

PREFACE

The Kerala Agricultural University is in the process of expanding its teaching, research and extension programme in Agricultural Engineering. Besides meeting the teaching requirements for the B.Sc Agricultural and Horticultural degree students, a post graduate programme leading to the M.Sc Agricultural Engineering degree has been started recently in the College of Horticulture, Vellanikkara. Several research projects of topical interest in the discipline have also been initiated.

This compilation on Directory of conventional and improved agricultural implements is part of the efforts to enhance the extension activities in the discipline of agricultural engineering. It is hoped that the material assembled in this text will be of some use to farmers, students and all those who are concerned with engineering application in agriculture.

Suggestions pointing out, errors and additional material for improving this compilation are earnestly solicited.

V. GANESAN
JOSE SAMUEL

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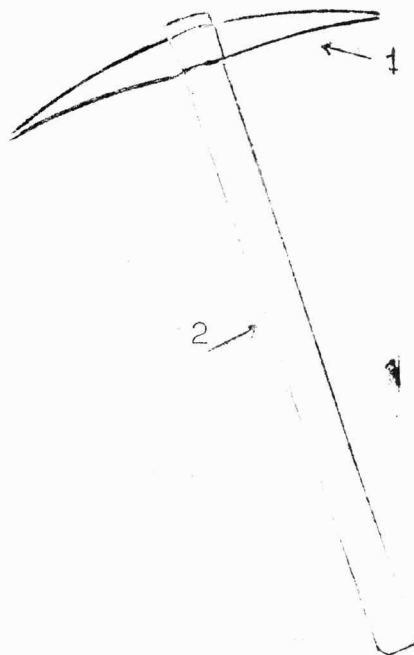
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I. LAND PREPARATION EQUIPMENT

A. HAND TOOLS

1. PICKAXE

1. Name of tool : Pickaxe
2. Local name : *nit (oo) o m*
3. General description : Double ended and sharp pointed tool fitted with wooden handle. Size of working part approx. 50 cm. Length of handle 1 m.
4. Function : Commonly used for breaking hard soil, digging pits and in road construction.
5. Special features : Metal working part constructed with sharp point at one end and a flat knife edge at the other to suit different soil condition.
6. Weight : 3.3 kg.
7. Approx. Cost : Rs. 27/=
8. Performance : 1 - 2 m³/day



9. Manufactures/Dealers

1. Local artisans

2. Manufactures list, please see appendix. I.

3. Local hardware dealers.

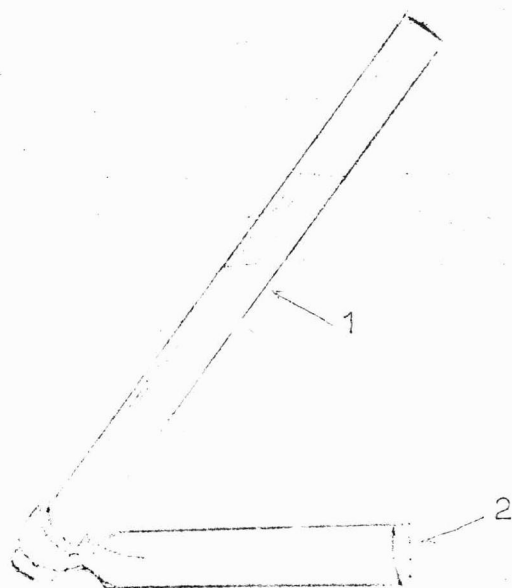
1. Working part
2. Handle

2. DIGGING HOE

1. Name of tool : Digging hoe
2. Local name : കുറ്റ്യാലി
3. General description : Consists of a narrow steel blade with sharp edge on the opposite end to fit the handle.
4. Function : Used mostly for upland crop culture as a primary tillage tool.
5. Special feature : Adapted for dry soil conditions and when the soil is hard to till by other means.
6. Weight : 2 kg
7. Approx. Cost : Rs. 21/=
8. Performance/Field capacity: Approx. 200 - 300 m²/day.

9. Manufactures/Dealers

1. Local artisans
2. Manufactures list, please see appendix. I.
3. Local hardware dealers.



1. Handle
2. Working part.

3. CHOPPING HOE

1. Name of tool : Chopping hoe (spade)
2. Local name : ചെറുതൊടി (Cherutodi)
3. General description : Consists of flat metal blade with a sharp edge on one end and socket on the opposite end to fit the handle.
4. Function : Used for breaking of light and medium soil, digging pits and making ridges, furrows etc.
5. Special features : Suited for upland as well as wet land work.

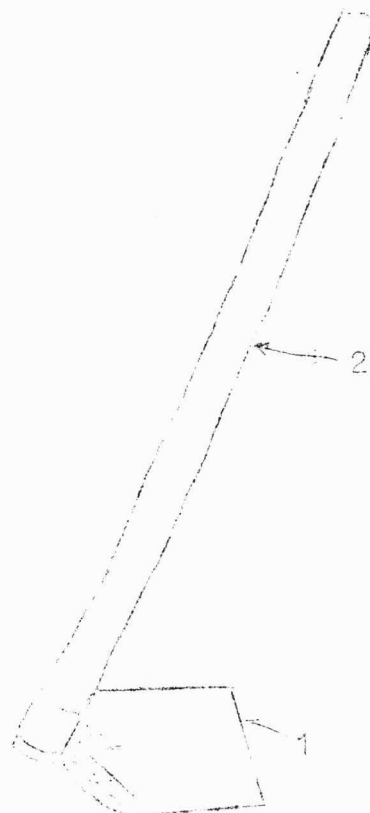
6. Weight : 2.47 kg
(with handle)
7. Approx. cost : Rs.17/=
8. Performance/
Field capacity : Appr. 500 m²/
day.

9. Manufacturers/Dealers

1. Local black smith

2. Manufactures list, please
see appendix.

3. Local hardware dealers.



1. Metal blade
2. Handle

4. HAND SHOVEL

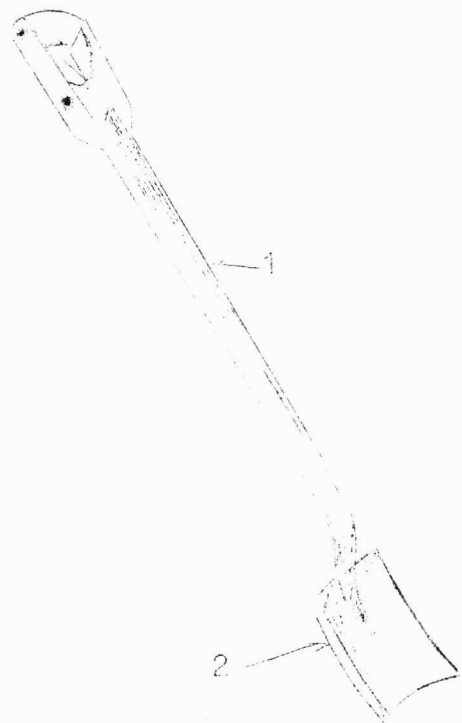
1. Name of tool : Hand shovel
2. Local name : കറുത്തു (കറുത്തു)
3. General description : Consists of a broad metal blade slightly curved on the sides on the opposite end to fit the handle.
4. Function : Used for handling loose soil and sand. Also used for spreading the loose soil in levelling work.
5. Special feature : Versatile tool used for handling and mixing granular materials.

6. Weight : 2 kg.
7. Approx. Cost : Rs.20/=
8. Performance : 10 m³/day

9. Manufacturers/Dealers

1. Manufacturers list, please see appendix. I

2. Local hardware dealers.



1. Handle
2. Metal blade

5. HAND RAKE

1. Name of tool : Hand rake, Long handled
2. Local name : പാലാൽമുട്ടി
3. General description : Consists of finger like metal working part and long wooden handle of approximate 1.5 m. length.
4. Function : Used for breaking the clods and smoothing the field. Also used for mixing fertilizers in the soil and even as interculture tool in kitchen gardens.

5. Special features : Nil

6. Weight : 1.5 kg

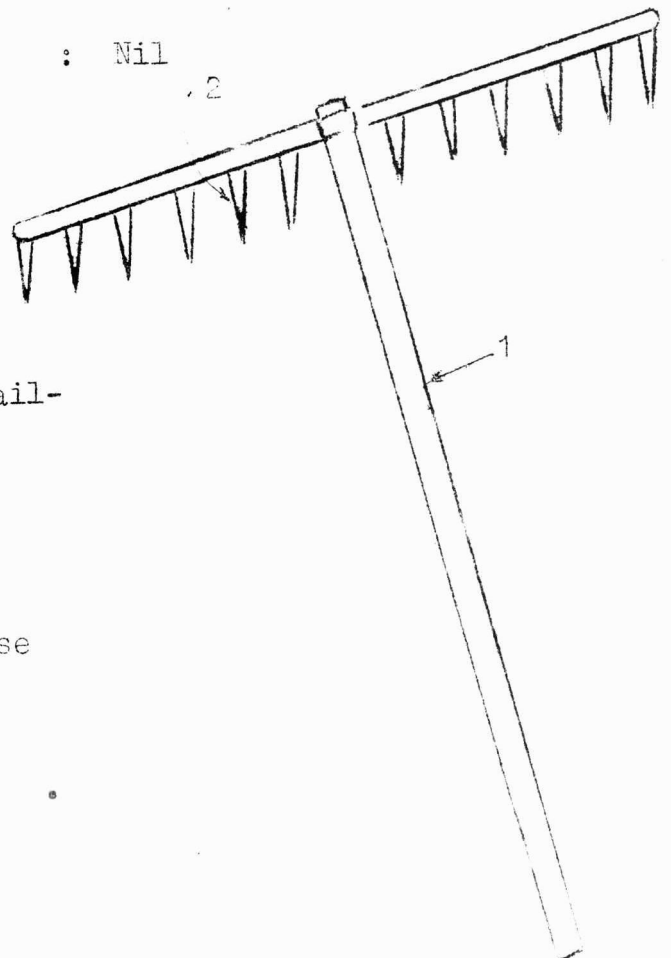
7. Approx. Cost : Rs.10/=

8. Performance : Not available.

9. Manufacturers

1. Manufacturers list, please see appendix. I

2. Local hardware dealers.

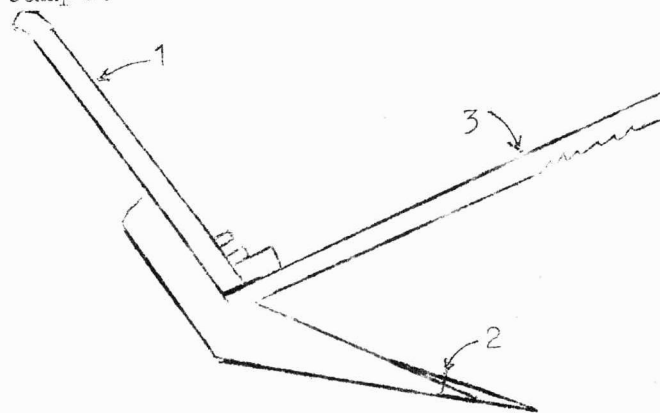


1. Handle
2. Working part

B. ANIMAL OPERATED IMPLEMENTS

1. COUNTRY PLOUGH

1. Name of implement : Country plough
2. Local name : मोसो भाँडा
3. General description : Consists of a beam, body and handle along with a share point which is the only part made of metal, fitted to the front end of the body.
4. Function : Used for shallow ploughing opens the upper crust of the soil forming a 'V' shaped furrow. Repeated operations break the clod and make the soil suitable for sowing seeds.
5. Special features : Versatile local implement used in seed bed preparation, sowing of seeds in lines and uprooting of stumps.
6. Weight : 14 kg.
7. Approx. Cost : Rs. 50/=
8. Performance : 0.3 ha/day
9. Manufactures/Dealers
- 1. Local artisans
 - 2. Local dealers



- 1. Handle
- 2. Share
- 3. Beam

2. ROSE PLOUGH

1. Name of implement : Rose plough
2. Local name : ரோஸ் பிளவு
3. General description : Consists of a beam, body and handle plough with a snare point (shoe), made of metal fitted to the front end of the body. It is a modified country plough.
4. Function : Used for ploughing. It opens the upper crust of the soil, breaks the clods and makes the soil suitable for sowing seeds.
5. Special feature : It inverts the soil as mould board plough. Suited for sandy soil.

6. Weight : 5.75 kg.

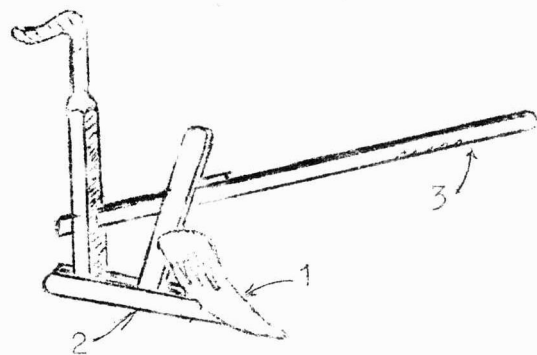
7. Approx. Cost : Rs.75/=

8. Performance/ : 2 ha/day
Field capacity

9. Manufacturers/Dealers

1. Thevar & Company,
Madurai (Madras)

2. Local hardware dealers.



1. Shoe
2. Land side
3. Beam

3. MOULD BOARD PLOUGH

1. Name of implement : Mould board plough (K.A.E...III)

2. Local name : മൂൾഡ് ബോർഡ് (മോൾഡ്-3)

3. General description : Consists of a body to which the share and mould board, land side, and wooden beam are attached. All parts except the beam are made of steel.

4. Function : Used for ploughing operation.

It opens the upper crust forming a rectangular furrow and inverts the soil. It also burries the trash and helps to prepare the field for planting.

5. Special features : Is made of high carbon steel, and it makes rectangular furrow as compared to a 'V' shaped furrow formed by the country plough.

6. Weight : 7 kg.

7. Approx. cost : Rs.100/=

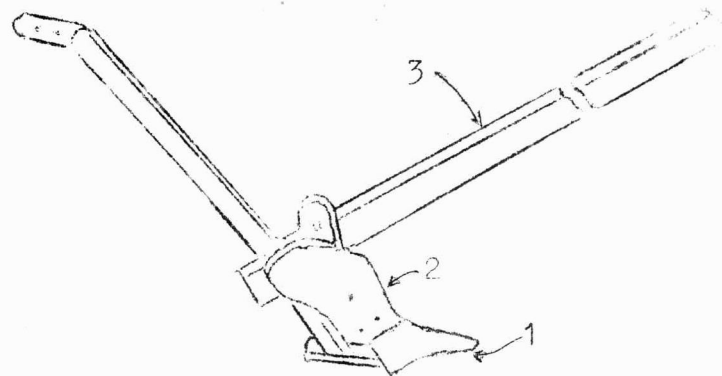
8. Performance : 0.3 ha/day

9. Manufactures

1. Sreekrishna Industries,
Coimbatore Road, Palghat.

2. Community Engineering Works,
Toppanamcode,
Trivandrum.

3. For additional list, please
see appendix. II.

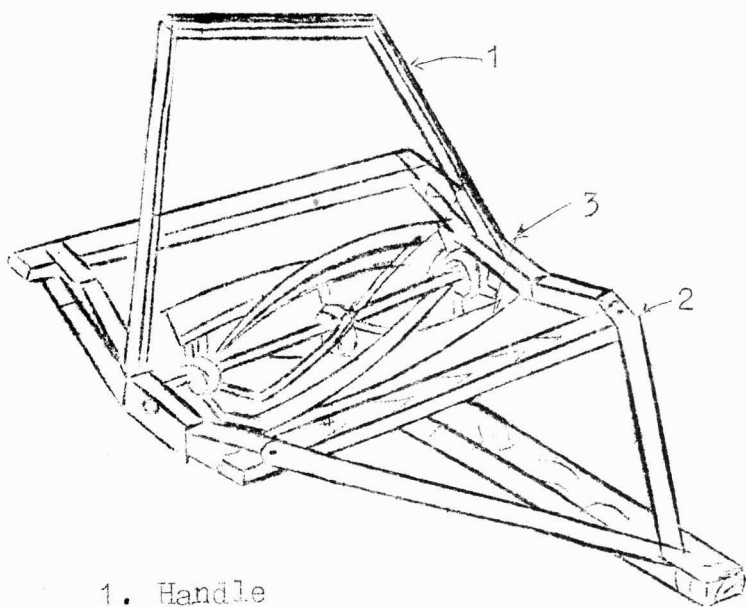


1. Share
2. Mould Board
3. Wooden beam

4. PUDDLER

1. Name of implement : Helical bladed puddler
2. Local name : வெளி கழகி.
3. General description : Five numbers of helical blades made of mild steel are fixed in a skewed shape and mounted on a wooden frame having wooden bearing, such that the blade can rotate freely. A handle and a pole shaft are provided.
4. Function : Puddling the soil in wet lands after initial ploughing.
5. Special features : Helical blades are made of mild steel. Helical geometry facilitates better churning and slicing of the soil as required for puddling purposes.
6. Weight : 45 kg.
7. Approx.cost : Rs.250/=
8. Performance : 0.6 ha/day
(one ploughing)
9. Manufacturers

1.College of Agrl.Engg.,
T.N.A.U.,
Coimbatore-641003.



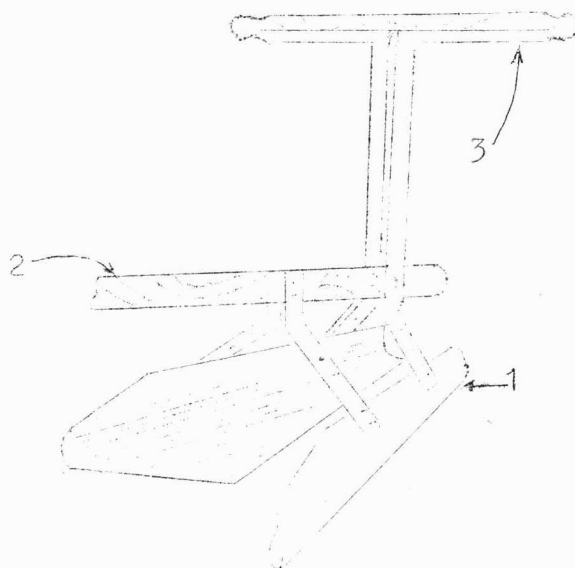
1. Handle
2. Frame
3. Helical blade

5. BUND FORMER

1. Name of implement : Bund former
2. Local name : വറുപ്പി ഒക്കര
3. General description : Consists of two converging steel blades (forming board) fixed to a frame and includes a beam and handle. Forming board is made of mild steel, the thickness of which varies from about 1.50 mm to 2.00 mm. Forming boards are bolted to the front and rear braces.
4. Function : To form bunds in the irrigated lands and across the slope of the dry lands to conserve soil moisture.
5. Special features : The size of the bund is regulated by the size of the wings and adjustable holes provided on the wings.
6. Weight : 70 kg
7. Approx. Cost : Rs.225/=
8. Performance
long bund per minute or
0.3 ha/day when the
bunds are formed at 3
metre interval in one
direction only.

9. Manufacturers/Dealers

1. College of Agrl. Engg.,
T.N.A.U.,
Coimbatore-641005,
Tamil Nadu, India.
2. ELSEETEE Industries,
Trichy Road,
Coimbatore.



1. Forming board
2. ~~Frame~~ Beam
3. Handle

C. POWER OPERATED IMPLEMENTS

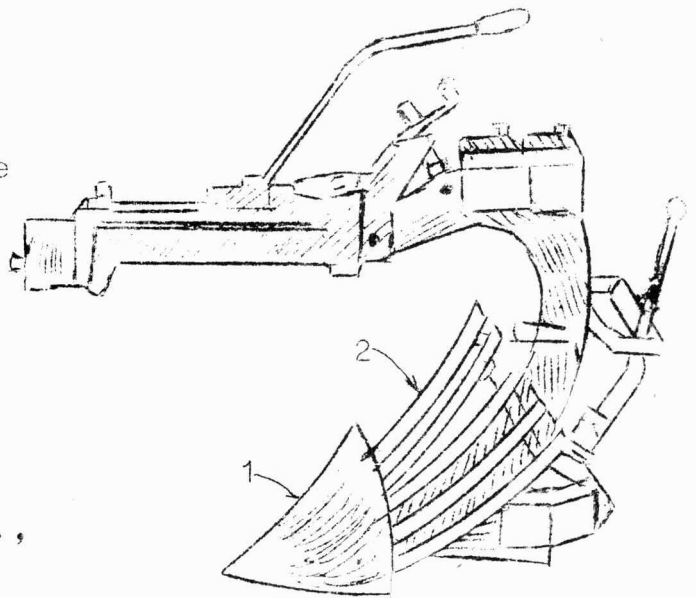
1. JAPANESE PLOUGH

1. Name of implement : Japanese plough
2. Local name : ജാപ്പനീസ് പ്ലൗ
3. General description : It consists of a triangular steel share and a mould board attached to the bottom part of the body. The share is centre pointed and the mould board is of solid plate or a slatted one. Slatted mould is intended to provide better scouring.
4. Function : Used for deep ploughing and also for better soil reversing.
5. Special features : In the reversible type it can be used for right hand or left hand turning of the furrow slice.

6. Weight : 40 kg.
7. Approx. Cost : Not available
8. Performance : 0.4 ha/day

9. Manufacturers

1. Krishi Engines (I) Ltd., Hyderabad. 18
2. VST Tillers & Tractors Ltd., Post Box No. 4001, White Field Road, Bangalore.
3. Kerala Agro Machinery Corporation. Athani
4. Other power tiller manufacturers, please see appendix.

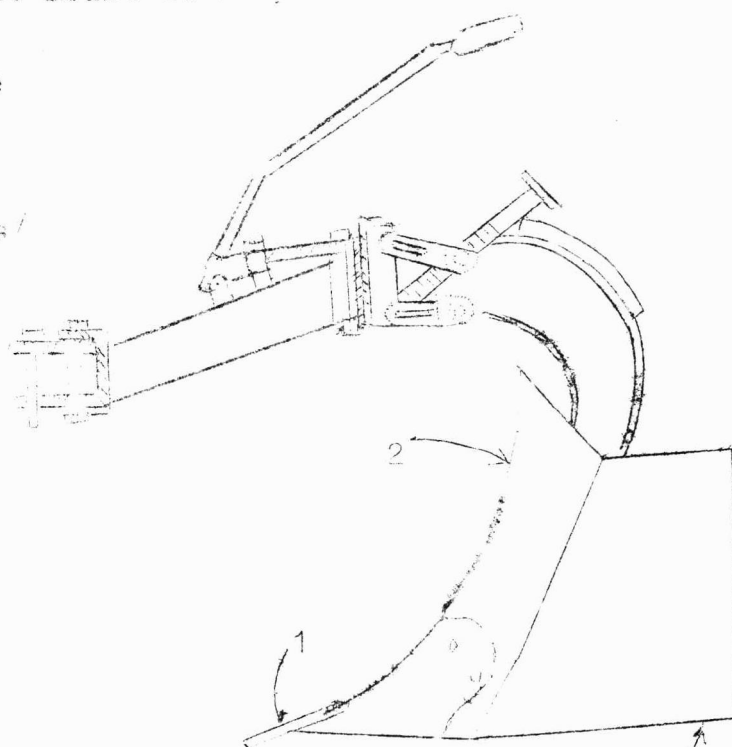


1. Steel share
2. Mould board

2. TRENCHER

1. Name of implement : Trencher
2. Local name : ລູເຊີ ຄາວໂຕ້
3. General description : This is a power tiller operated implement consisting of a share point, trencher, wing and frame. The trencher excavates trenches of trapezoidal shape with top width of 53 cm; bottom width of 17 cm. and a total depth of 24 cm; the depth below the ground level being 13 cm.
4. Function : For excavating trenches around cashew or coconut trees to collect rain water and to facilitate application of manures and fertilizers.
5. Special features : The trencher bottom can be attached to the plough shank of any power tiller by replacing the mould board portion alone.
6. Weight : Not available
7. Approx. cost : Rs.1000/=
8. Performance : 200 trenches / day of 8.5 metre dia.
9. Manufactures

1. College of Agrl. Engr.,
 F.N.A.U. Coimbatore,
 Pin. 641003.



1. Share point
 2. Trencher

3. SUB SOILER

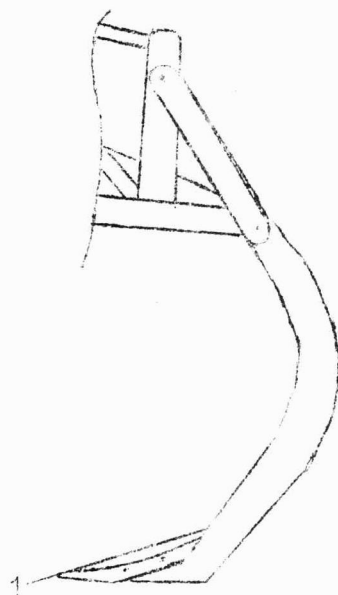
1. Name of the implement : Subsoiler (Tractor drawn)
2. Local name : അടിയൻ കലപ്പ
3. General description : This is a tractor operated implement provided with a heavy beam to which a sweep or chisel is attached. Chisel is pointed to a wedge like shape.
4. Function : It penetrates the ground to a greater depth (30 to 90 cm) than conventional ploughs and breaks the hard pan. Will not pulverise the surface soil as in other tools. Subsoiling improves the aeration and permeability of the soil.
5. Special feature : The chisel like part is made of high carbon steel to reduce wear. Disturbs the surface of the soil slightly when working.
6. Weight : 64 kg.
7. Approx. cost : Rs. 2800/=

8. Performance

Can (35.6 cm) plough bottom pulled at the rate of 4.0 km/hr. will plough approx. 0.12 ha/hr.

9. Manufacturers:

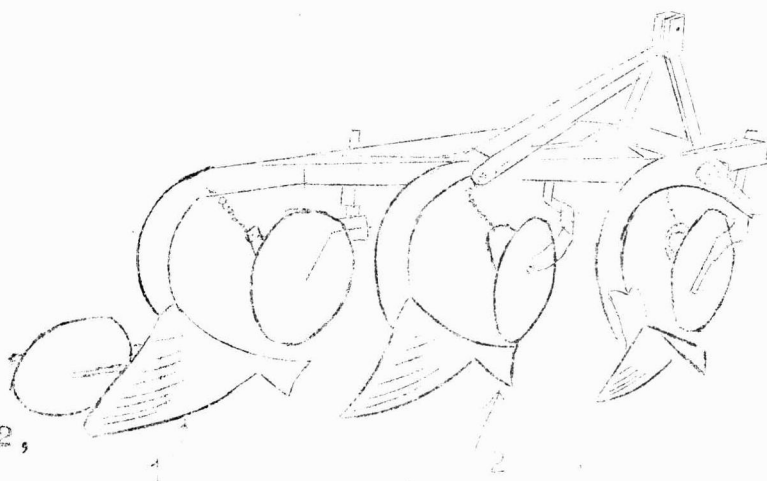
1. Tractors & Farm Equipment Ltd.,
661, Annasalai, Madras-2.
2. Escorts Ltd., 19/6,
Mathura Road,
Faridabad, Punjab.



1. Shoe

4. MOULD BOARD PLOUGH

1. Name of implement : Mould board plough (3 bottoms)
(Tractor drawn).
2. Local name : மூல்களில் மரிக்கல்
3. General description : It consists of three ploughs fitted to a frames inclined to the line of pull. A single plough bottom consists of a share mould board, landside and frog. Usually it is connected to the three point hydraulic links of the tractor.
4. Function : Used for seed bed preparation under adverse soil condition. It mixes manure and soil efficiently by complete inversion of furrows.
5. Special features : Made from finest high grade steel. Shares are of carbon steel which ensures trouble free life.
6. Weight : 200 kg
7. Approx. Cost : Rs. 7,800/=
8. Performance: 2 ha/day
9. Manufactures
 1. EAFE, Post Box No. 3392, Madras.
 2. Escorts Ltd., 19/6, Madura Road, Faridabad.
 3. Other manufactures, please see appendix.



1. Mould board
2. Share

5. DISC PLOUGH

1. Name of implement : Disc plough
2. Local name : ഡിസ്ക് പലുഗ്
3. General description : It consists of steel disc of 60 to 90 cm diameter, set at a certain angle to the direction of travel. Each disk revolves on a stub axle in a thrust bearing, carried at the lower end of a strong stand which is bolted to the plough beam.
4. Function : It cuts turns and breaks furrow slices by means of separately mounted steel discs.
5. Special features : Made of heat treated steel. Positive penetration. Clearance for deep work in tarashy fields.

6. Weight : 250 kg

7. Approx. cost. Rs. 6000/=

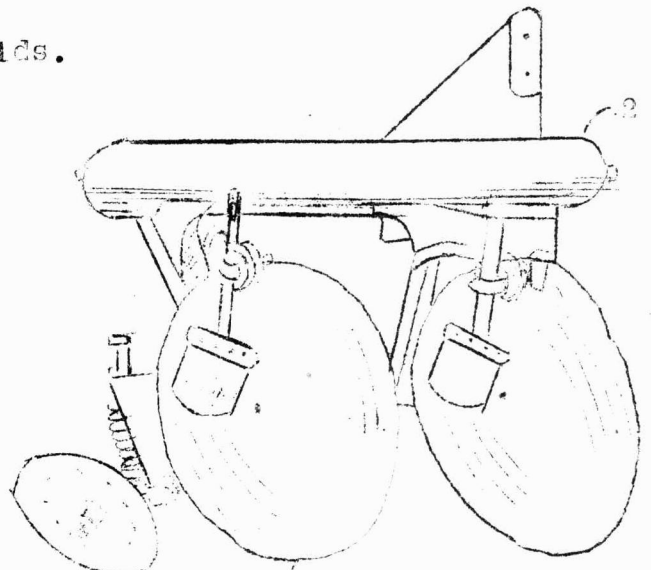
8. Performance/
Field capacity.

1.5 ha/day for 10 hour
working day.

9. Manufactures

1. Tractors and Farm equipment
Ltd., Madras.

2. Other manufactures please
see appendix.



1

1. Disc
2. Frame

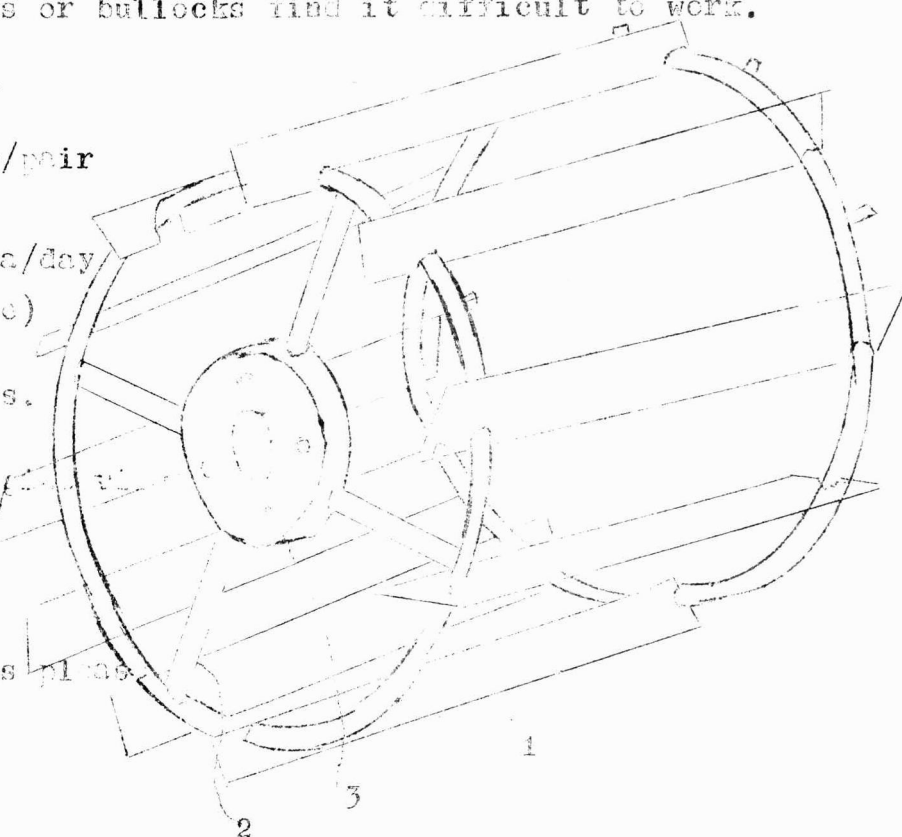
6. CAGE WHEEL

1. Name of implement : Cage wheel
2. Local name : மீனாடி
3. General description : Consists of a series of mild steel flats fastened to a cast iron hub through mild steel tubes and spokes. Number of M.S. flats is usually 10. Effective width of puddling varies from 0.9 to 1.2 metres.
4. Function : It is a traction aid utilised in both diesel tractors and rowertillers for improved mobility in wet condition. Also commonly used in puddling wet soils.
5. Special features : Suitable for puddling medium and heavy clay soils for paddy cultivation where tractors or bullocks find it difficult to work.

6. Weight : 40 kg
7. Approx. Cost : Rs.400/pair
8. Performance : 0.22 ha/day
(puddling twice)
9. Manufacturers/Dealers.

1. College of Agrl. Engg. & Vet. Sci.,
T.N.A.U.,
Coimbatore-641003,
Tamil Nadu, India.

2. Other manufacturers please see appendix.

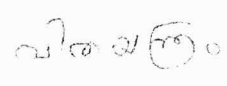


1. M.S. Cross flat
2. Spokes
3. Hub

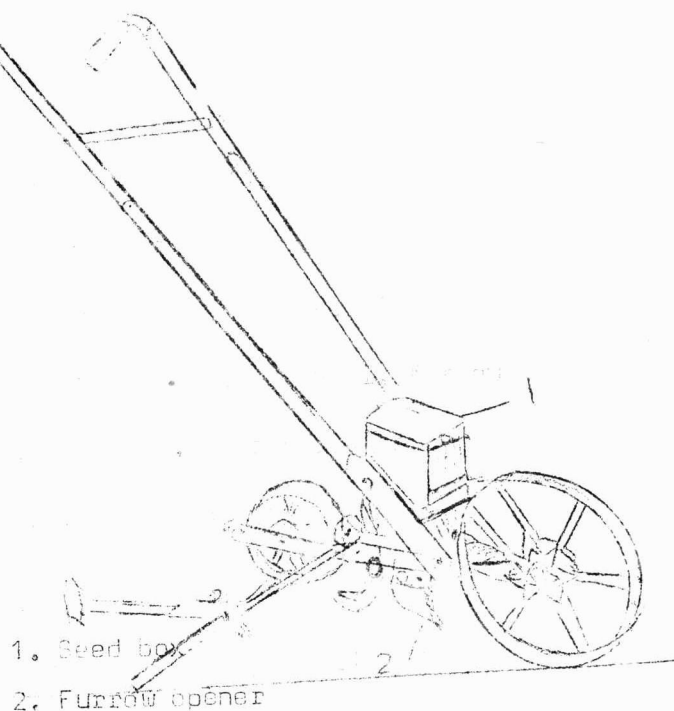
II. PLANTING EQUIPMENT

4. HAN OPERATED

1. SEED DRILL

1. Name of implement : Hand operated seed drill
2. Local name : 
3. General description : It generally consists of a seed box, seed dropping mechanism, land wheel, furrow opener, soil packer and a marker. Seed dropping mechanism varies with different makes.
4. Function : It opens the furrow to a uniform depth, drops seeds uniformly without injury covers the seeds and compacts the soil around them.
5. Special features : Suited for small seeds
6. Weight : 12 to 15 kg
7. Approx. Cost : Rs. 300 - 500
8. Performance : 0.15 to 0.2 ha/day
9. Manufactures:

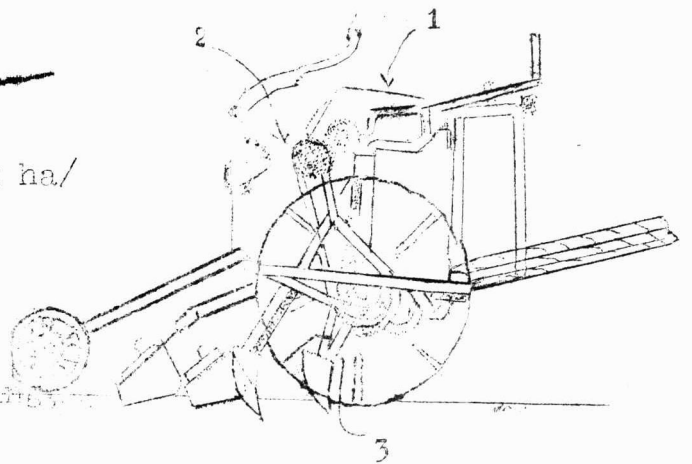
1. ASNEE, Malad, Bombay
2. Nanda & Co. Oiler, Trichur
3. Also see appendix.



B. ANIMAL OPERATED IMPLEMENTS

1. BULLOCK DRAWN CUP FEED TYPE SEED DRILL

- 1. Name of implement : Bullock drawn cup feed type seed drill.
- 2. Local name : വിൽതു വിതയർ
- 3. General description : Consists of a seed box, seed disc, seed tube, furrow opener and furrow closer. The tyres are attached with furrow openers and furrow closers. The depth of furrow can be adjusted by increasing or decreasing the number of dead weights loaded at the end of the tyre.
- 4. Function= : Used for the line sowing of seeds.
- 5. Special features : Suitable for ~~xxx~~ precision drilling of small seeds by virtue of its special metering mechanism.
- 6. Weight : 90 kg.
- 7. Approx. Cost : Rs. ~~850~~ =
- 8. Performance : 1 to 1.2 ha/day
- 9. Manufacturers:



- 1. Seed box
- 2. Seed disc
- 3. Seed tube

College of Agrl. Engineering
T.N.A.U., Coimbatore,
Pin. 641003.

III. INTERCULTURE EQUIPMENT

A. MANU LLY OPERATED

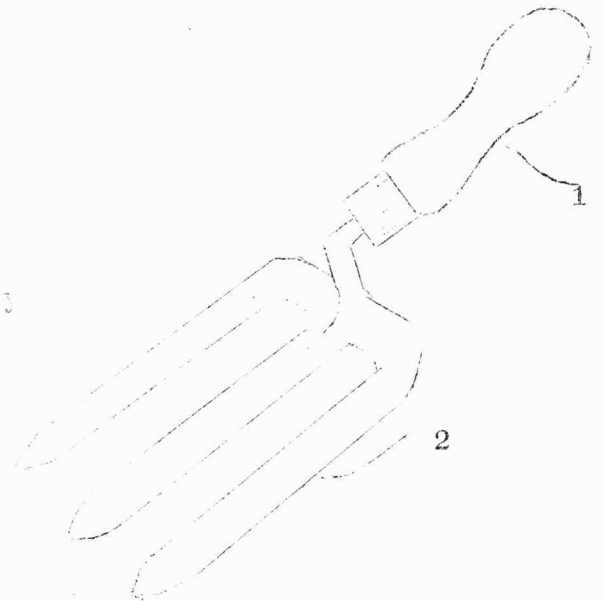
1. H/ND FORK

- 1. Name of tool : Hand fork
- 2. Local name : എട് എളി
- 3. General description : It consists of three forks forming a frame. The distance between the forks is about 2 cm. The frame is fitted to a handle. The operator uses the implement assuring a squatting position.
- 4. Function : Used for interculturing and weeding.
- 5. Special features : Small, light weight and low cost tool.

- 6. Weight : 250 gm.
- 7. Approx. Cost : Rs. 10/=
- 8. Performance : 60 - 100 m²/day

9. Manufactures

- 1. Manufactures list please see appendix. I.
- 2. Local hardware dealers.



- 1. Handle
- 2. Fork

2. THREE PRONGED HOE

1. Name of tool : Three pronged hoe
2. Local name : മൂന്നു മൂക്കി
3. General description : Consists of three curved prongs fitted with a socket. The prongs are spaced about 4 cm. apart. A wooden handle of about one metre length fits into the sockets.
4. Function : Used for intercultural purposes in row crops. Occasionally used in seed bed preparation as well as for ridge making.

5. Special features : Light weight tool

6. Weight : 1.5 kg.

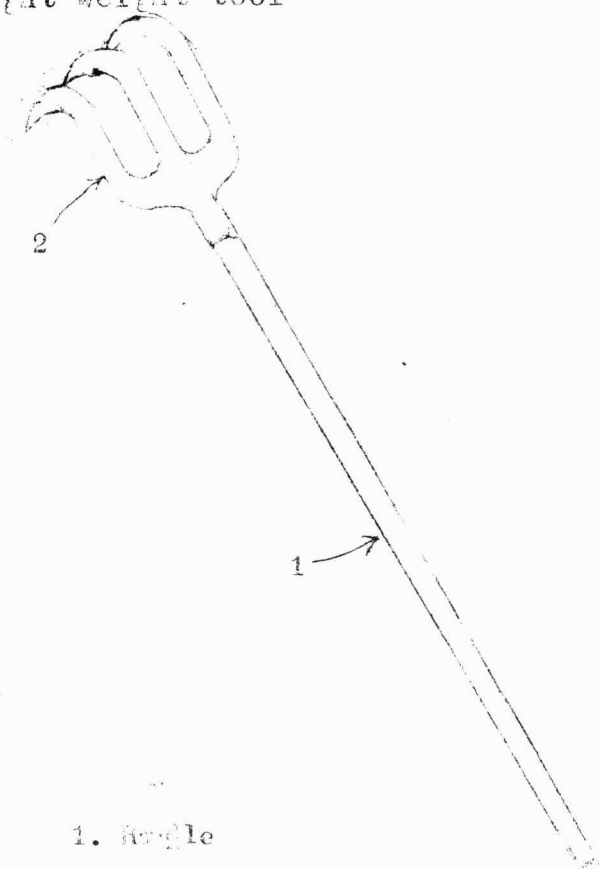
7. Approx. cost : Rs.14/=

8. Performance: 0.02 ha/day

9. Manufacturers/Dealers

1. Cossul & Co (Pvt) Ltd.,
14/70, The Mall, Kannur.

2. Local hardware dealers.



1. Handle

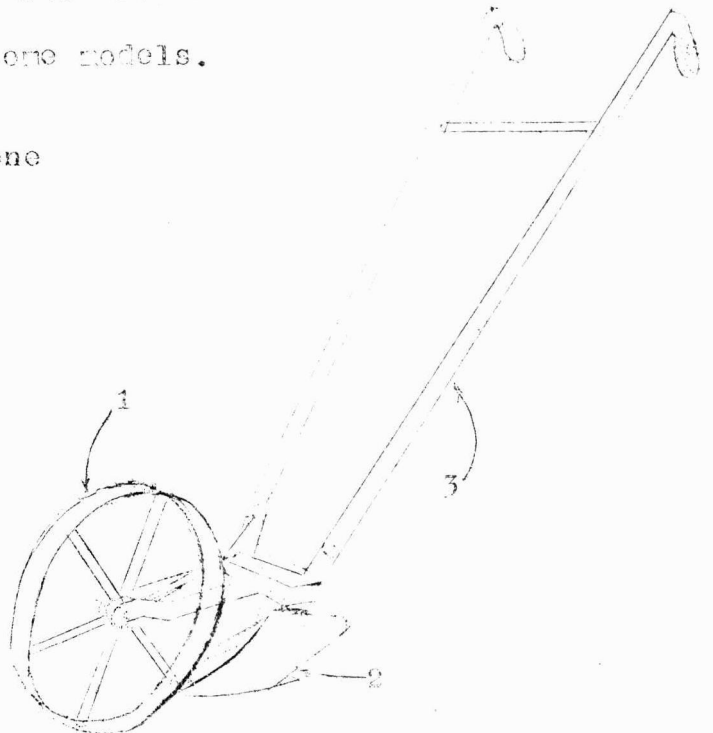
2. Prongs

3. HAND WHEEL HOE

1. Name of implement : Hand wheel hoe
2. Local name : വിൽ വഴലി
3. General description : It mainly consists of wheel, axle, frame and working tool. Diameter of the wheels varies from 50 to 80 cm. Frame is made of mild steel structure. Working tool is usually in shape of blade of reversible type or sweep.
4. Function : Used for inter culturing purposes in between rows of crops.
5. Special feature : Attachments to sow seeds and for applying fertilizer near the root zone are available in some models.
6. Weight : 7 kg with one attachment.
7. Approx Cost : Rs.130/=
8. Performance: 2 ha/day
9. Manufacturers

1. ASREE, Malad, Bombay

2. Seshul & Co (Pvt) Ltd.,
Kanpur.



1. Wheel
2. Working tool
3. Frame

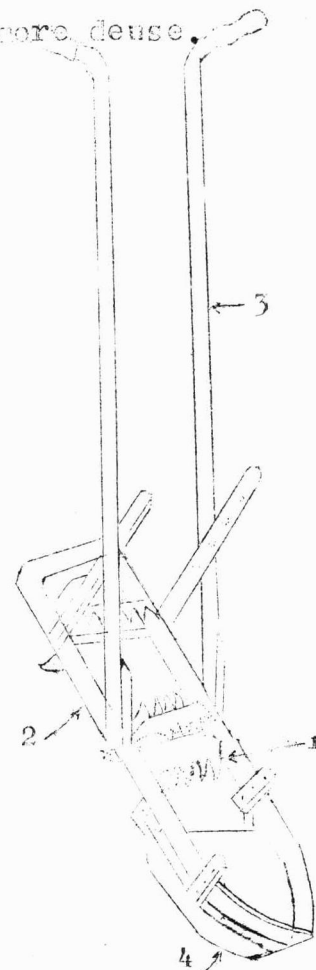
1. WEED CONTROL DEVICE

- 1. Name of implement : Weed control device
- 2. Local name : கடுளிதலை
- 3. General description : Consists of two or three tines (blades), frame, bracket, handle and a float to reduce sink in mud.
- 4. Function : To remove weeds from row cropped wet lands.
- 5. Special feature : Suited for different environments. This implement is operated in a to and fro motion both wher weed growth is more dense.

- 6. Weight : 8 kg
- 7. Approx. Cost : Rs. 290/=
- 8. Performance : 100 m²/day
- 9. Manufacturers/Dealers

1. Community Engineering Works, Pappanandale, Alwarthurai.

2. M/s. Cessul & Co (I) Ltd,
14/78, The Mall, Bangalore.



- 1. Tines
- 2. Frame
- 3. Handle
- 4. Float

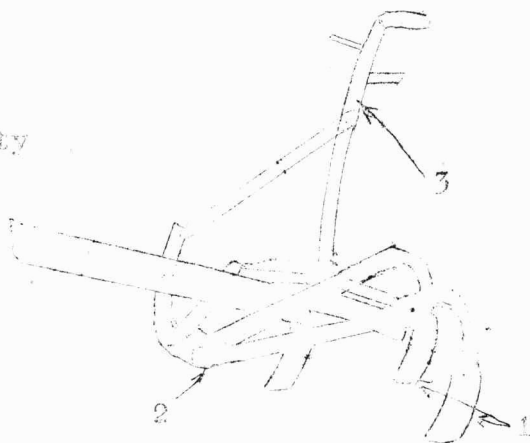
B. ANIMAL OPERATED IMPLEMENTS

1. CULTIVATOR

1. Name of implement : Cultivator (Animal Drawn)
2. Local name : ഇട ഉഴവ് ഉപകരണം
3. General description : Consists of a number of tynes attached to a frame. It is provided with long wooden beam and a single steel handle.
4. Function : Used for tilling the soil between standing rows of crops and for weed control.
5. Special features : Suited to replace country plough for preparing seed bed in light soil. The work done is 3 times as compared to country plough. Worthy of popularisation in Kerala.
6. Weight : 15 kgs.
7. Approx. Cost : Rs.120/=
8. Performance : Tillage capacity about 1 ha/day.

9. Manufacturers/Dealers

L. Sossai & Co. Pvt. Ltd.,
The Mall, Kanpur.



1. Tynes
2. Frame
3. Handle

C. POWER OPERATED

1. CULTIVATOR

- 1. Name of implement : Cultivator (Power tiller operated)
- 2. Local name : അക്രൂരിക ഉട ഉറവ്
- 3. General description : Consists of a main frame which carries a number of cross members to which tyres are fitted. At the forward end of the cultivator there is a hitch arrangement for hitching purposes. Some times wheels are provided. The lift is operated by wheels simultaneously so that draft remains uniform and even.
- 4. Function : Used mainly for secondary tillage, inter cultivation and also for weeding.
- 5. Special features : By modifying the position of the attached teeth, the machine can be adjusted to a wide range of farming jobs such as mulching, light ploughing, pulverising and potato digging.

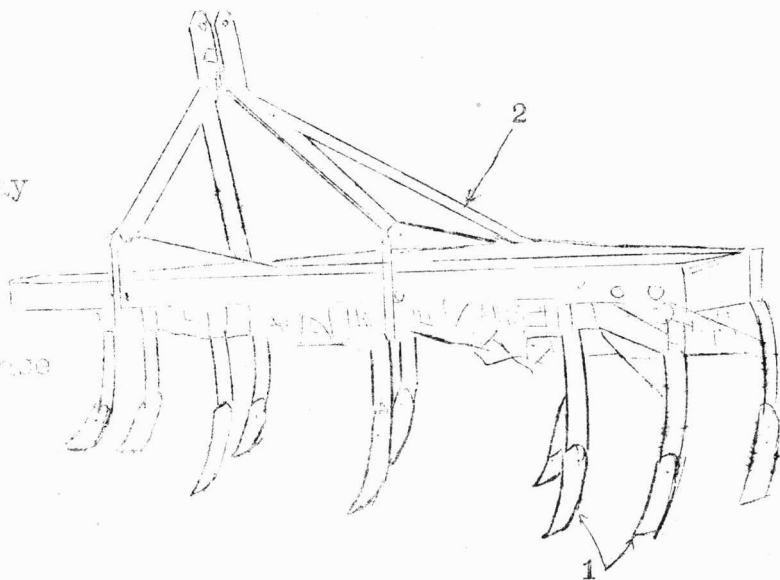
6. Weight : 40 kg.

7. Approx. Cost : Rs.1000/=

8. Performance : 0.8 ha/day

9. Manufacturers:

1. Manufacturers list please see appendix



- 1. Tyres
- 2. Frame

IRRIGATION AND DRAINAGE EQUIPMENT

A. MANUALLY OPERATED WATER LIFT.



1. COUNTER POISE LEFT

801089

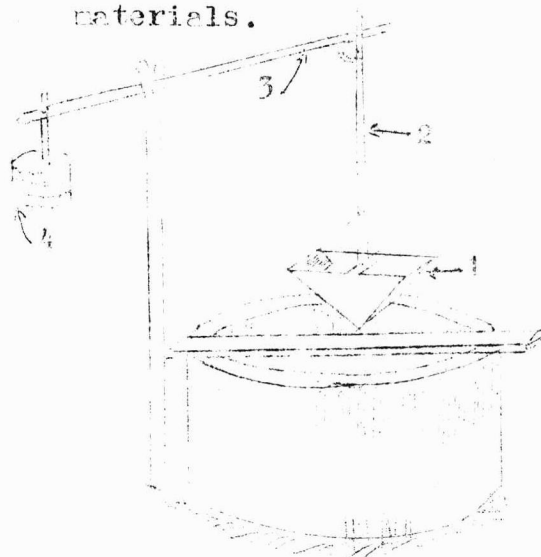
- 1. Name of implement : Counter poise left
- 2. Local name : *சுழிப்பை*
- 3. General description : It consists of a conical bucket, bamboo pole, lever, weight, and a wooden pillar. When the bucket is made to descend in water after which it is automatically lifted due to the counterweight.
- 4. Function : Used for lifting water for irrigation purposes from shallow wells of 2 to 4 m. depth.
- 5. Special features : This can be operated by a single operator and has low capital investment.
- 6. Weight : Made from locally available materials.

7. Approx. Cost. Rs. 50 - 75.

8. Performance: 1000 - 1500 Litres/hr.

9. Manufacturers:

- 1. Local artisans.
- 2. Local hardware dealers.



- 1. Bucket
- 2. Bamboo pole
- 3. Lever
- 4. Weight

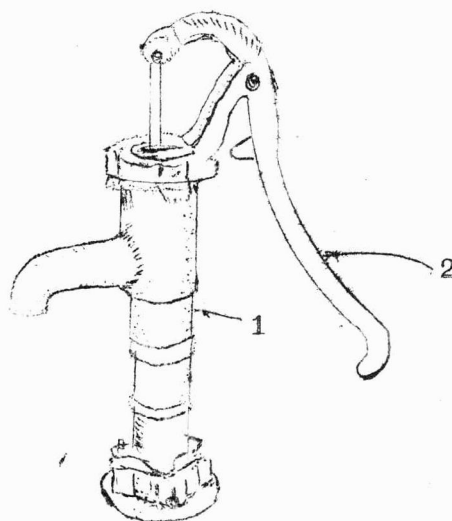
2. HAND PUMP

1. Name of implement : Hand pump
2. Local name : ഹാൻഡ് പമ്പ്
3. General description : Consists of a barrel, piston, valves, suction and delivery tubes. The piston is moved up and down by the movement of a handle which displaces air from the pump column. This creates a vacuum permitting the force of atmospheric pressure to push the water from the well in to the pump and from it to the outside.
4. Function : Used for pumping water for domestic as well as irrigation purposes.
5. Special features : Suited for low lift and low discharge requirements. Also used for tapping water from filter point wells.
6. Weight : 20 kg.
7. Approx. Cost : Rs.125/=
8. Performance : Capacity
1500 l/hour.

9. Manufacturers/Dealers

1. Kumar Industries,
Palghat Dist., Kerala.
2. Best and Co (P) Ltd.,
13/15 North Beach Road,
Madras.

3. Also see appendix.



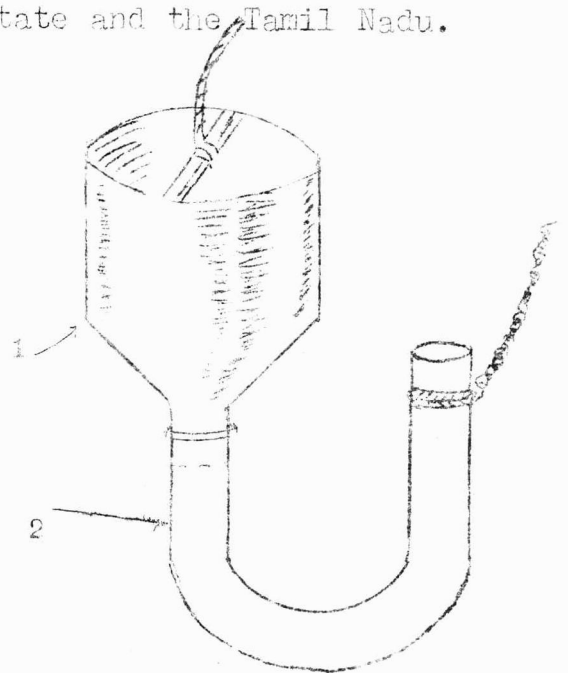
1. Barrel
2. Handle

B. ANIMAL OPERATED IMPLEMENTS

1. MOTE

1. Name of implement : Mote
2. Local name : மடுக்கோல்
3. General description : Consists of a metal vessel with a leather tail. This is tied through two ropes over two separate pulleys to the yoke of a pair bullocks. Water fills in the container when the vessel descends in water and is lifted through the forward movement of bullocks away from the well. The length of travel of the bullocks should be greater than the level of water from the ground.
4. Function : Used for lifting water from 7 to 12 metres height.
5. Special features : Popular form of water lift northern parts of state and the Tamil Nadu.
6. Weight : 10 to 12 kg
7. Approx. Cost : Rs. 125/=
8. Performance : 10,000 L/trip
9. Manufacturers/Dealers

1. Local artisans
2. Local Hardware dealers.



1. Vessel
2. Leather tail

2. WATER SPRINKLER

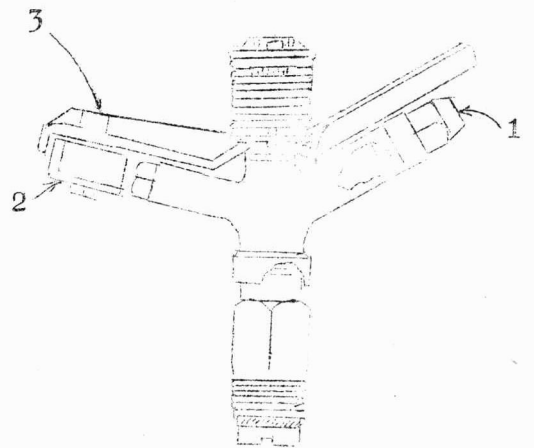
1. Name of equipment : Sprinkler head
2. Local name : ശിശിരം
3. General description : Consists of a main nozzle, driving nozzle, oscillating arm and a rectifier. Nozzle arms are fitted to an aluminum alloy base. Complete system requires high pressure pump and pipe lines.
4. Function : Sprays water into the air which falls on the ground surface somewhat resembling rainfall. It is particularly suited to irrigation of sandy soils and hill slopes.
5. Special features : Has efficient control of water application. This method of irrigation is adaptable to most topographic condition without land preparation. Especially suitable for irrigation in steep slopes or irregularly topography. Complete system is some what expensive.
6. Weight : 1 kg
7. Approx. Cost : Rs. 125/=
8. Performance : Sprays cover semicircular areas of approx. 30 - 40 m. dia main.

9. Manufacturers:

1. Premier equipment Co., Ltd.,
Kottayam.

2. Wattatraya Industries,
Pvt. Ltd., Poona.

3. M/s. Vintas Ltd.,
Willingdon Island,
Post Box No. 234, Cochin.

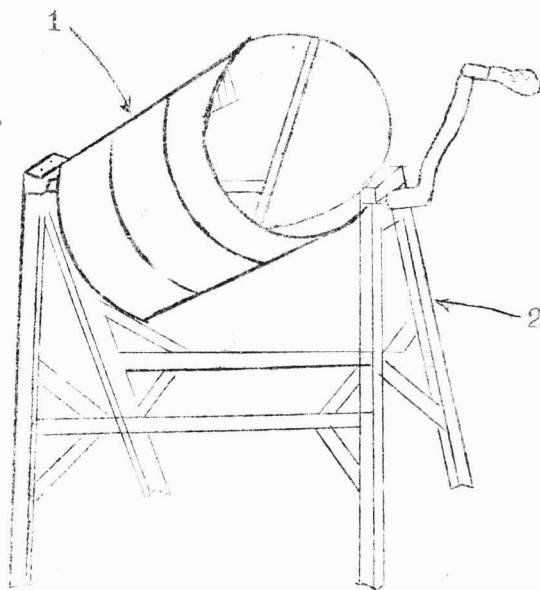


1. Main nozzle
2. Driving nozzle
3. Oscillating arm

V. FERTILISER APPLICATION EQUIPMENT

1. SEED DRESSING DRUM

1. Name of equipment : Seed dressing drum
2. Local name : വിട്ടുള ചരിച്ചരണകോടി
3. General description : Consists of a drum mounted on a stand which can be rotated by hand. Plates are fixed inside the drum for mixing seed and fungicides properly.
4. Function : To treat seeds with fungicides before sowing.
5. Special features :
6. Weight : 23 kg.
7. Approx. Cost : Rs. 275/=
8. Performance : Can handle about 25 lit. of seed material at one time.



9. Manufacturers.

1. Manufacturers list please

see appendix.

1. Drum
2. Frame

VI. PLANT PROTECTION EQUIPMENT

A. MANUALLY OPERATED

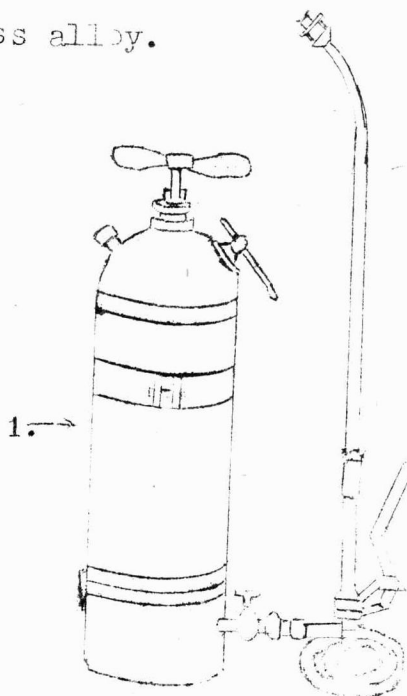
1. Hand compression sprayer

1. Name of equipment : Hand compression sprayer
2. Local name : മേലാർ
3. General description : Consists of an air pump mounted in an airtight chamber, which is filled three quarters full with spraying material. The pressure is developed by pumping air into the tank and the spray is forced out under pressure. Tank capacity varies from 14 to 18 litres.
4. Function : To apply pesticides on plants in the form of sprays dust, mist etc. It breaks the liquid into droplets of effective size and distribute them uniformly over the plants.
5. Special features : Tank is fabricated from cold rolled special brass alloy.
6. Weight : 7.5 kg
7. Approx. Cost : Rs.450/=
8. Performance : Can spray about $\frac{1}{2}$ to 1 ha/day.

9. Manufacturers/Dealers

Manufactures list please

see appendix IV



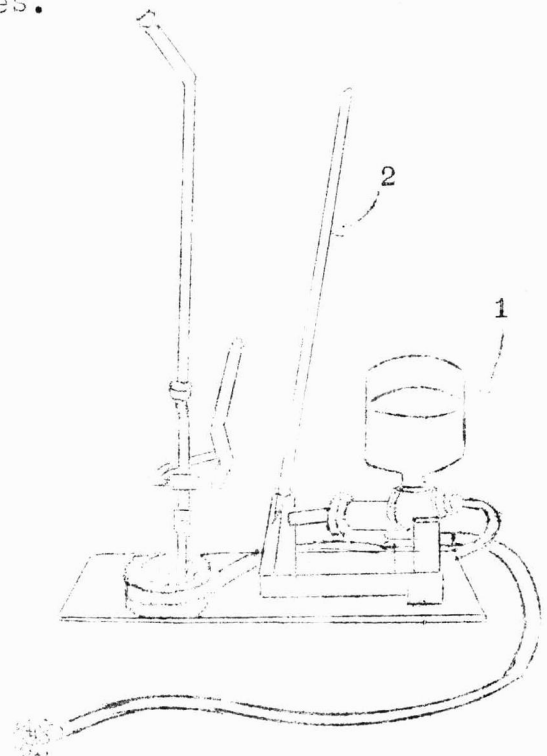
1. Tank

2. ROCKER SPRAYER

1. Name of equipment : Rocker sprayer
2. Local name : ಕೂದಲೆ ಸೆಕ್ರೇಟೆ
3. General description : Consists of a pressure chamber, and pump fixed on a wooden platform. The spraying liquid is kept in a container and it is drawn to the pressure chamber through a suction pipe, by operating the handle. The liquid under pressure is then forced through nozzle of the spray lance.
4. Function : Breaks the liquid into droplets of effective size and distributes them uniformly over the target area.
5. Special feature : Suited for spraying vegetable and cereal crops as well as tall trees also used in gardens and factories.
6. Weight : 11 kg.
7. Approx. Cost : Rs. 450/=
8. Performance : 1.5 to 2.5 ha/day

9. Manufacturers/Dealers.

Manufactures list, please see appendix. 14

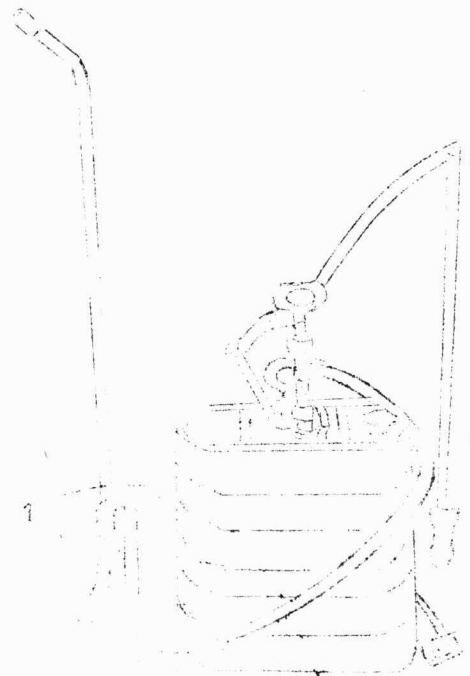


1. Tank

2. Handle

3. KNAPSACK SPRAYER

1. Name of equipment : Knapsack sprayer
2. Local name : ബാക്സാക്ക് സ്പ്രെയർ
3. General description : Provided with a pump fitted inside a 9 to 22.5 litres capacity tank. The pump is operated with one hand and spray lance with the other.
4. Function : Applies pesticides and fungicides in the form of a spray.
5. Special features : Made of brass or galvanised steel tank so as to withstand corrosion. Continuous pumping is need.
6. Weight : 7.3 to 7.8 kg
7. Approx. Cost : Rs.350/= for 16 litre capacity.
8. Performance : Sprays about 0.4 hectare in a day, using 90 litres of liquid.
9. Manufacturer/Dealers
Manufacturers list please see appendix. IV



1. Tank

B. POWER OPERATED EQUIPMENT

1. KNAPSACK MIST BLOWER CUM DUSTER

1. Name of equipment : Knapsack power mist blower cum duster.
2. Local name : സ്പ്രെയർ കം ഡസ്റ്റർ
3. General description : Mainly consists of liquid/dust container, blower, fuel tank and engine. There are mounted on a sturdy tabular frame. The back rest and shoulder straps are foam rubber padded for the comfort of the operator.
4. Function : Spraying and dusting pesticides in controlling insects, diseases and weeds.
5. Special feature : The unit can be converted from a sprayer to a duster or reconverted into a sprayer quickly.

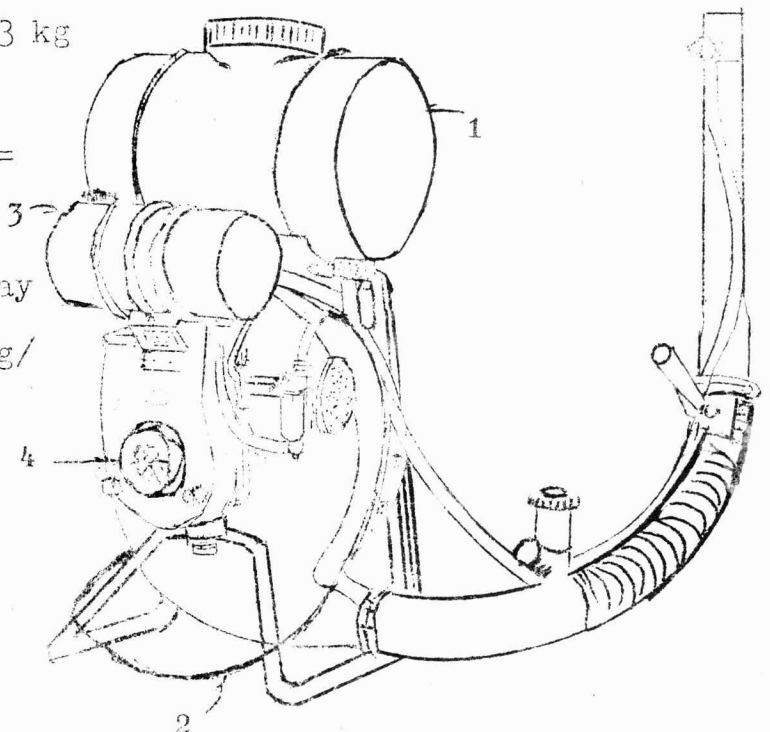
6. Weight : Empty-13 kg approx.

7. Approx. Cost : Rs.1210/=

8. Performance :
Spraying 4 to 6 ha/day
Dust out put 0-1.5 kg/minute.

9. Manufacturers/Dealers.

Manufactures list please see appendix IV



- 1.Container
2.Blower
3.Fuel Tank
4.Engine

HARVESTING AND THRESHING EQUIPMENT

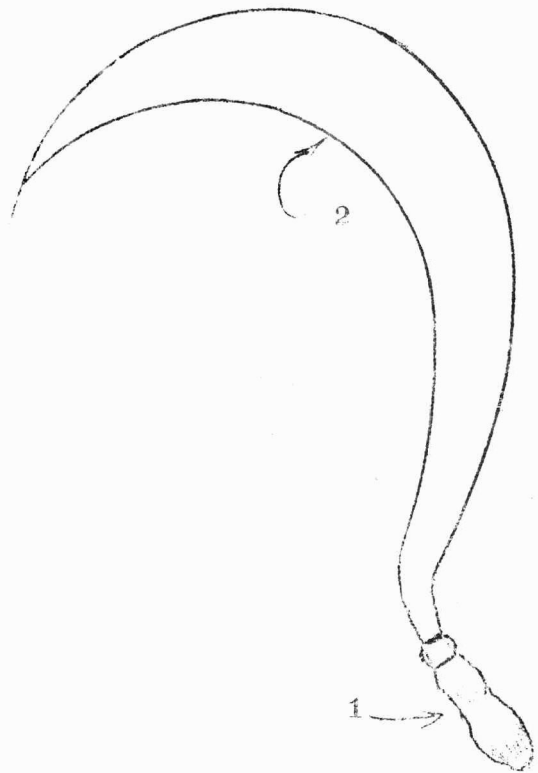
A. MANUALLY OPERATED

1. SICKLE

1. Name of tool : Sickle
2. Local name : $\infty\infty\infty\infty$
3. General description : Essentially consists of a blade and a wooden handle. The blade is made in a curved shape, and is made of carbon steel. Handle of the sickle is made of well seasoned wood.
4. Function : Used for harvesting cereal crops and cutting other vegetation.
5. Special features : The blade is made of carbon steel. Sickles with serrated cut fibrous crops better and are preferred in some areas.
6. Weight : 500 gram
7. Approx. Cost : Rs. 10/=
8. Performance : 500 hrs/ha

9. Manufactures

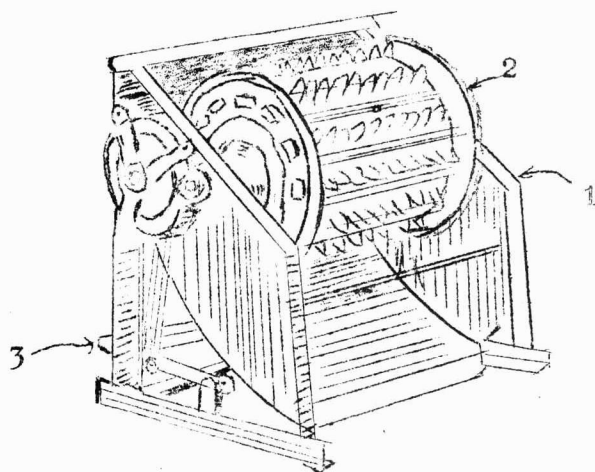
1. Local black smith.
2. Local hardware dealers.



1. Handle
2. Blade (working part)

2. THRESHER

1. Name of implement : Foot operated thresher
2. Local name : കാർ കോൾട്ട് പ്രവർത്തിപ്പിക്കുന്ന പെരി
മെന്ത്രം
3. General description : Consists mainly of a well
balanced cylinder with a series of threshing
teeth fixed on wooden slats. 4 gear drive
mechanism transmits power. While cylinder is
kept in rotary motion at high speed, the paddy
bundles of suitable sizes are held against the
teeth to ~~the~~ be threshed.
4. Function : To separate grains from the
panicles and straw of cereal crops.
5. Special features : Originally developed in Japan.
No special skill is required to operate the
machine.
6. Weight : 40 kg.
7. Approx. Cost : Rs. 650/=
8. Performance : Paddy -
80 kg/hour.
9. Manufacturers/Dealers.



1. A.S.P.E.E., Malad, Bombay
2. Cossull & Co (Pvt) Ltd.,
14/78, The Mall, Kanpur.

1. Frame
2. Drum
3. Pedal

VIII. PROCESSING EQUIPMENT

A. MANUALLY OPERATED

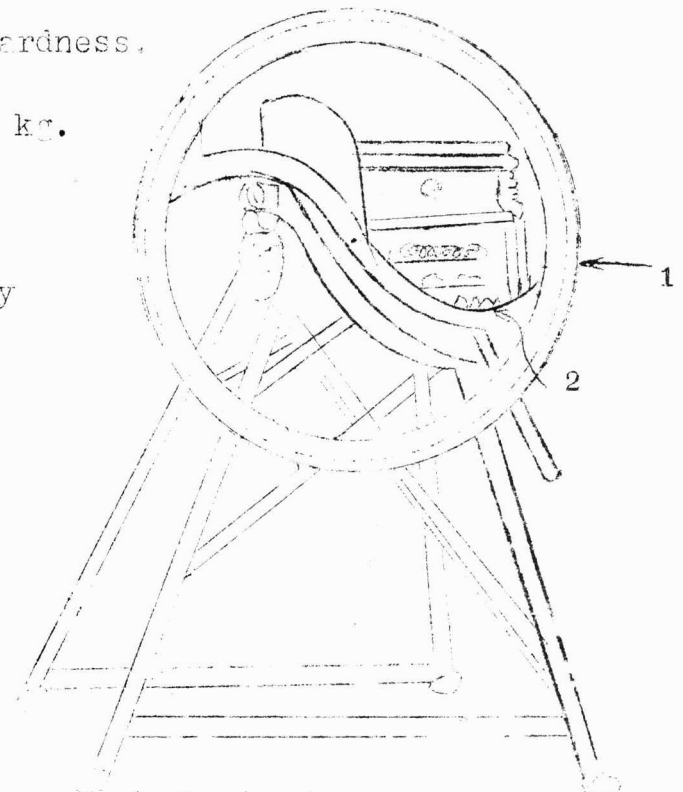
1. CHAFF CUTTER

1. Name of implement : Chaff cutter
2. Local name : മെലക്കോൻ മെട്രിക് ചാഫ് കട്ടറ
3. General description : Consists of two knives arranged radially on the side of a big flywheel which is usually made of cast iron. The fodder is gripped between two toothed rollers which allow and pass it forward to a shear plant where it is chopped into short length.
4. Function : Used for cutting green/dry fodder into bits varying in length from 3 to 10 cm for easy assimilation by animals.
5. Special features : Blades are made of plain carbon steel and is heat treated to obtain requisite hardness.

6. Weight : About 60 kg.
7. Approx. Cost : Rs.100/=
8. Performance : 200 g/day

9. Manufacturers

1. ELSEETEE Industries,
Trichy Road,
Coimbatore.

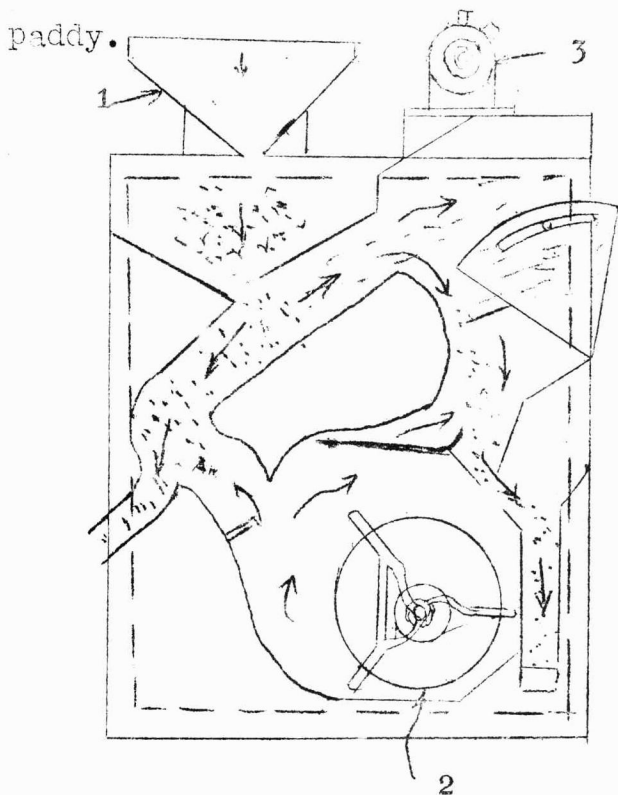


1. Fly wheel
2. Knife

B. POWER OPERATED EQUIPMENT

1. PADDY WINNOWER

- 1. Name of equipment : Paddy winnower
- 2. Local name : പാടർ വിൻനോ
- 3. General description : Consists of a feeding hopper at the top to receive the threshed paddy, chaff and straw bits; a blower to send a blast of air to separate the straw, chaff and other impurities, and an out let.
- 4. Function : To winnow the threshed paddy.
- 5. Special features : Suitable for all varieties of paddy.
- 6. Weight : Not available
- 7. Approx. Cost : Rs.2200/= with motor.
- 8. Performance : 5 tons/day
- 9. Manufacturers:



1. College of Agri. Engg.,
T.N.A.U., Coimbatore,
Pin. 641003.

2. M/S MALITHARA INDUSTRIES
KIDANGARA

CHANGANNACHERRY,
KERALA

3. LOCAL INNOVATOR
OF MAVELIKARA
WHOSE ADDRESS CAN
BE OBTAINED FROM

" THE SPECIAL OFFICER
KAYAMKULAM KAYAL 'REELAM FARM',
CHOO LATHERUVU
CHEPPAD. P.O.,
KERALA

- 1. Feed hopper
- 2. Blower
- 3. Electric Motor

2. SPEED CLEANER CUM GRADER

1. Name of equipment : Seed cleaner cum grader.
2. Local name : എട്തെ തെ: തിരിയെ മെട്രം
3. General description : Mainly consists of feed hopper feed roller, three sieve box, blower and fan. Screens are provided with nylon brushes to avoid dagging. Electric motor is of 1.5 HP. Blower supply necessary air flow for cleaning and removing light particles.
4. Function : To upgrade the quality of seeds by cleaning and grading them. Foreign materials and thrash larger as well as smaller than the final product, immature seeds and dust are separated.
5. Special features : Screens are provided to suit for different crops like jowar, paddy, bajra etc.

6. Weight : Not available

7. Approx. Cost : Rs. 20,000 with motor.

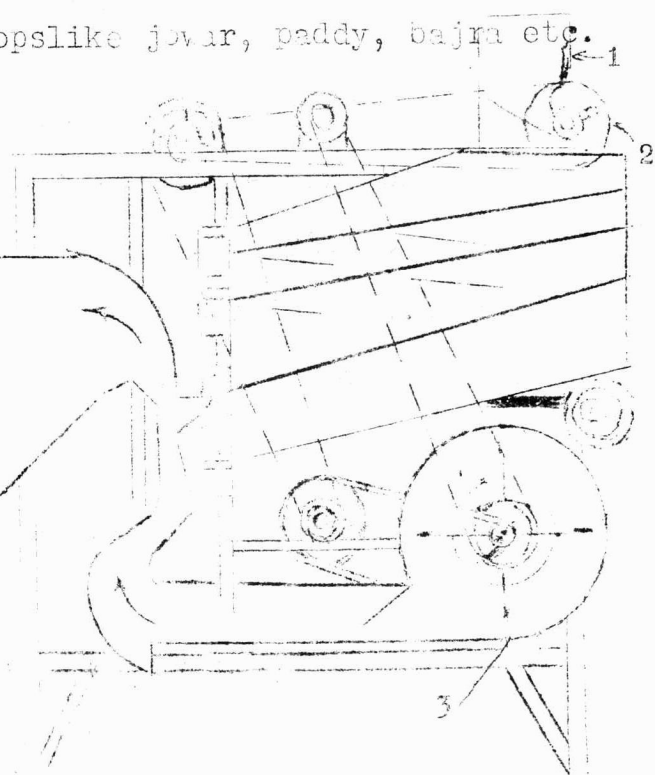
8. Performance:

Paddy = 1.6 ton per day

Maize = 3.2 ton per day

9. Manufacturers:

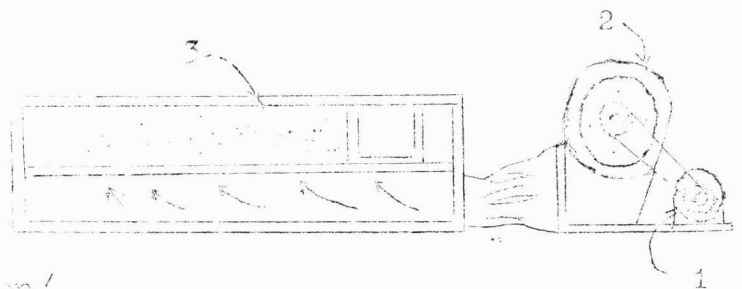
College of Agr. Engineering,
T.N.A.U., Coimbatore,
Pin. 641003.



3. RECTANGULAR METAL BIN BATCH DRYER

- 1. Name of equipment : Rectangular metal bin batch drier.
- 2. Local name : மெட்டாலிக் பீன் டிரை
- 3. General description : Consists of an electric motor, centrifugal blower, airduct, drying chamber, a plenum chamber, and a Kerosene burner or electrical heating element. Kerosene burner is placed at the suction side of the blower to facilitate uniform temperature of air at the discharge end.
- 4. Function : For drying of grains or earheads or pods.
- 5. Special features : Suitable for drying Gandy, chillies, groundnut, bajra, Sorghum and flower earheads.
- 6. Weight : Not available

7. Approx. Cost : Rs. 5500/-
with axial blower and
~~iron~~ pot type burner.



8. Performance : 0.5 to 1 ton/
day depending upon crop &
moisture content.

- 1. Electric Motor
- 2. Blower
- 3. Drying chamber

9. Manufacturers:

1. College of Agril. Engg. & Mech.,
T.N.A.U., Coimbatore.
Pin. 641003.

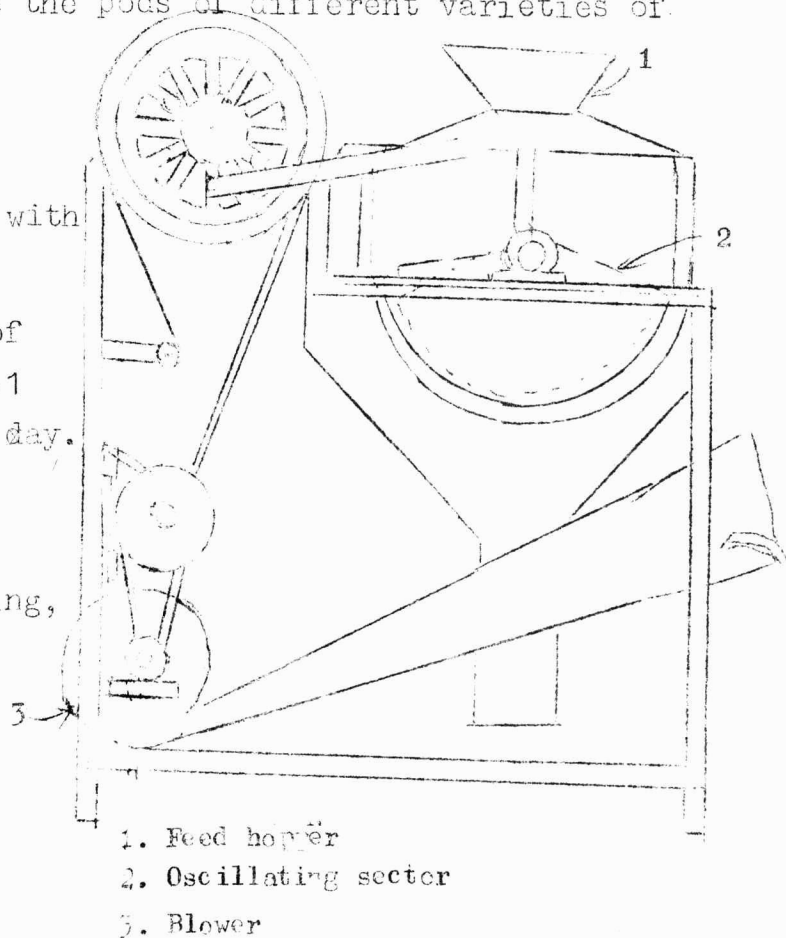
4. GROUND NUT DECORTICATOR

1. Name of equipment : Groundnut decorticator
2. Local name : *கனம் கனம் கனம்*
3. General description : Consists of a hopper, double crank lever mechanism, an oscillating screen and a blower assembly, all fixed on a frame. A number of cast iron peg assemblies are fitted on the oscillating sector unit. Groundnut pods are shelled between the oscillating sector and the perforated concave sieve fixed to the frame.
4. Function : To shell groundnut pods and separate kernels with the least injury or damage for use as seed.
5. Special features : The clearance between the concave and oscillating sector is adjustable to decorticate the pods of different varieties of groundnut.

6. Weight : 195 kg
7. Approx. Cost : Rs.2500/= with motor.
8. Performance : 32 tons of pods per day (or) 2.1 tons of kernels per day.

9. Manufacturers:

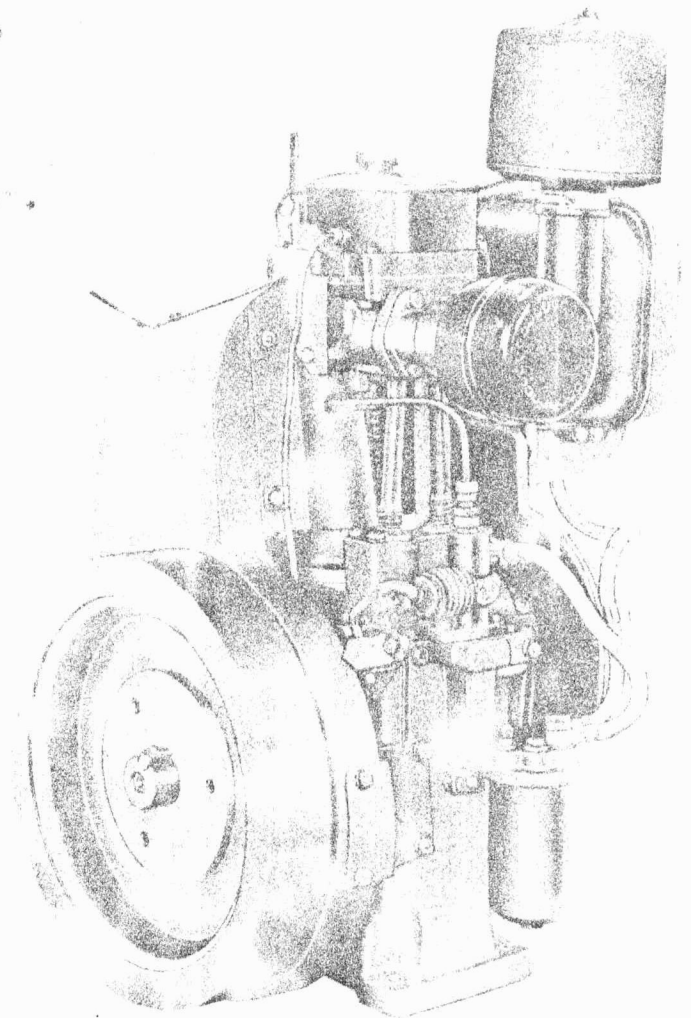
College of Agrl. Engineering,
T.N.A.U., Coimbatore,
Pin.641003.



IX. POWER SOURCES

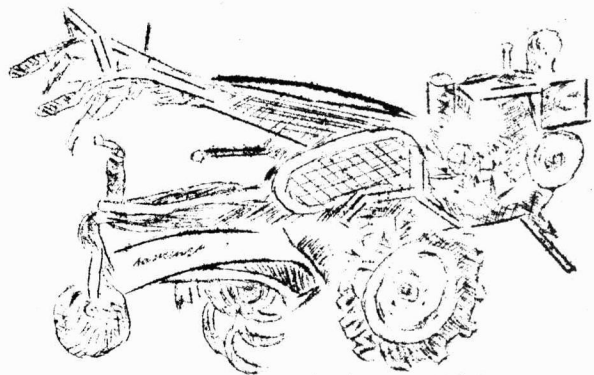
1. DIESEL ENGINE

1. Name of implement : Diesel engine
2. Local name : ഫീസൽ എൻജിൻ
3. General description : Machine for converting stored energy of gaseous or liquid fuel into mechanical work. Burning of liquid fuel injected under pressure into a combustion chamber containing compressed air releases energy by working on a piston.
4. Function : Used as stationary engine for pumping and prime mover for electric generation.
5. Special features : Develops more torque, compared to petrol engines. Operating cost is also lower. 5 hp models are commonly used for agricultural purposes.
6. Weight : 6 - 30 kg/hp depending on the design.
7. Approx. Cost: Rs 800-1000/hp.
8. Performance : Depends on speed and hp. ranges.
9. Manufacturers:
Manufacturers please see appendix. VII



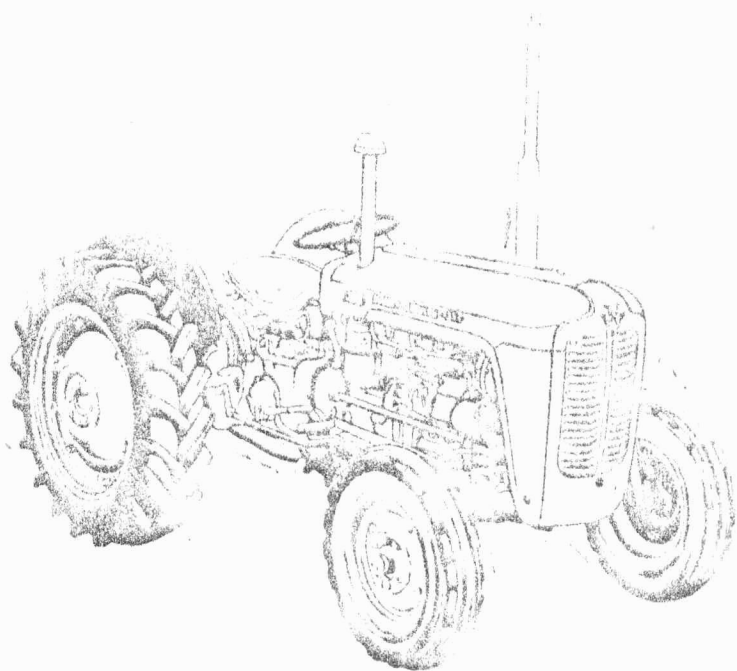
2. POWER TILLER

1. Name of implement : Power tiller
2. Local name :
3. General description : Mainly consists of a 7 to 10 HP diesel engine. The engine power goes to the main clutch with the help of belt or chain. From main clutch power is transmitted to the wheel and tilling attachments. A rotavator assembly provides both traction and tillage.
4. Function : Used for ploughing, weeding, levelling and many other agricultural operations including hauling with suitable attachments.
5. Special features : Suited for wet land work.
6. Weight : 450-500 kg.
7. Approx. Cost : Rs.25000/-(with main accs.)
8. Performance:
 - Ploughing : 1.0 ha/day
 - Puddling : 0.8 ha/day
 - Tilling : 1.6 ha/day
 - Interculture : 1.2 ha/day.
9. Manufacturers/Dealers - Manufacturers please see appendix No.VI.



3. TRACTOR

1. Name of implement : Wheel Tractor
2. Local name : चिरोट ट्रेक्टर
3. General description : Self propelled power unit, having wheels or tracks for operating agricultural implements and machines. Fitted with an I.C. engine. The engine power is transmitted to the tractor wheels through gears and shafts.
4. Function : Used for various farm operations like ploughing, disking, harrowing, seeding and farm transport with suitable attachments.
5. Special features : Adapted for field work, p.t.o. and belt pulley drives are available for operating a machine as a stationary power unit.
6. Weight : 1500 kg.
(35 h.p.)
7. Approx. Cost : Rs. 50,000/=
8. Performance
Ploughing: 3 Furrows Board
Board ploughs 2 ha/day
Harrowing 4 ha/day
Disking 0.4 ha/day
9. Manufacturers/Dealers
 1. Tractor and Equipments, Madhya Pradesh
 2. Escorts Ltd., Faridkot, Punjab.
 3. International Tractor Company of India, Bombay.



APPENDIX - I

1. Associated Engineering Industries,
XIII/181, Railway Station Road,
Chalakkudy.
2. Blue Star Industries,
Pudusseri,
Palghat.
3. Jose Engineering Works,
XIII/566,
Chalakkudy.
4. Kerala Agro Machinery Corporation Ltd.,
Athani P.O.,
Angamaly South,
Ernakulam.
5. Kumar Industries,
Edathara P.O.,
Palghat District.
6. M.M.I. Metal Industries,
Engineering Foundry,
Koyasseri, Palghat.
7. Moly Enterprises,
C-24, Industrial Estate,
Ollur.
8. Pulikothil Industries,
VI/85,
Pazhanji,
Thalapilly.
9. Regional Agro- Industries Co-operative Ltd.,
Cannanore.
10. Regional Engineering Works,
Kanchikode,
Palghat District.
11. Sankar Tools and Implements,
Industrial Estate,
Kanakkad,
Cheruvannur.
12. Sasikumar Industries,
5/469,
Lokamaleswaran,
Kodungallur.
13. South India Metal Company,
(SIMCO),
Shornur.

14. Sree Ganesh Industries,
Mini Industrial Estate,
P.O. Kuruvilassery,
Via. Mala.
15. Sree Krishna Industries,
Coimbatore Road,
Palghat.
16. Sree Narayana Engineering Industries,
Kulappully,
Palghat District.
17. Sree Narayana Metal Industries,
Shornur.
18. Thozhuthiparambil Industries,
VI/269,
Cherpu.
19. Varghese Industries,
2/48,
Manarilassery,
Irinjalakkuda.

APPENDIX II

1. Union Tractor Workshop
8.E, Phase II, Mayapuri,
Industrial Area,
New Delhi-110027,
India.
2. Friends own Fondry & Workshop,
Gill Road, Miller Ganj,
Ludhiana, 141003.
3. Union Forgings,
Shorpur, G.T.Road,
Ludhiana-3,
Punjab.
4. M/s.Francis D'Soiya & Co.,
Dhanu Road, Dist.Thana,
Maharashtra, W.Rly.
5. Wanson (India) Pvt.Ltd.,
Chinchwad, Poona-411019.

APPENDIX IV

SERVICES

Knapsack mist sprayer cum Duster

1. American Springs & Pressing Works,
Private Ltd., Marway Road,
Malad, Bombay-64.
2. Grand Farm Equipments,
1st Floor, Fullikkal Buildings,
XXX/1495, M.G.Road, Ernakulam,
Cochin-682016.
3. Crushmore Maxban India,
10, PHEARSLANE,
Calcutta-12.
4. Jardine Henderson, Ltd.,
4, Clive Row,
Calcutta-1.
5. Ramsar Farm Machines (Pvt) Ltd.,
209, Mettupalayam Road,
Coimbatore-641002.
6. M/s.Sujirkars Trading Co.,
Post Box No.108,
Jewtown, Cochin, Kerala.
7. Sunbeam Agricultural Equipment (P)Ltd.,
L-4, Connaught Circus,
New Delhi-1.
8. The Sigma Steel Industries Regd.,
A/2, Industrial Estate,
Ludhiana-5.

APPENDIX -III

1. Kirloskar Brothers Ltd.,
5, Parliament Street,
Jeevan Tara Building,
New Delhi-110001.

2. Bathloid & Company Ltd.,
P.Box.1719, Padmadam Building,
M.G.Road, Pallinukku,
Ernakulam.

3. Premier Irrigation Equipment (Pvt) Ltd.,
Sazmera Buildings,
Lal Bahadur Sastri Road,
Kottayam-686001.

APPENDIX - V

1. Cooper Engineering Limited,
Marketing Division,
658 Jangli Maharaj Road,
Poona-411004.
2. Greaves Cotton & Co.Ltd.,
I. Dr.V.E.Gandhimarg,
Bombay-400023.
3. Koel Sales & Service,
Kothrud, Pune,
Pin. 411029.
4. Krishna Engines (P) Ltd.,
No.2 Durga Bhavan,
Rashtrapathi Road,
Secunderabad,
Andhra Pradesh.
5. Kirloskar Oil Engines Ltd.,
13, Laxmanvec Kirloskar, Road,
Kirkee, Pune - 411003.
6. Vee Enterprises,
Cochin-2,
Pin. 682001.

APPENDIX- VI

1. Kerala Agro Machinery Corporation Ltd.,
(K.A.M.C.),
P.O.Athani, Amgamala South,
Ernakulam, Kerala.
2. V.S.T. Tillers Tractors Ltd.,
P.B.No.4801,
White Field Road,
Mahadevapura Post,
Bangalore.
3. Krishi Engines Ltd.,
Sanathnagar,
Hyderabad (A.P.)

(Contd..)

APPENDIX - VI (Contd.)

4. Indequip Engineering Ltd.,
Near I.T.I., Naroda,
Ahmedabad.
5. Maharashtra Co-op. Engg. Society Ltd.,
P.B.No.175, Shroli,
Kothapur (Maharashtra).

APPENDIX - VII

1. Voltas Ltd.,
Wellington Island,
P.B.No.234, Cochin-3.
2. Voltas Ltd.,
EMA (AGRI) Division,
19. Graham Road, Ballard Estate,
Bombay-1.
3. Rajice, 47-48 Pragathi House,
Nehru Palace, New Delhi.
4. Tractors & Farm Equipment Ltd.,
Post Box No.3302, Madras.600034.
5. International Tractor Co.of India Ltd.,
Ajorli Road, Kandirili,
East Sombay-400067.
6. Vicon Ltd.,
35/5 Langford Road,
Bangalore-560025.
7. U.P.State agro industrial Corporation Ltd.,
Agrl.workshop,
Talkatora Road, Lucknow.
8. Dates Dies Pvt. Ltd.,
Pearay Lal Building,
Kashmere Gate,
Delhi-110006.
9. Pritam Singh & Sons,
10, Rani Hansi Road,
Motia Khan,
New Delhi-110055.
10. Mahindra Iven Ltd.,
155, Bombay Poona Road,
Pimpri, Poona-411018.

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A.M.Michael.
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 - iii. Ramsar Farm Machines Private Ltd., 253, Nettur Nagar Road,
Coimbatore-641002.
 - iv. Best and Compton ~~xxxx~~ Engg.Ltd., XXXIII/842,
Mahatma Gandhi Road, Ernakulam. 682011.
 - v. Dattatraya Industries Pvt. Ltd., 691A, Poona Buthara Road,
Poona - 411009
 - vi. ELSEETEE INDUSTRIES, Post Box.No.1808, Coimbatore-641005.
 - vii. Eicher Tractors India Ltd., New Faridabad-121001.
 - viii. Tractors and Farm Equipment Limited, Post box No.3302,
Madras-600034.
 - ix. Kumar Industries, P.O.Saathana, Via.Palgrat-678611.
 - x. Moon Limited, 28/3, Lingod Road, Bangalore-560025.
6. Status report on Agriculture. Implements Industry in Tamil Nadu,
Madras - 600 034.
7. Rice Production machinery for the tropics, Fred Samuel and John A.,
Romonamy, I.R.P.I., Philippines.
8. Tractors, Implements and implements for Punjab Farmers, Agri.
Information Service, Dept. of Agriculture, India.

