/ commodity**	:	Cassava
viii.	**Efficiency**	:	
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	No
xi.	**Commercialization status**	:	Commercialized through Institute
	(a) No. of Licensees to whom the technology has been transferred		
	(b)Selected Addresses of Licensee /Manufacturer		Nil
xii.	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017 (Kerela)

i.	Name of the Technology	:	Cassava Peeling Knife
ii.	Application/Use	:	Used for peeling (removal of the corky skin alone or along with the fibrous rind) of cassava tubers
iii.	**Description of the Technology:** On-site evaluation of the improved prototype showed that the average output of the peeling knife is 132 kg/h, comparable to that of the traditional knife used by professional workers. Additional labour cost per tonne of tubers peeled by the improved knife (@Rs.3/- per basket of 55-60 kg unpeeled tubers) is about Rs.12/- only; Flesh loss with the improved knife is only 1.38% compared to the 5.70% flesh loss by the traditional knife. The cost of the additional tuber loss by the traditional knife, or in other words the saving of tuber flesh by the improved knife, is nearly Rs 106/- at the factory rate of Rs 145/- per bag 70 kg of tubers. The traditional knife costs Rs 5/- each, and two to three knives are disposed by a labourer each week., with the minimum cost of operation being Rs 10/- . The cost of the improved knife is estimated at Rs 40/- 		
iv.	**Inputs required/ raw material**		
	a) Over all dimensions	:	230 mm
	b) Weight (kg)	:	0.075 kg
	c) Prime mover		NA
	d) Power	:	Manual
	e) Man power	:	one
	f) Land	:	NA
	g) Investment	:	NA
v.	**Out put capacity**	:	132 kg/h
vi.	**Unit Cost**	:	Rs 40/-
vii.	Suitability for crops/commodity	:	Cassava
viii.	Efficiency	:	98%
ix.	Unit cost of operation	:	Rs. 0.30 per kg tubers
x.	**Patents obtained/applied**	:	NA
xi.	**Commercialization status**		Commercialized though Institute
	(a). Number of licensees to whom the technology has been transferred	:	NA
	(b). Selected Addresses of Licensee /Manufacturer and	:	Nil
xii	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017

i.	Name of the Technology	:	Cassava Chipping Machine (Hand Operated)
ii.	Application/Use	:	Cassava chipping machine is an economic alternative to manual slicing of cassava tubers and reduces the tedium associated with manual slicing as well as increases the average turn out per hour.
iii.	**Description of the Technology:** Hand operated chipping machine consists of two concentric mild steel drums, the annular space between which is divided into compartments for feeding the tubers, supported on four MS legs. A rotating disc at the bottom of the drum carries the knives assembly. A pair of H.S.S. bevel gears is provided to operate the machine manually with a crank arm. Tubers are fed into the compartments from the top and the chips are collected at the bottom 		
iv.	Inputs required		
	Raw material	:	Cassava tubers
	Machinery	:	
	Over all Dimensions	:	500 mm x 500 mm x 750 mm
	Weight (kg)	:	30 kg
	Power	:	Manual
	Man power	:	one
	Land	:	NA
	Investment	:	NA
v.	Out put capacity	:	120 kg/h for 6.9 mm thick chips
vi.	Unit Cost	:	Rs.9,000/-
vii.	Suitability for crops/commodity	:	Cassava, yams etc.
viii.	Efficiency	:	95%
ix.	Unit cost of operation	:	Rs. 0.30/- per kg tubers
x.	Patents obtained/applied	:	Obtained
xi.	Commercialization status	:	Commercialized through the Institute
	(a). Number of licensees to whom the technology has been transferred	:	One
	(b). Selected Addresses of Licensee / Manufacturer	:	Kerala Agro Industries Corporation, Trivandrum, NRDC, New Delhi-11 00 48
xii.	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017

i.	Name of the Technology developed	:	Pedal Operated Cassava Chipping Machine
ii.	Application/Use	:	Cassava chipping machine is an economic alternative to manual slicing of cassava tubers and reduces the tedium associated with manual slicing as well as increases the average turn out per hour
iii.	**Description of the Technology :** The pedal operated chipping machine is a modified version of the hand operated prototype with additional provision of a pivoted pedal for transmitting the power to the cutting disc through suitable belt and pulley drive mechanism. A trimming knife is also provided on the frame to remove the woody neck portion of the tubers before feeding into the compartments. Four castor wheels are fixed to the legs of the machine to make it portable. 		
iv.	Inputs required		
	a) Raw material	:	Cassava tubers
	b) Machinery	:	NA
	c) Over all Dimensions	:	1170 x 930 x 950 mm
	d) Weight (kg)	:	72 kg
	e) Power	:	Manual
	f) Man power	:	Two
	g) Land	:	Nil
	h) Investment	:	Nil
v.	Output capacity	:	83 to 768 kg/h for increase in chip thickness from 0.9 to 6.9 mm.
vi.	Unit Cost	:	Rs.14,000/-
vii.	Suitability for crops/commodity	:	Cassava
viii.	Efficiency	:	95%
ix.	Unit cost of operation	:	Rs.0.20 per kg tubers
x.	Patents obtained/applied	:	No
xi.	Commercialization status	:	Commercialized through Institute
	(a). Number of licensees to whom the technology has been transferred	:	Nil
	(b). Selected Addresses of Licensee /Manufacturer and	:	Nil

i.	Name of the Technology	:	Motorized Cassava Chipping Machine
ii.	Application/Use	:	Cassava chipping machine is an economic alternative to manual slicing of cassava tubers and reduces the tedium associated with manual slicing as well as increases the average turn out per hour
iii.	**Description of the Technology :** The motorized chipper developed runs with a 0.5 hp single phase motor through suitable belt drive. The feed hopper consists of two concentric rows of 25 cm high MS cylinders. The outer row of cylinders is of 10 cm dia while the inner row of cylinders meant for thinner tubers are of 7 cm dia. A MS circular disc of 87 cm dia and 10 mm thickness carries two pairs of stainless steel blades. 		
iv.	Inputs required		
	a) Raw material	:	Cassava tubers
	b) Machinery	:	NA
	c) Over all Dimensions	:	1150 mm x 1000 mm x 900 mm
	d) Weight (kg)	:	200 kg
	e) Power	:	0.5 hp single phase
	f) Man power	:	One
	g) Land	:	Nil
	h) Investment	:	Nil
v.	Output capacity	:	286, 655 and 1091 kg/h for chip thicknesses of 2.5, 5.3 and 9.9 mm
vi.	Unit Cost	:	Rs.35,000/-
vii.	Suitability for crops/commodity	:	Cassava, yams
viii.	Efficiency	:	95%
ix.	Unit cost of operation	:	Rs 0.05/- per kg tubers
x.	Patents obtained/applied	:	No
xi.	Commercialization status	:	Commercialized through Institute
	(a). Number of licensees to whom the technology has been transferred	:	Nil
	(b). Selected Addresses of Licensee /Manufacturer	:	Nil
xii	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017

i.	Name of the Technology	:	Mobile Starch Extraction Plant
ii.	Application/Use	:	The mobile starch extraction plant is a cost effective equipment permitting on-farm starch extraction by the producers and thus avoids the exploitation of the farmers by middlemen
iii.	**Description of the Technology:** The major components of the machine are hopper to feed the tubers, crushing disc or cylinder with nail punched protrusions rotating inside crushing chamber to crush the tubers, sieving tray to remove the fibrous and other cellulosic materials, stainless steel or plastic tanks to collect the sieved starch suspension, tuber storage chamber, handle and wheels for easy transportation from place to place and a frame to support these components. Addition of water during the processing can be controlled through a water pipe with holes fixed inside the hopper along its length and during sieving by a shower attachment connected to the water line. An electric motor (¾ hp) or a generator (kerosene–petrol) attached to the frame can be used as the energy source to operate the machine. 		
iv.	Inputs required		
	Raw material	:	Cassava Tubers and water
	Machinery	:	
	Over all Dimensions	:	1350 x 1800 x 1320 mm
	Weight (kg)	:	165 kg
	Power	:	¾ hp , single phase
	Man power	:	one
	Land	:	Nil
	Investment	:	Nil
v.	Out put capacity	:	120-200 kg/h.
vi.	Unit Cost	:	Rs.90,000/-
vii.	Suitability for crops/commodity	:	Cassava, sweet potato, *Amorphophallus*
viii.	Efficiency	:	85%
ix.	Unit cost of operation	:	Rs.3/-per kg starch
x.	Patents obtained/applied	:	NA
xi.	Commercialization status	:	Commercialized through the Institute
	(a). Number of licensees to whom the technology has been transferred	:	Nil
	(b). Selected Addresses of Licensee /Manufacturer	:	Nil
	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017

i.	Name of the Technology	:	Feed Granulator
ii.	Application/Use	:	The granulator is a low cost device to granulate tuber corps based formulations for use as cattle or poultry feed. This can even be extended to fish meal
iii.	**Description of the Technology:** A drum type centrifugal granulator consists of a cylindrical drum mounted horizontally on a shaft installed on a trapezoidal angle iron frame work. Provisions were made to spray water using a knapsack sprayer through one side of the drum while the granulator is in operation. A rectangular slot is provided at the down slope of the drum for feeding the materials and to take out the granulated feeds. The machine can be operated manually and also by an electric motor (¾ hp). Feed granules of optimum properties can be obtained by adjusting the moisture content as 51-68%, rotational speed 40 rpm and rotational time 2-6 min depending upon the ingredients used in the feed. 		
iv.	Inputs required		Dry floury feed ingredients, water
	a) Raw material	:	
	b) Machinery	:	
	c) Over all Dimensions	:	1000 mm x 800 mm x 1000 mm
	d) Weight (kg)	:	35 kg
	e) Power	:	Electric/Manual
	f) Man power	:	¾ hp electric motor/one person
	g) Land	:	NA
	h) Investment	:	-
v.	Output capacity	:	20 kg/h
vi.	Unit Cost	:	Rs. 5,000/ for manual Rs12,000/- for motorised
vii.	Suitability for crops/commodity	:	Byproducts of agricultural crops
viii.	Efficiency	:	95%
ix.	Unit cost of operation	:	Rs.1.60/-(manual operation) and Rs.0.92/- (mechanical operation) per kg feed
x.	Patents obtained/applied	:	No
xi.	Commercialization status	:	Ready for commercialization
	(a) Number of licensees to whom the technology has been transferred	:	Nil
	(b) Selected Addresses of Licensee /Manufacturer	:	Nil
xii.	Contact Address	:	Research Engineer, AICRP on PHT Central Tuber Crops Research Institute, Thiruvananthapuram – 695 017

i.	**Name of the Technology**	:	Garlic Bulb Breaker
ii.	**Application/ Use**	:	Machine facilitates in the gentle separation of individual cloves from garlic bulbs. The machine has utility for garlic processors, industries, seed industries and farmers.
iii.	**Description of Technology**: Bulb breaking i.e. separation of individual cloves from garlic bulbs is the first and foremost unit operation in processing of garlic. Further, the individual cloves are also used as seed material. The machine consists of a hollow cylinder with cushioned battens, a concave, an aspirator and a prime mover. The cloves are separated because of the beating action of battens and friction between bulb and concave. Aspirator separates the light paper skin, root and middle stem of bulb. Clean cloves are collected along the chute below the concave. A manual operated model with 50-kg/hr capacity is also available for small entrepreneurs & farmers. It has generated lot of interest in garlic cultivation belt of MP & Rajasthan for separating individual cloves for seed purposes. 		
iv.	**Input/raw material**	:	Garlic bulbs
	a) Overall dimension	:	660 mm x 1000 mm x 1130 mm
	b) Weight	:	85 kg
	c) Prime mover	:	Electric motor
	d) Plant & Machinery	:	Machine with motor
	e) Power		1 hp, Single phase electric motor
	f) Man power	:	1 unskilled labours
	g) Land	:	NA
	h) Investment	:	Rs 24,000/=
	i) Operational effi.:		80%
v.	**Output capacity**	:	800 kg bulb/hr
vi.	**Unit cost (per machine)**	:	Rs 18,000 (without motor)
vii.	**Suitability for crops/commodity**	:	Garlic
viii.	**Efficiency**	:	Clove separation eff.: 94-95 %
ix.	**Unit cost of operation**	:	Rs 2.50 /q of cloves
x.	**Patent obtained/applied**	:	NIL
xi.	**Commercialization status**	:	
	a) No. of Licensees to whom the technology has been transferred		Three entrepreneur have started production
	b) Selected Addresses of Licensee / Manufacturer	:	M/s Kalpana Entreprises N.B. Complex, Pratap nagar,Udaipur-313001
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Peeler cum Polisher for Ginger and Turmeric
ii.	**Application/ Use**	:	The machine has application for peeling of fresh ginger rhizomes and smoothening/ value addition of dried rhizomes of ginger and turmeric. It has utility for processors.
iii.	**Description of Technology** : A simple machine was developed to peel the outer skin from fresh ginger rhizomes and abrade off outer shriveled skin of dried rhizomes of ginger and turmeric. The peeling operation helps in faster drying and polishing facilitates in value addition & quality improvement of dried rhizomes. The machine works on the principle of friction and abrasion. It consists of a perforated drum with a common opening for feeding and discharge of rhizomes. The machine has a perforated drum coated with emery strips at inner surface. The drum is rotated at 40 rpm. Water supply through hollow shaft helps in removal of peel/skin through the drum perforation. In case of polishing dehydrated rhizomes, water supply is disconnected. Effective output of machine has been worked out as 40-50 kg/h *vis a vis* 30 and 50 kg/day through manual and gunny bag peeling. 30 machines have supplied. About 30 machines have been supplied.		
iv.	**Input/raw material**	:	Ginger/turmeric rhizomes
	a) Overall dimension	:	900 mm x 700 mm x 1070 mm
	b) Weight	:	57 kg
	c) Prime mover	:	Electric motor
	d) Plant & Machinery	:	Peeler-Polishing machine, dryer
	e) Power		1 hp single phase motor
	f) Man power	:	1 unskilled labour
	g) Land	:	-
	h) Investment	:	Rs 20,000/=
	i) Operational efficiency	:	75-80%
v.	**Output capacity**	:	8 kg batch in 8 to 10 min i.e. 40-50 kg /hr for peeling & 50-60 kg/hr for polishing
vi.	**Unit cost (per machine)**	:	Rs 15,000/= (without motor)
vii.	**Suitability for crops/commodity**	:	Ginger, carrot, turmeric
viii.	**Efficiency**	:	80%
ix.	**Unit cost of operation**	:	Rs 25 /q rhizome
x.	**Patent obtained/applied**	:	
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees to whom the technology has been transferred	:	Three entrepreneur have started production
	b) Selected Addresses of Licensee / Manufacturer	:	1. M/s Kalpana Enterprises N.B. Complex, Pratap nagar,Udaipur-313001
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Garlic Clove Flaking Machine
ii.	**Application/ Use**	:	achine facilitates in the gentle flaking of individual garlic clo fasten the dehydration process. The machine has utility for processors.
iii.	**Description of Technology** : A garlic clove flaking machine has been developed to press the cloves gently in order to facilitate faster drying. The machine has 2 rollers fixed in horizontal plane side by side with clearance adjustment to accommodate the maximum size individual garlic clove. The roller rotates in opposite direction with the help of chain-sprocket arrangement. Roller clearance of 5 and 10 mm was found optimum for flaking of normal and bold size cloves, respectively. The machine can also be operated manually with capacity 80-100 kg/h. About 15 machines have been supplied. 		
iv.	**Input/raw material**	:	Garlic cloves
	a) Overall dimension	:	75 mm x 550 mm x 1200 mm
	b) Weight	:	65 kg
	c) Prime mover	:	Electric motor
	d) Plant & Machinery	:	Machine with motor-starter
	e) Power		1 hp, Single phase electric motor
	f) Man power	:	1 unskilled labours
	g) Land	:	NA
	h) Investment	:	Rs 22,000/=
	i) Operational efficiency		80%
v.	**Output capacity**	:	420 kg /hr (80-100 kg/hr manual operation)
vi.	**Unit cost (per machine)**	:	Rs 17,000/=(without motor)
vii.	**Suitability for crops/commodity**	:	Garlic
viii.	**Efficiency**	:	82-87%
ix.	**Unit cost of operation**	:	Rs 5/q of cloves
x.	**Patent obtained/applied**	:	NIL
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees to whom the technology has been transferred		Three entrepreneur have started production
	b) Selected Addresses of Licensee or Manufacturer		1. M/s Kalpana Enterprises N.B. Complex, Pratap nagar,Udaipur-313001
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Solar Dryer
ii.	**Application/ Use**	:	The solar dryer is useful for drying of perishable & semi perishable commodities at production catchment.
iii.	**Description of Technology** : A natural convection, solar energy based tray type dryer was developed to dry various kind of perishables/semi-perishables. The dryer has 12 no. of wire mesh trays and two drought pipes with aspirator to induce the natural convection. The whole structure is made such that the front glass cover is inclined at an angle of latitude of Udaipur plus 15°. A 25-mm wide slit at the bottom of cabinet is provided for entry of fresh air to dryer. The dryer has capacity of 60 to 75 kg/batch and requires 2-3 man-hr/days. 		
iv.	**Input/raw material**	:	Fresh ginger/ turmeric rhizomes
	a) Overall dimension	:	2600 mm x 2100 mm x 1930 mm
	b) Weight	:	270 kg
	c) Prime mover	:	Solar energy
	d) Plant & Machinery	:	Solar dryer
	e) Power		Solar energy
	f) Man power	:	1 unskilled labours
	g) Land	:	100 Sq m
	h) Investment	:	Rs 35,000/-
	i) Operational efficiency		75%
v.	**Output capacity**	:	60 to 75 kg/batch
vi.	**Unit cost (per machine)**	:	Rs 35,000/-
vii.	Suitability for crops/commodity	:	Perishable and semi perishable agricultural produce
viii.	Efficiency	:	75%
ix.	Unit cost of operation	:	Rs. 2-3 per kg
x.	**Patent obtained/applied**	:	No
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees to whom the technology has been transferred		One entrepreneur has started production
	b) Selected Addresses of Licensee or Manufacturer		1. M/s Kalpana Enterprises N.B. Complex, Pratapnagar , Udaipur-313 001
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	**Garlic peel remover for dehydrated flakes**
ii.	**Application/ Use**	:	To remove peels from dehydrated garlic flakes
iii.			
iv.	**Description of Technology:** A dry garlic clove peel remover/de-skinner machine with capacity of 50 kg/h was developed to detach and separate peel from dehydrated garlic flakes. The machine consists of a scrubber made of canvass strips which rotates in a barrel. The peels get detached of due to abrasion and friction and an aspirator sucks the light peel and dehydrated clove/flakes is obtained through the discharge trough. The machine results in saving of almost 300 % in cost over conventional practice.  		
v.	**Input**	:	
	a) Raw material		Garlic clove
	b) Machinery		
	• Overall dimension	:	1200 x 750 x 1150 mm
	• Weight	:	95 kg
	• Prime mover	:	Electric motor- Single phase
	c) Power		1 hp
	d) Man power	:	One
	e) Land	:	NA
	f) Investment	:	20000/=
vi.	**Output capacity**	:	50 kg/h
vii.	**Unit cost (per machine)**	:	Rs. 17000/- (without motor)
viii.	**Suitability for crops/commodity**	:	Garlic
ix.	**Efficiency**	:	80-85%
x.	**Unit cost of operation**	:	Rs 53/q dried flakes
xi.	**Patent obtained/applied**	:	No
xii.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		Nil
	(b)Selected Addresses of Licensee /Manufacturer and contact person	:	Nil
xii	Contact Person	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**a. Type of Technology**	:	Equipment
	b. Technology developed	:	**Aloe Gel Extraction Machine**
ii.	**Application/ Use**	:	Machine has application for extracting clear gel from alovera leaf. It has use for small entrepreneurs.
iii.	**Description of Technology :** Aloin-free clear aloe gel without rind is required for making all kind of health drink/beverages and cosmetic/medicinal products. A gel extraction machine was developed which consisted of three pairs of stainless steel roller arranged in vertical plane. The front pair has more clearance than the rear pairs. The front pair just compresses the leaf while rear pairs helps in extraction. The clearance between rollers can be adjusted with the help of nuts provided on top frame according to the thickness of leaves. Maximum gel recovery could be obtained at roller speed 75-90 rpm. The machine has capacity for extracting 40-50 kg/h leaf. Two units have been supplied to a SHG village Ogna (Forest deptt). 		
iv.	**Input/raw material**	:	Aloevera leaves
	a) Overall dimension	:	950 mm x 550 mm x 850 mm
	b) Weight	:	77 kg
	c) Prime mover	:	Electric motor
	d) Plant & Machinery	:	Gel extractor, pulper/grinder
	e) Power		3 hp Single phase power connection
	f) Man power	:	1 unskilled labour
	g) Land	:	50 Sqm
	h) Investment	:	Rs 70,000/=
	i) Operational efficiency		70%
v.	**Output capacity**	:	100-150 lit /day
vi.	**Unit cost (per machine)**	:	Rs 45,000/= with 1 hp motor
vii.	**Suitability for crops/commodity**	:	Aloe vera
viii.	**Efficiency**	:	90%
ix.	**Unit cost of operation**	:	Rs 30/lit
x.	**Patent obtained/applied**	:	NA
xi.	**Commercialization status**	:	Commercialized
	a) No. of Licensees to whom the technology has been transferred	:	one entrepreneur has adopted for production
	b) Selected Addresses of Licensee or Manufacturer	:	-
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology,

			Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	**Garlic grader**
ii.	**Application/ Use**	:	For grading of garlic bulbs and cloves/flakes
iii.	**Description of Technology:** Garlic grading machine has been developed to grade garlic bulb/cloves on overall size basis. The machine consists of a rotary frame for mounting two sieves, an aspirator, a hopper and bottom discharge toughs for collection of graded material. As per Agmark specs. rules 2004 (http.agmarknet.nic.in/fveggmrules04. htm#garlic), the screen for machine was developed to separate garlic bulb in grades *viz.* less than 30 mm, between 30-40 mm (Class I & II) and more than 45 mm dia size (Extra class). The machine results in saving of almost 200 % cost over conventional practice.		
iv.	**Input**	:	
	a) Raw material		
	b) Machinery		
	• Overall dimension	:	1700 x 700 x 1550 mm
	• Weight	:	150 kg
	• Prime mover	:	Electric motor –single phase
	c) Power		1 hp
	d) Man power	:	One
	e) Land	:	NA
	f) Investment	:	40000/-
v.	**Output capacity**	:	100 kg/h
vi.	**Unit cost (per machine)**	:	Rs. 35000/- (without motor)
vii.	**Suitability for crops/commodity**	:	Garlic
viii.	**Efficiency**	:	82%
ix.	**Unit cost of operation**	:	Rs 30 / q
x.	**Patent obtained/applied**	:	NIL
xi.	**Commercialization status**	:	Ready for commercialization
	(a) No. of Licensees to whom the technology has been transferred		No
	(b)Selected Addresses of Licensee /Manufacturer		M/s Kalpana Entreprises N. B. Complex, Pratap nagar,Udaipur-1
xii	Contact Address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Turmeric polisher
ii.	**Application/ Use**	:	Ginger and turmeric polishing
iii.	**Description of Technology** : The developed turmeric polisher mainly consists of polishing drum, power transmission system and supporting frame. The hexagonal abrasive drum is an important part of the surface abrasive polisher. Turmeric rhizomes were allowed to roll on internal abrasive surface of drum where polishing takes place due to abrasive action of protrusions and rhizomes.		
iv.	**Input/raw material**	:	Turmeric, polishing drum
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Prime mover	:	-
	d) Plant & Machinery	:	-
	e) Power		1 hp
	f) Man power	:	1 unskilled
	g) Land	:	-
	h) Investment	:	-
	i) Operational efficiency		7.45% in 25 min.
v.	**Output capacity**	:	4-6 kg/batch
vi.	**Unit cost (per machine)**	:	Rs. 25000
vii.	**Suitability for crops/commodity**	:	Ginger and Turmeric
viii.	**Efficiency** **a) Polishing**	:	7.45%
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	-
xi.	**Commercialization status**	:	Ready for commercialization
	c) No. of Licensees to whom the technology has been transferred		-
	d) Selected Addresses of Licensee or Manufacturer		-
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Garlic/clove peeler
ii.	**Application/ Use**	:	Garlic clove peeling
iii.	**Description of Technology** : The thin papery skin tightly adhered on garlic clove is to be removed for further processing, pickling, paste formulation etc. Batch type garlic clove peeler has been developed on the principal of impact and swirling action of compressed air. The capacity of the developed peeling machine was recorded as 400g/batch in 70 seconds with efficiency of 98 per cent. There is no bruising or damage to peeled cloves. 		
iv.	**Input/raw material**	:	Garlic
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Prime mover	:	-
	d) Plant & Machinery	:	-
	e) Power		Compressed air of 10-15kg/cm^2
	f) Man power	:	1 unskilled
	g) Land	:	-
	h) Investment	:	-
v.	**Output capacity**	:	400g/batch in 70 seconds
vi.	**Unit cost (per machine)**	:	Rs. 40000
vii.	**Suitability for crops/commodity**	:	Ginger and Turmeric
viii.	**Efficiency**	:	98%
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	-
xi.	**Commercialization status**	:	Ready for commercialization
	e) No. of Licensees to whom the technology has been transferred		-
	f) Selected Addresses of Licensee or Manufacturer		-
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)

i.	**Name of the Technology**	:	Ginger peeler
ii.	**Application/ Use**	:	Ginger rhizome peeling
iii.	**Description of Technology** :  Indigenous peeling methods are very laborious and time consuming and result in high loss of material and quality. The loss of ginger meat from underneath the skin would result not only in loss of weight but also heavy loss of economic value of ginger. On the demand of local ginger producers the ginger peeling machine was developed and the process parameters of the mechanical peeling were optimized to obtain high peeling efficiency with minimum ginger meat loss. The developed ginger peeler mainly consists of peeling unit, power transmission system and supporting frame. Ginger rhizomes were allowed to roll on abrasive surface of roller brushes where peeling takes place due to abrasive action of nylon wire brushes and rhizomes. Single phase 1 hp electrical motor was used as source of power and chain–sprocket mechanism was used for transmission of power. The developed ginger peeler was found to work satisfactorily with brush wire thickness of 150 gauges at a speed of roller brushes of 115 rpm for peeling time 10 min.		
iv.	**Input/raw material**	:	Ginger
	a) Overall dimension	:	-
	b) Weight	:	-
	c) Prime mover	:	-
	d) Plant & Machinery	:	-
	e) Power		1 hp
	f) Man power	:	1 unskilled
	g) Land	:	-
	h) Investment	:	-
v.	**Output capacity**	:	4-6 kg/batch
vi.	**Unit cost (per machine)**	:	Rs. 45000
vii.	**Suitability for crops/commodity**	:	Ginger
viii.	**Efficiency**	:	81.25 percent
ix.	**Unit cost of operation**	:	-
x.	**Patent obtained/applied**	:	-
xi.	**Commercialization status**	:	Ready for commercialization
	g) No. of Licensees to whom the technology has been transferred		-
	h) Selected Addresses of Licensee or Manufacturer		-
xii	Contact address	:	Research Engineer, AICRP on PHT College of Technology & Argil. Engineering, Maharana Pratap University of Agricultural & Technology, Udaipur– 313 001 (Rajasthan)