

Power Operated Farm Implements

Power Tiller Drawn Auger Digger

Suitability : To dig holes of 45-60 cm depth and 30 cm diameter for planting saplings.

Capacity : 40-50 holes/h

Power Source: Power Tiller (8-10 hp)

***Cost:** ₹ 22,000/-



Tractor Operated Mole Plough

Suitability : It is used for making moles at depth of about 60 cm. These moles function as pipeless drains to drain water in water logged soils.

Capacity : 0.14-0.42 ha/h

Power Source: Tractor (60-75 hp)

***Cost:** ₹ 18000/-



Tractor Operated Peg Type Puddler

Suitability : To break the soil clods near saturation level, into soil particles in order to prepare homogenized puddle tilth for mechanized paddy transplanting. Improves puddling in combination with cage wheels.

Capacity : 0.40 ha/h

Power Source: Tractor (35-45 hp)

***Cost:** ₹ 24,000/-



Plastic Mulch Laying Machine

Suitability : For laying plastic film for mulching & moisture conservation, raising soil temperature for better germination of seed and weed control.

Capacity : 0.12-0.18 ha/h

Power Source: Tractor (35 hp or above)

***Cost:** ₹ 55,000/-



Power Tiller Till Plant Machine

Suitability : A matching equipment for 10-12 hp power tiller to prepare seedbed and drilling seed and fertilizer simultaneously. It is suitable for wheat, Bengal gram, soybean etc. under medium and heavy soil.

Filed Capacity : 0.08-0.11 ha/h

Power Source: Power Tiller (10-12 hp)

***Cost:** ₹ 15,000/-



Power Tiller Seed cum Fertilizer Drill

Suitability : For sowing seeds of wheat soybean, bengal gram, sorghum etc. in medium and heavy soil.

Capacity : 0.20-0.25 ha/h

Power Source: Power Tiller (8-10 hp)

***Cost:** ₹ 18000/-



Tractor Operated Pneumatic Planter

Suitability : To plant single seed at predetermined seed to seed and row to row spacing. Suitable for mustard, sorghum, soybean, cotton, pigeon pea, groundnut okra etc.

Field Capacity : 0.5-1.0 ha/h

Power Source: Tractor (35-45 hp)

***Cost:** ₹ 72,000/-



Tractor Operated Inclined Plate Planter

Suitability : For planting maize, groundnut, gram, soybean, mustard etc. Row to row distance can be varied and planting of different seeds in different rows is possible.

Field Capacity : 0.45-0.65 ha/h

Power Source: Tractor (35 hp or above)

***Cost:** ₹ 37,000/-



Vegetable Transplanter

Suitability: For transplanting seedlings of vegetables like tomato, brinjal, cauliflower, cabbage, chili etc. The inclined wheels compact the soil around the seedlings which prevents lodging of plants. Facilitates timely transplanting and cost saving.

Field capacity : 0.08-0.12 ha/h

Power Source: 35-45 hp tractor

***Cost :** Rs.48,000/-



Power Operated Sweep Cultivator

Suitability : To perform interculture operation in soybean, sorghum, bengal gram, pigeon pea and other wider spaced crops in medium and heavy soils.

Field Capacity : 0.18-0.25 ha/h

Power Source: Power Tiller (8-10 hp)

***Cost:** ₹ 8000/-



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* Approximate cost. Price effective on date of delivery will be applicable

Self Propelled Power Weeder

Suitability : For weeding in crops sown in rows. spacing of sweeps can be adjusted as per crops spacing

Field Capacity : 0.1-0.15 ha/h

Power Source: 3.5 hp petrol engine

* **Cost :** ₹ 50,000/-



Self Propelled Vertical Conveyor Reaper (walk behind type)

Suitability : The self-propelled vertical conveyor reaper, also known as walk behind type reaper is suitable for harvesting and windrowing, wheat, paddy and soybean

Field Capacity : 0.20-0.25 ha/h

Power Source: 5 hp diesel engine

* **Cost :** ₹ 1,00,000/-



Tractor Operated Groundnut Digger

Suitability : For digging out groundnut plants from the soil specially in black soil. Groundnut pods along with plants are exposed over the soil by operation of this machine.

Field Capacity : 0.40 ha/h

Power Source: Tractor (35 hp or above)

* **Cost:** ₹ 20000/-



Semi-Axial Flow Multicrop Thresher

Suitability : For threshing crops like wheat, soybean, gram, sorghum, maize, pigeon pea, sunflower and paddy.

Field Capacity : 350-1350 kg/h

Power Source: 7.5 hp electric motor

* **Cost:** ₹ 75000/-



High Capacity Multicrop Thresher

Suitability : Suitable to thresh crop like wheat, maize, sorghum, gram, soybean, pigeon pea and sunflower.

Field Capacity : 550-2800 kg/h

Power Source: 20 hp electric motor/35 hp tractor

* **Cost:** ₹ 1,10,000/-



Tractor Operated Straw Reaper-cum-Trailer

Suitability :

In a combine harvested wheat field, it harvests and threshes the leftover wheat straw and plants and also gathers the shattered earheads. Fine quality bhusa is stored in the in-built overhead trailer simultaneously. The design reduces the requirement of additional tractor with trailer.

Field Capacity : 0.40ha/h

Power Source: 35-45 hp tractor

* **Cost :** ₹ 3.5 lakh



Areca Nut Sheath Shredder

Suitability : For converting dry areca nut sheath into small pieces which has been found to be a good alternative as fodder for the cattle. Facilitates longitudinal and transverse cut of areca nut sheath in single pass of cutting blade.

Field Capacity : 130 kg/h

Power Source: 3 hp electric motor

* **Cost:** ₹ 15,000/-



Multipurpose Hydraulic Lift System for Orchard Operations

Suitability : For ease in harvesting, pruning, spraying and canopy management operations in orchards. A single operator controls the total horizontal & vertical movement with ease & flexibility up to a height of 6m. The load carrying capacity is 200 kg.

Power Source: 12 hp Petrol Engine

* **Cost:** ₹ 6.5-7.0 lakhs



Precision Plot Drill

Suitability : Designed for Bio-Scientist for research trials. It is used for precision drilling of seeds in experimental plot. Prevents interplot material mixing and seed damage. It is suitable for small to bold seeds of cereal, pulses and oilseed crops.

Field Capacity : 1.0 plot/min (5mx18m)

Power Source: Tractor (35 hp or above)

* **Cost:** ₹ 45,000/-



Plot Thresher

Suitability : Designed for breeder scientists to thresh samples of research plots of wheat, gram, soybean etc. for precise calculation of plot yield. Can be used for seed purpose injury to seed, is almost nil.

Capacity : 10-25 kg/h

Power Source: 1.0 hp electric motor

* **Cost:** ₹ 30,000/-



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Hand & Animal Operated Improved farm Implements

Maize Sheller

Suitability : For shelling / separating dry maize kernels from cob for use as seed/food purpose.

Capacity : 20-25 kg/h

Power Source: One Person

***Cost:** ₹ 60/-



Serrated Sickle

Suitability : To harvest dry thin stem crops such as paddy, wheat, mustard etc.

Capacity : 0.02 ha/h

Power Source: One Person

***Cost:** ₹ 60/-



Naveen Dibbler

Suitability : To plant medium and bold seeds in well pulverized small field and for gap filling.

Field Capacity : 0.03 ha/h

Power Source: One Person

***Cost:** ₹ 700/-



Rotary Dibbler

Suitability : It is manually operated push type equipment for dibbling bold and medium size seeds in rows at uniform spacing in well prepared soil.

Field Capacity : 0.05 ha/h

Power Source: One Person

***Cost:** ₹ 2,300/-



Paddy Drum Seeder

Suitability: For sowing pre-germinated paddy seeds in puddled field. Light in weight and hence can be easily operated. Available in 4 and 8-row sizes.

Field capacity : 0.7-0.15 ha/ h

Power Source: One Person

Cost: ₹ 7,000/-



Twin Wheel Weeder

Suitability: For weeding and interculture operations between crop rows in dry fields

Field Capacity : 0.01 ha/h

Power Source: One Person

*** Cost:** ₹ 800



Cono Weeder

Suitability : For weeding and interculture operations between crop rows in paddy fields.

Field Capacity : 0.01 ha/h

Power Source : One Person

***Cost :** ₹1900



Improved Bakhar

Suitability : For seedbed preparation in black soil. Rolling action reduces draft.

Field Capacity: 0.06-0.07 ha/h

Power Source: A pair of Bullocks

*** Cost:** ₹ 4,000/-



Patela Harrow

Suitability : Secondary tillage equipment for clod crushing, trash collection, leveling and smoothing of land surface before seeding.

Field capacity: 0.3 ha/h

Power Source: A pair of Bullocks

*** Cost:** ₹ 6,000/-



Patela Puddler

Suitability : For shallow puddling with higher mechanical dispersion of soil.

Field capacity: 0.10 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 6,000/-



* Approximate cost. Price effective on date of delivery will be applicable

Lug Wheel Puddler

Suitability : For shallow puddling with higher mechanical dispersion of soil to improve puddling performance.

Field capacity: 0.10 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 9,000/-



Two Row Seed Cum Fertilizer Drill

Suitability : For sowing crops like wheat, gram, sorghum, lentil, pea, sunflower etc. and drilling fertilizer in black soil under rainfed conditions for small bullocks.

Field capacity: 0.05-0.08 ha/h

Power Source: A pair of Bullocks

*** Cost:** ₹ 7,000/-



Three Row Seed Drill

Suitability : For sowing crops like wheat, gram, sorghum, lentil, pea, sunflower etc. and drilling fertilizer in black soil under rainfed conditions for medium size bullocks.

Field capacity: 0.08-0.12 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 7,000/-



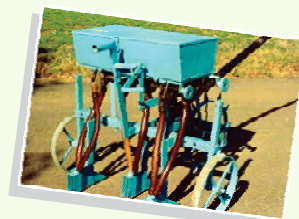
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Field capacity: 0.08-0.12 ha/h

Power Source: A pair of Bullocks

*** Cost:** ₹ 9,000/-



Mustard/Small Seed Sowing Drill

Suitability : It is a two row seed cum fertilizer drill for small seeds such as rapeseed/mustard and pearl millets.

Field capacity: 0.08-0.12 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 9,000/-



Inclined Plate Planter

Suitability : Equipment with Inclined Plate metering mechanism for planting groundnut, maize, soybean, pigeon pea, sorghum and other oilseeds and pulses.

Field capacity: 0.10-0.12 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 15,000/-



Groundnut-cum-Potato Digger

Suitability : For digging groundnut and potato and exposing them on soil surface. Can also be used for secondary tillage operation (harrowing).

Field capacity: 0.05-0.08 ha/h

Power Source: A pair of Bullocks

***Cost:** ₹ 7,200/-



Animal Performance Measurement

Animal Loading Car

Suitability : It is an equipment used to study draftability of draught animals i.e. bullocks, buffaloes, camels, donkeys, mules etc. under field conditions.

*** Cost:** ₹ 4,00,000/-



Animal Tread Mill

Suitability : For studying the draftability and fatigue of animals under different load and speed condition.

Power Source: 5 kW AVS drive

***Cost:** ₹ 4,00,000/-



Animal Weighing

Balance

Suitability : For weighing animals. Gives correct weight of animals to monitor their health.

Power Source: 220 V electric supply



Crop Processing & Value Addition Technologies

Potato Peeler

Purpose : To remove outer skin of potatoes through scouring.

Capacity : 50-60 kg/h

Power Source: One Person

*** Cost:** ₹ 17,000/-



Potato Slicer

Purpose : To cut slices of potatoes for making wafers / chips.

Capacity : 40-50 kg/h

Power Source: One Person

*** Cost:** ₹ 12,000/-

Groundnut Decorticator (Standing Type)

Purpose : For shelling/separating dry groundnut kernels from pods for use as seed/food purpose.

Capacity : 60-70 kg/h

Power Source: One Person

*** Cost:** ₹ 2400/-



Groundnut Decorticator (Sitting Type)

Purpose : For shelling / separating dry groundnut kernels from pods for use as seed / food purpose.

Capacity : 30-35 kg/h

Power Source: One Person

***Cost:** ₹ 2400/-

Double Screen Grain Cleaner with Sack Holder

Purpose : To clean and grade selected grains using suitable matching sieves and sack holder to hold sack while transferring clean grain with reduced drudgery.

Capacity : 150-225 kg/h

150 kg/h Wheat, 200kg/h Gram, 225 kg/h Soybean

Power Source: One Person

*** Cost :** ₹ 4500/- (Cleaner), ₹ 1200/- (Sack holder)



Pedal cum Power Grain Cleaner cum Grader

Purpose : To clean and grade selected grains using suitable matching sieves with high capacity and reduced drudgery.

Capacity : 180-900 kg/h

Pedal Operated (Kg/h): Linseed (180), Wheat (350), Sunflower (280), Gram (500), Mustard (507), Safflower (274), Soybean (600)

Power Operated (kg/h): Linseed (230), Wheat (500), Sunflower (345), Gram (800), Safflower (315), Soybean (900)

Power Source: Manual or Electric Motor 0.5 hp single phase

*** Cost :** ₹ 20000/-

Crop Processing & Value Addition Technologies

Motorized Soybean Dehuller

Suitability: To remove outer hull of soybean to make soy splits.

Capacity : 80 kg/h

Power Source: Electric Motor 1 hp single phase

*** Cost : ₹ 18000**



Soy Paneer Plant

Suitability: To cook and grind soybean to make soy milk and soy paneer.

Capacity : 300 l milk or 50 kg paneer per day (8h)

Power Source: Cooking Gas/Kerosene Stove and Electric Motor 2 hp/ three phase

*** Cost : ₹ 180000 (Plant),
₹ 4000 (Paneer Pressing Device)**



Dal Mill

Suitability: For making dal from tur/arhar (Pigeon Pea) at cottage level. Can also be used for other pulses such as black gram, green gram and lentil.

Capacity : 100 kg/h

Power Source: Electric Motor 2 hp three phase

*** Cost : ₹ 30000**



Multipurpose Grain Mill

Suitability: For cottage scale milling of grains and spices

Capacity : 10-20 kg/h for making flour from wheat, soybean, chickpea (gram) and coriander powder etc. 50-70 kg/h for making gram dal.

Power Source: Electric Motor 1 hp single phase

***Cost : ₹ 19000**



Millet Mill

Suitability : Dehusking of all minor millets possible viz., foxtail millet, millet, kodo millet, proso millet and barnyard millet. A continuous type Millet Mill which is eco-friendly & energy efficient. Dust free operation and reduction of overall torque.

Capacity: 100 kg/h, **Power Source:** 1 hp single phase motor

Dehusking efficiency: 95%.

***Cost : ₹ 45,000 (with motor)**



Multi-Purpose Tray Dryer & LSU Dryer

It is a batch type twin i.e. LSU type dryer for grain and tray type for food products.

It uses hot air with GI sheet and plywood with wire mesh bottom trays for LSU and tray type dryer respectively.

No. of Tray : 10

Capacity : LSU - 250 Tray - 100 (kg/Batch)

***Cost : ₹ 60,000**



Vegetable Dryer

It is used for drying vegetables like Cauliflower, Cabbage, Onion etc. at small level. Twenty trays of Nylon wiremesh are fitted in Aluminium frame and temperature in drying chamber is controlled with the help of thermostat. It can reduce moisture from 90% to 6% for a batch of 50 kg in 11-14 hours.

Capacity : 50 kg/Batch

Drying Time : 11-14 hours

*** Cost : ₹ 70,000**



* Approximate cost. Price effective on date of delivery will be applicable

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Agricultural Energy Technologies

Micro-controller based single axis sun tracker

Suitability : Suitable to orient SPV panel with the direction of sun movement for harnessing maximum solar energy.

Power required for tracking : 430 W

SPV panel capacity : 2.4 kWp

***Cost of tracking unit :** ₹ 40,000/-



Solar cabinet dryer

Suitability : For drying of fruits and vegetables.

Capacity : 20-25 kg per batch

Drying time : 3-4 days per batch

***Cost of dryer :** ₹ 20,000/-



Solar assisted dehumidifier based heat pump dryer

Suitability : For drying heat sensitive fruits, medicinal and aromatic crops.

Capacity : 20 kg per batch

Cost of unit : ₹ 1,50,000/-

Operating cost : ₹ 20-25/kg



Forced convection type solar cocoon dryer

Suitability : For drying of silk cocoons.

Capacity : 50 kg cocoons/batch

Drying cost : ₹ 8-10/kg of cocoon

Cost of Unit : ₹ 1,50,000/-



Solar tunnel dryer

Suitability : Suitable for drying horticultural crops

Capacity : 100 kg/batch

Thermal efficiency : 24-28%

Operating cost : ₹ 8-10/kg of the dried products

Cost of Unit : ₹ 100,000/-



Double reflector box type solar cooker

Suitability : Two reflector mirrors (unbreakable acrylic mirror) are fixed in this solar cooker. It is more effective in winter season in Central and North India especially.

Cooking capacity : Food for 4-5 persons

Temperature range : 25-30°C

Time taken for cooking : 2-2.5 h

Weight : 19 kg

Cost of Unit : ₹ 3,000/-



* Approximate cost. Price effective on date of delivery will be applicable

Renewable Energy Technologies

Charring and briquetting technology

Suitable for making bio-char and briquettes from crop residues

Capacity of charring : 80 kg/day

Capacity of briquetting machine : 40 kg/h

Cost of charring unit : ₹ 8,000/-

Cost of briquetting machine : ₹ 35,000/-



Multi fuel domestic cook stove

Suitability: Smokeless cooking stove using briquettes made of crop residue.

Capacity : 1.0 kg briquettes per 1.5 h (Burning), 0.5 kg (Hopper)

***Approximate Cost:** ₹ 1000



Briquetting plant for agro-residues

Suitable for making briquettes from different agro residues without binder

Capacity : 330-350 kg/h

Operating Cost : ₹ 1/kg biomass briquette

Cost of plant : ₹ 15,00,000/-



Pile foundation based biogas plant

Suitable for vertisols, where plant failure due to soil cracks is prominent.

No of Piles : depends on capacity of plant

Cost : ₹ 5,000/- additional, compared to Janta biogas plant model



Automatic LPG supplementation system for producer gas engine

Suitable for automatic supplementation of LPG to a producer gas engine to avoid sudden load variations.

Recovery time : 5-7 seconds

Cost of system : ₹ 50,000/-



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RECENT TECHNOLOGIES FOR PRODUCTION AGRICULTURE

CIAE Tractor Drawn Pre-emergence Herbicide Strip Applicator-cum-Planter

Salient Features: It is tractor drawn six row planter-cum-fertilizer drill equipped with pre-emergence herbicide applicator. The machine plants seed, drills fertilizer and sprays herbicide strip across the planted rows simultaneously. With Pre-emergence herbicide application, the intra row weeding is eliminated.

Brief specifications:

Field capacity- 0.6 ha/h, Herbicide tank capacity - 80 litre
Overall Dimensions (L x W x H) - 2508 x 1525 x 1405 mm.



CIAE Tractor Drawn Rotary Assisted Broad bed Former-cum-Seeder

Salient Features: It is six row tractor drawn machine to create or reshape broad bed and drill seed and fertilizer simultaneously on the bed. The creation or re-shaping is done by dumb bell shape bed former with both ends having conical rollers. The dumb bell bed former also drives seed and fertilizer metering system. The machine is suitable for soybean, wheat cropping system on raised bed.

Brief specifications:

Field capacity - 0.35 ha/h fresh bed making and sowing and 0.56 ha/h for bed reshaping and sowing.
Bed Size (W x H) - Broad 1500 x 150 mm, Weight - 300 kg



CIAE Multi Millet Thresher

Salient Features: It is power thresher for threshing and dehulling of all six minor millets. The threshing drum has been fitted with three rows of canvas strips and three rows of cutting knives placed alternately since some of the millet crops require cutting action while others need shear force for complete threshing.

Brief specifications:

Threshing capacity- 80-120 kg/h, Dehulling capacity- 15-40 kg/h
Overall dimension (L x W x H): 1300 X 700 X 1100 mm



CIAE Tractor Drawn Seed-cum-Fertilizer Drill with Two Stage Fertilizer Application System

Salient Features: It is tractor drawn five row machine to sow seeds and apply fertilizer at two different depths simultaneously. This machine has potential to increase wheat and soybean yield by 15 and 22% respectively.

Brief specifications:

Field capacity - 0.05 ha/h at 3.5 km/h, weight - 200 kg, Overall dimensions (L x W x H): 2070 x 1445 x 1340 mm.



CIAE Power Tiller or Tractor Drawn Planter with Fertilizer Drill

Model I - Inclined Plate Type/Model II-Vertical Plate Type

Salient Features: It is light weight power tiller or tractor operated six row planter with fertilizer drill and available in inclined plate or vertical plate type seed metering system. The implement has been developed with low ground clearance for effective sowing of millets (Inclined plate type)/multi-crop such as sorghum, wheat, maize etc. (vertical plate type) and drill fertilizer simultaneously. The power tiller operated machine is provided with an attachment to link it with power source.

Brief specifications: Field capacity - 0.42 ha/h, Draft - 800 to 900 N, weight-75 kg, Overall dimensions (L x W x H) - 700 x 2100 x 1000 mm



CIAE Tractor Operated Transplanter for Sugarcane Bud Seedlings (In collaboration with ICAR-SBI Coimbatore)

Salient Features: It is two row transplanter for sugarcane bud seedlings raised in portrays. The unit has been developed to promote sugarcane cultivation through bud chip/single bud technology to save cost towards seed material. Seed material required under this technique is only 1 to 1.5 t/ha and the remaining cane after extracting bud chips can be sent for milling / jaggery making. It also facilitates easy handling and transportation.

Brief specifications:

Field Capacity - 0.10 - 0.20 ha/h, Power Source- 35 hp or more, weight - 600 kg
Overall dimension(L x W x H) - 2500 x 2050 x 1600 mm



CIAE Power Weeder for Mound Cassava

Salient Features: This weeder is suitable for weeding in Cassava crop, planted at 75 cm inter row and 35-40 cm intra plant spacing in sloppy terrain. The compact size of the machine facilitates fatigueless operation for a women worker.

Brief specifications:

Weeding Capacity-0.16 ha/day, weeding efficiency-93%, Field efficiency-70%
Weight - 15 kg, Power Source- 0.5 hp petrol engine



CIAE Animal Lifting Device for Bullocks and Equines

Salient Features: It is manually operated, low cost and light weight machine suitable for lifting and shifting animal weighing up to 900 kg. It has wheels to transport sick or unable to walk animals from one place to other.

Brief specifications:

Capacity -for animals weighing up to 900 kg, Overall dimensions (L x W x H) - 2886 x 3862 x 2365 mm



Motorized Sugarcane Single Bud Cutting Machine (In collaboration with ICAR-SBI Coimbatore)

Salient Features: To raise seedlings in the portray, single bud of specified length along with a portion of the nodal region is required. The single bud out of seed material is cut by motorized single bud cutting machine. This machine is driven by one hp electric motor with two circular blades mounted on shaft ends rotating at 2000 rpm. Two persons can operate the machine and can cut 3000 single buds per hour. The saving in time and cost is about 90 and 64% respectively compared to manual cutting.

Brief specifications: Capacity - 3000 buds/h, Power Source- 1 hp



CIAE Bullock Drawn Planter with Fertilizer Drill

Model I - Inclined Plate Type/Model II-Vertical Plate Type

Salient Features: It is light weight bullock drawn three row planter with fertilizer drill and is available in inclined plate or vertical plate type seed metering system. This implement is a light weight unit with low ground clearance and suitable for planting of multi-crops such as millets, jute, carrot, grams etc. and drills fertilizer simultaneously. There is a saving of 60-70% towards input and operation cost while using this equipment compared to traditional methods.



Brief specifications: Field Capacity - 0.12 ha/h, Draft - 400 to 500 N, weight -35 kg, Overall dimensions (L x W x H) - 700 x 1000 x 900 mm

CIAE Low Cost SPAD (Soil Plant Analysis Development) Meter

Suitability: It is compact, hand held, portable and low cost instrument [paper stapler size], which measures chlorophyll content of the plant leaves [up to one mm thickness] to assess nitrogen requirement of the crop and makes recommendation for dose of nitrogen application. It is operated through Android Smart phone and provides instant display of data. The accuracy of the instrument is ± 1.5 SPAD units.

Brief specifications: Overall dimensions (L x W x H) - 100 x 20 x 40 mm



CIAE Vegetable Transplanter (Single or Two Row)

Salient Features: It is hand held single or two row light weight and low cost implement for transplanting of plug/pot type seedlings on ridges / raised beds/plastic mulch. The implement consists of single or two delivery pipes, frame with clutch handle and single or two jaws for making holes and delivery of seedlings in soil.

Brief specifications:

Model I- Single Row:

Field capacity-Planting 12-15 seeding per minute, Overall dimensions (L x W x H) - 210 x 60 x 1000 mm, weight - 2 kg

Model II- Two Row:

Field capacity-Planting 20-22 seeding per minute, weight - 5 kg, Overall dimensions (L x W x H) - 530 x 610 x 1000 mm



CIAE Manually Operated Vertical Plate Planter with Fertilizer Drill (Push Type)

Salient Features: It is manually operated push type single row vertical plate seed metering type planter with fertilizer drill. It is light weight low ground clearance machine suitable for planting of small seeds such as millet, jute etc. and drill fertilizer simultaneously which leads to cost saving compared to traditional method.

Brief specifications:

Field capacity- 0.04 ha/h, weight-20 kg, Overall dimensions (L x W x H) - 1110 x 450 x 1100 mm



CIAE Manually Operated Planter

Model I - Inclined Plate Type/Model II-Vertical Plate Type

Salient Features: It is manually operated light weight pull type three row planter suitable for planting of small seeds such as millet, jute and multi crops such as sorghum, bajra and vegetables etc. This implement is available with inclined plate or vertical plate type metering system. Planting with this machine saves seed, fertilizer and cost compared to drilling by traditional methods.

Brief specifications:

Field capacity - 0.10 ha / h, draft- 100 to 200 N, weight-21 kg, Overall dimensions (L x W x H) - 1170 x 1100 x 400 mm



CIAE Manual Stalk Uprooter

Salient Features: It is light weight, gender friendly, simple, handy and easy to fabricate manually operated implement to uproot stalks of harvested crop such as Cotton, Red gram, Lantana camara etc.

Brief specifications:

Field capacity - 0.04 ha/h, weight - 4.5 kg. Overall dimensions (L x W x H) - 160 x 430 x 125 mm



CIAE Manual Nursery Seeder

Salient Features: It is manually operated low cost portrays type nursery seeder for sowing of seeds of chilli, brinjal, tomato and other similar vegetable seeds. It saves time, cost of operation and labour to the tune of 68% compared to traditional manual nursery seeding method.

Brief specifications:

Tray dimension - 485x305x41 mm, No of cell in tray - 104 (13x8 rectangular array).

Overall dimension (L x W x H) - 600 x 400 x 41 mm, weight-15 kg.



Recent Technologies for Post-Harvest Processing & Value Addition

Package for Banana Stem Central Core (Slicer, Dicer, Fibre removal, surface water removal, Juicer/Grinder and Squeezer) [In Collaboration with ICAR-NRC Banana, Trichy].

Salient Features: Banana stem central core, a good source of nutrition, is an abundant natural resource in tropical and subtropical regions. About 5-7 tons of central cores can be extracted from one hectare. The banana central core which is wasted mostly can be made into value added nutritional products for human consumption, thus generating additional revenue to farmers / entrepreneurs / processors. The package consists of six machines such as Slicing unit, Dicing unit, Fibre removing unit, Surface water removing unit, Juicer Grinder and Juice Squeezer.



Slicing Unit



Dicing Unit



Fibre removing unit



Surface water removing unit



Juicer Grinder



Juice Squeezer

Package for Rope Making from Outer Sheath of Banana Pseudo Stem (In collaboration with ICAR-NRC Banana, Trichy)

Salient Features: Out of the 14-18 sheaths available in a pseudostem of banana plant, the outermost 4-6 sheaths yield coarse fibre. These can be used for making value added products, thus generating wealth from waste. Ropes from outer sheath of banana pseudostem are in high demand for different applications but is labour intensive with hand spinning or by ratt machines. The package of equipment consists of equipment for splitting the outer sheath and a twisting equipment for obtaining the twisted rope from splitted banana outer sheath. This machine saves about 40 % of labour over conventional method and gives about 60% increase in capacity.



CIAE Ripening Chamber for Horticultural Crops

Salient Features: It is a chamber with a volume of 15 m³ made of pre-fabricated detachable panels. The panels consist of EPE foam sheet as insulating material. The chamber is equipped with an air-conditioner, humidifier and ethylene generator to maintain the desired conditions for ripening of fruits like banana, mango sapota & papaya.

The chamber can accommodate around 1 ton of fruits for ripening, which takes about 4-6 days.

Brief specifications: Capacity- 1 tonne in 4-5 days



CIAE Power Operated Millet Flaking Machine

Salient Features: It is a compact machine to make millet flakes by pressing the millet flour between two textured stainless steel rollers. The adjustable gap between rollers make it suitable for use with different sizes of millets/cereals and other food/feed materials into variable thickness flakes. The machine is operated by electric motor.

Brief specifications: Capacity- 450 kg/h, Power Source- 2 hp single phase motor



CIAE Banana Chipper Shredder

Salient Features: The unit is suitable for making banana pseudo stem chips of size 25x50 mm, which can be used for vermi composting. This shredder is gender friendly, cost effective, portable and suitable for on-farm tasks. It is free-standing and is mounted on four legs, operated by a 3 hp three phase electrical motor. The capacity of the machine is 6000 kg/h by engaging two workers.



CIAE Aonla Deseeding/ Segmentation unit

Salient Features: Aonla can be deseeded in this compact, safe and hygienic deseeder. The capacity of machine is 12-15 kg/h with 4-5% loss of pulp and around 1.6-1.8 percent loss of juice. It saves cost by 70-80% as compared to conventional method.

Brief specifications: Capacity- 12-15 kg / h, Power Source- 0.5 hp single phase electric motor



CIAE Power Operated Fruit Grader

Salient Features: It is expanding flap type grader to grade fruits such as apple, sweet lemon and orange fruits etc. in five grades by adjusting the flap spacing. The unit consists of hollow pin chain, sprockets, steel flaps, rollers, wheel track, collection trays, power source and reduction gear and transmission system.

Brief specifications:

Capacity 5 t / h, Grading efficiency-93 to 96%, Power Source- 1 hp, 3-phase electric motor

Overall dimensions (L x W x H) - 4700 x 700 x 1000 mm



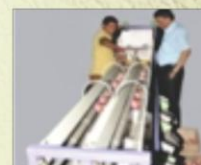
CIAE Power cum Manually Operated Fruit and Vegetable Grader

Salient Features: It is manual cum power operated grader for spherical fruits & vegetables such as apple, guava, mango, citrus, tomato, onion, potato, etc. having equivalent diameter of 35-120 mm to grade them in to five grades. The fruit/vegetables are loaded through rubber flap elevator to the grading system consisting of 2 sets of reducing diameter rollers.

Brief specifications:

Capacity-2 t/h, Grading efficiency- 92 to 95%, Weight-220 kg,

Overall dimensions (L x W x H) - 5012 x 964 x 1172 mm



CIAE Diverging Belt Fruit Grader

Salient Features: This diverging belt type fruit/vegetable grader is suitable for spherical fruits/vegetables such as tomato, onion, apple, guava, amla, citrus etc. to grade them into 4 grades. It is light weight equipment and is designed ergonomically.

Brief specifications:

Capacity- 1.5-2.0 ton of fruits /h, Power Source- 0.5 hp single phase electric motor



Process Technology & Products

CIAE Process Technology for Production of Pro-Biotic Soya Cheese Spread

Salient Features: Process technology is available for production of probiotic soy cheese spread, which is nutritionally rich product having probiotic characteristics. The product contains about 17% protein, 25% fat, high antioxidant activity (53%) and higher probiotic culture viability. It can be utilized as a spread with bread/chapatti/paratha/biscuits as a main meal or a meal supplement.



Process Technology for Gluten-free Eggless Cake

Salient Features: Eggless gluten free multinutrient cake has been made using cereals, millets, pulses and fruits. It is rich in protein, vitamins, minerals and anti-oxidants sans cholestrols and saturated fat. No added colour and preservatives are added and its high nutritive value is its USP. People who avoid eggs and are allergic to gluten can enjoy this cake safely.



CIAE Nutri-Bar

Salient Features: Multi-Nutrient Bars are high nutrient baked products which provide an easy way out of the dilemma of choosing between health and taste. The snack contains ingredients from almost every food group and is sweetened with healthy natural sweeteners like jaggery. This Nutri bar substantially contributes to our daily requirement of energy, protein, minerals and also provides added advantages of phenolics and antioxidants. Apart from this, the combination of fresh and dry fruits leaves a pleasant taste on the tongue. This snack can be used to satisfy "between the meals" hunger and also act as "quick bite" during travel.



CIAE Multi Nutrient Ladoo

Salient Features: Multi nutrient Laddoo (contains cereals, sprouted legumes, malted millet, dairy ingredient, fruits oil and jaggery) is a high energy and protein food with good source of minerals, phenolics and antioxidants. These are easy to store and consume and contain protein (24.6g), iron (10.4mg), phosphorus (287.5mg), phenolics (123.0 GAE) mg, flavonoids (6.9 QE) mg and antioxidant activity (62.6% RSA) in 100g.



CIAE Soy Fortified Nutritious Healthy Noodles

Salient Features: A process has been developed to produce noodles fortified with Defatted (DFSF) and Full Fat Soy flour (FFSF), in proportion ranging from 10% to 30% with refined wheat flour/whole wheat flour while . The refined flour (maida) was replaced up to 40%. The soy fortified noodles prepared had about 17% protein, fat 7.5%, carbohydrate 68% and energy 395 Kcal/100 g. The sensory evaluation revealed that up to 20% incorporation of DFSF/FFSF is acceptable in quality and taste.



CIAE-Extruded Functional Food - Snack

Salient Features:

Soy fortified functional extruded products have been developed using rice flour (20-25%), corn flour (20-25%), wheat flour (15-25%), DFSF (5-10%), fruit powder (3-5%), vegetable powder (3-5%), Soy Protein Isolate (SPI, 3-5%) and dairy whiteners (5-10%). The protein content, fat, carbohydrate and energy of the developed extruded were found to be 16-21%, 1-2%, 60-63% and 340 kcal/100g respectively.