MEAT DAO
Local Name: Meat da

Features
The tool is mainly used for domestic purposes like preparation and cutting of fish or meat in addition to cutting of bushes and twigs of trees. It is made from old leaf spring steel or mild steel flat by forging to required shape. The tool is used by holding the tang and struck against the object to be cut. In many cases the tang in inserted in the wooden handle for easy operation.

Specifications
Raw materials used
- Blade: Leaf spring or mild steel flat
- Handle: Bamboo/wood

Dimension of blade
- Length x Width x Thickness (mm): 260 – 290 x 50 – 60 x 5-6

Dimension of handle
- Diameter (mm): 30-40
- Length (mm): 150-200
- Angle between the blade and handle (degrees): 180
- Weight (kg): 0.40-0.50

Uses
Used for cutting fish, meat and vegetables

Sources (Appendix)
121, 136, 923, 964, 1095, 1248, 1251, 1258, 1420, 1425

MEAT DAO
Local Name: Meat da

Features
It is a multipurpose cutting tool specially used for cutting meat in Arunachal Pradesh in addition to the agricultural operations. It is made from mild steel flat or old leaf spring steel by forging. The cutting edge of the blade is slightly curved and end flattened. A handle is riveted on the tang end of the blade. The cutting is accomplished by striking the cutting edge against the job.

Specifications
Raw material used
- Blade: Leaf spring/mild steel flat
- Handle: Wood

Dimension of blade
- Length x Width x Thickness (mm): 300 – 350 x 40 - 45 x 4-5
- Angle between the blade and handle (degrees): 175 (approx.)
Uses
Used for cutting and chopping of meat and fish and cutting thin branches, twigs, bushes etc.

Sources
Various blacksmiths of Arunachal Pradesh

MEAT DAO
*Local Name: Tahtawn Chem*

Features
The cutting tool is specially used for cutting meat and fish in Mizoram State. It is made from mild steel flat or old leaf spring steel by forging. The cutting edge of the blade is made thin and sharp by beveling. The blade is joined with the help of fasteners to wooden handle. The dao made from spring steel are hardened and tempered for longer service life of the cutting edge and does not require frequent sharpening.

Specifications
- **Raw material used**
  - Blade: Leaf spring steel or mild steel flat
  - Handle: Wood/bamboo
- **Dimension of blade**
  - Length x Width x Thickness (mm): 250 - 280 x 40 - 45 x 3 - 4
- **Angle between the blade and handle (degrees)**: 180
- **Dimension of handle**
  - Diameter (mm): 30 - 35
  - Length (mm): 150 - 180
  - Weight (kg): 0.30 - 0.35

It is used for cutting and chopping of meat and fish. It is also used for cutting bamboo, thin branches of trees and shrubs.

Sources
Various blacksmiths of Mizoram State

MEAT CUTTING KNIFE
*Local Name: Chedo*

Features
It is a chopping knife mostly used by meat shops in the region. The tool consists of blade and tang, which is inserted, in the wooden handle. The blade is made from old leaf spring steel or mild steel sections including flat and angle and forged to shape. The tool made from the spring steel is hardened and tempered for longer service life of the cutting edge.
service life of the cutting edge. The cutting edge is slightly convex and sharpened. The object to be cut is placed on the wooden log/anvil and cutting edge struck against it.

**Specifications**

<table>
<thead>
<tr>
<th>Raw materials used</th>
<th>Blade</th>
<th>Handle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leaf spring, mild steel flat/ angle</td>
<td>Wood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions of blade</th>
<th>Length x Width x Thickness (mm)</th>
<th>230-250 x 60-70 x 5-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions of handle</td>
<td>Diameter (mm)</td>
<td>30-40</td>
</tr>
<tr>
<td></td>
<td>Length (mm)</td>
<td>180-220</td>
</tr>
<tr>
<td>Angle between blade and handle (degrees)</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.50-0.60</td>
<td></td>
</tr>
</tbody>
</table>

**Uses**
The tool is used for cutting fish, meat, vegetable etc. It is also used for cutting thin branches of tree, shrubs and harvesting of vegetables.

**Sources (Appendix)**

124, 145, 159, 290, 341, 353, 365, 455, 573, 574, 626, 727, 728, 778, 779, 781, 824, 951, 982, 1100, 1210, 1211, 1467, 1646, 1682

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**FISH CUTTING KNIFE**

*Local Name: Sanachana*

**Features**

It is common type of fish cutting knife used in Mizoram State. The blade is made from mild steel flat or old leaf spring steel by forging operation. The handle of the knife is generally made from mild steel flat. The spring steel blade is hardened and tempered to suitable hardness. The knife is provided with two arms so that blade is kept above ground level during use.

**Specifications**

<table>
<thead>
<tr>
<th>Raw materials used</th>
<th>Blade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mild steel flat/leaf spring</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions of blade</th>
<th>Length x Width x Thickness (mm)</th>
<th>150 - 180 x 35 - 40 x 2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle between the blade and handle (degrees)</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Dimensions of body</td>
<td>Length (mm)</td>
<td>160 - 180</td>
</tr>
<tr>
<td></td>
<td>Width (mm)</td>
<td>25 - 30</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.25 - 0.30</td>
<td></td>
</tr>
</tbody>
</table>

**Uses**

It is used for cutting fish, meat, vegetables etc.

**Sources**

Various blacksmiths of Mizoram state.
**FISH CUTTING KNIFE**

*Local Name: Tari Ot-dohkha*

A common knife mainly used for cutting and chopping fish and other eatables. The knife is made from old leaf spring steel or saw blades. The blade is cut or forged to be and tang joined to wooden handle. The tool is a smaller version of the chopper. For operation the fish or visceral is placed on wooden anvil/log or board and the blade is struck against them. The cutting takes place due to impact action.

**Specifications**

- **Materials used**
  - Blade: Spring steel or saw blade
  - Handle: Wood

- **Dimensions of blade**
  - Length x Width x Thickness (mm): 300 – 400 x 40 -70 x 3-4
  - Angle between the blade and handle (degrees): 180

- **Dimensions of handle**
  - Length x Width x Thickness (mm): 100-150 x 30-40 x 15-20
  - Diameter (mm): 0.15 - 0.20

**Sources (Appendix)**


**KITCHEN KNIFE**

*Local Name: Churi*

A smaller version of *dao* and in shape resemble to kitchen knife. The tool consists of blade and tang fabricated in one piece. It is made from old leaf spring steel or mild steel flat fitted with a wooden or bamboo handle. The cutting edge is sharpened. The tool is operated by impact motion or chopping action.

**Specification**

- **Materials used**
  - Blade: Leaf spring, mild steel flat
  - Handle: Bamboo/wood

- **Dimensions of blade**
  - Length x Width x Thickness (mm): 180-200x20-25x2-3

- **Dimensions of handle**
  - Diameter (mm): 15-20

387
From the table:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blade</strong></td>
<td>Leaf spring, mild steel flat, old file</td>
</tr>
<tr>
<td><strong>Handle</strong></td>
<td>Wood</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>150 - 250 × 30-40 × 3 - 4</td>
</tr>
<tr>
<td><strong>Diameter</strong></td>
<td>25-30</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>100 - 150</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>0.15 - 0.20</td>
</tr>
</tbody>
</table>

**Features**

It is a common cutting tool used for domestic and agricultural purposes. The tool consists of cutting blade and tang inserted in wooden handle. The cutting edge is sharpened. The blade made from spring steel is hardened and tempered to suitable hardness for longer service life of the blade. The tool is made by the local artisans using old leaf spring steel, mild steel flat or old files by forging operation.

**Uses**

The tool is used for harvesting of vegetables and also for domestic purposes. vegetables.

**Sources (Appendix)**

114, 121, 261, 964, 986, 1095, 1168, 1250, 1251, 1258, 1420, 1425, 1487

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**KITCHEN KNIFE**

*Local Name: Heijang*

**Features**

It is a common cutting tool used for domestic and agricultural purposes. The tool consists of cutting blade and tang inserted in wooden handle. The cutting edge is sharpened. The blade made from spring steel is hardened and tempered to suitable hardness for longer service life of the blade. The tool is made by the local artisans using old leaf spring steel, mild steel flat or old files by forging operation.

**Specifications**

**Raw materials used**

- **Blade**: Leaf spring, mild steel flat, old file
- **Handle**: Wood

**Dimensions of blade**

- **Length × Width × Thickness (mm)**: 150 - 250 × 30-40 × 3 - 4

**Dimensions of handle**

- **Diameter (mm)**: 25-30
- **Length (mm)**: 100 - 150
- **Angle between blade and handle (degrees)**: 180
- **Weight (kg)**: 0.15 - 0.20

**Uses**

The tool is used for cutting tuber crops for planting and domestic purposes in the kitchen.

**Sources (Appendix)**

792, 794, 799, 802, 805, 1069, 1623, 1625, 1626, 1647

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**KITCHEN KNIFE**

*Local Name: Boti dao*

**Features**

It is common type of meat product cutting knife used in Tripura State. The blade is made from mild steel flat or old leaf spring steel by forging operation. The handle of the knife is generally made from mild steel flat. The spring steel blade is hardened and tempered to suitable hardness. The knife is provided with two arms so that blade is kept above ground level during use.
Specifications

Raw materials used
- Blade: Mild steel flat, leaf spring
- Handle: Mild steel flat, leaf spring

Dimensions of blade
- Length x Width x Thickness (mm): 425 - 450 x 40 - 45 x 3 - 4

Dimensions of support
- Length (mm): 150 - 200
- Width (mm): 20 - 32
- Angle between blade and handle (degrees): 180
- Weight (kg): 0.45 - 0.50

Uses
It is used for cutting fish, meat and vegetables.

Sources (Appendix)
95, 146, 166, 225, 357, 643, 680, 901, 958, 981, 1018, 1050, 1056, 1159, 1169, 1276, 1525, 1555, 1609, 1624

MEDIUM KNIFE
Local Name: Thang maton kakpi

Features
The tool is used for agricultural and domestic purposes. The tool consists of blade and tang and is made in one piece by forging operation. The blade is made from old leaf spring steel and fitted to a wooden or bamboo handle. The blade is slightly convex and flattened at the tip. The cutting edge is hardened and tempered to suitable hardness. These are available in different shapes and sizes and are custom made according to demand. The tool is operated by striking the blade against the object to be cut.

Specifications

Raw materials used
- Blade: Leaf spring
- Handle: Bamboo/wood

Dimensions of blade
- Length x Width x Thickness (mm): 200 - 300 x 50 - 70 x 5 - 6

Dimensions of handle
- Diameter (mm): 30 - 50
- Length (mm): 150 - 300
- Angle between blade and handle (degrees): 180
- Weight (kg): 0.40 - 0.50

Uses
It is used for cutting wood, bamboo, twigs and branches of tree, shrubs, fish and meat and clearance of forest growth.
BIG KNIFE
Local Name: Maring Thang

Features
The tool is employed for agricultural and domestic purposes. It is made in single piece from old leaf spring steel by forging operation. Tang of the tool is fitted to a wooden or bamboo handle. The cutting end of the blade is flattened and edge is made sharp. The blade is hardened and tempered to suitable hardness for longer service life. It is available in different shapes and sizes according to the demand of the customer.

Specifications
Raw materials used
Blade : Leaf spring
Handle : Bamboo/wood

Dimensions of blade
Length×Width×Thickness (mm) : 340 – 360 × 70 – 90 × 8 - 10

Dimensions of handle
Diameter (mm) : 35 - 50
Length (mm) : 350 - 400
Weight (kg) : 1.20 - 1.40

Uses
It is used for cutting wood, bamboo, twigs and branches of tree, shrubs, fish and meat and clearance of forest growth.

Sources (Appendix)
792, 794, 1059, 1622, 1623, 1625

BIG KNIFE, CONCAVE EDGE
Local Name: Bamphok

Features
The hand tool consists of a blade and handle in which the tang of the blade is inserted. The blade is made from old leaf spring steel or mild steel flat/angle section by forging. The blade is curved and the concave side is sharpened for cutting. The blades made from spring steel, are hardened and tempered to suitable hardness for increasing service life of the tool and does nor require frequent sharpening. The tool is operated by holding the handle and striking the blade against the work to accomplish cutting.

Specifications
Raw materials used
Blade : Leaf spring, mild steel flat or angle
Handle : Wood

Sources (Appendix)
792, 794, 1069, 1622, 1623, 1625
KNIFE
Local Name: Chemte

Features
It is a common household cutting knife used in Mizoram. The blade is made from used saw or hacksaw blades. The serrations of the blade are removed and the cutting edge made sharp by grinding. A handle is joined to the blade.

Specifications
Raw materials used
- Blade : Hacksaw blade
- Handle : Wood

Dimensions of blade
- Length x Width x Thickness (mm) : 120-150 x 20 x 1
- Angle between the blade and handle (degrees) : 180

Dimensions of handle
- Diameter (mm) : 20-25
- Length (mm) : 100-120
- Weight (kg) : 0.05-0.06

Uses
It is used for cutting vegetables, small fish etc.

Sources
Various blacksmiths of Mizoram state.

FOLDING KNIFE
Local Name: Tari iing

Features
Folding knife is common household appliance of Meghalaya. These are available in different sizes. It consists of a thin blade fitted to a wooden handle. The cutting edge is made sharp by

Sources (Appendix)
forging or grinding. The blade is made from mild steel flat or saw blade. When not in use, the blade can be folded.

**Specifications**

**Raw materials used**

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade</td>
<td>Mild steel flat, saw blade</td>
</tr>
<tr>
<td>Handle</td>
<td>Wood</td>
</tr>
</tbody>
</table>

**Dimensions of blade**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Length x Width x Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 – 250 x 25 – 40 x 1.5-3</td>
</tr>
</tbody>
</table>

**Dimensions of handle**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30-40</td>
<td>350-700</td>
</tr>
</tbody>
</table>

**Weight (kg)**

<table>
<thead>
<tr>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15-0.25</td>
</tr>
</tbody>
</table>

**Uses**

It is used for cutting of vegetables, peeling and splitting of betel nuts and other household works.

**Sources (Appendix)**

101, 104, 134, 286, 355, 668, 788, 790, 804, 834, 836, 967, 1065, 1066, 1068, 1070, 1293, 1310, 1312, 1316, 1318, 1593, 1596, 1751

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**AGRICULTURAL KNIFE**

*Local Name: Thangjou*

**Features**

It is a long handled cutting tool and consists of blade and tang inserted in the handle. The tip of the blade is flattened and cutting edge sharpened. The cutting edge is slightly made convex. The blade is made from old leaf spring steel and forged to shape. The blade is hardened and tempered to suitable hardness for longer service life of the cutting edge.

**Specifications**

**Raw materials used**

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade</td>
<td>Leaf spring</td>
</tr>
<tr>
<td>Handle</td>
<td>Bamboo</td>
</tr>
</tbody>
</table>

**Dimensions of blade**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Length x Width x Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>250 - 300 x 30 – 45 x 5-6</td>
</tr>
</tbody>
</table>

**Dimensions of handle**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30-40</td>
<td>350-700</td>
</tr>
</tbody>
</table>

**Weight (kg)**

<table>
<thead>
<tr>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40-0.65</td>
</tr>
</tbody>
</table>

**Uses**

The tool is used for cutting and clearing unwanted growth on ridges of paddy fields. It is also used for clearing jungle growth, making holes for dibbling of seeds and for loosening and dressing of soil.

**Sources (Appendix)**

792, 794, 799, 802, 805, 1069, 1623, 1625, 1626, 1647
BETEL NUT KNIFE  
*Local Name: Kuhvachema*

**Features**
It is a locally made cutting tool mainly used for cutting betel nut. The tool has two arms; one of the arms has cutting blade and the other arm has anvil to hold the nut in place. The ends of arms are joined by riveting and act as a hinge for movement of arms. It is made from mild steel rod or flat by forging operation. For operation, the nut is placed on the anvil and cutting blade pressed against the nut. The tool is operated by one hand.

**Specifications**

<table>
<thead>
<tr>
<th>Raw materials used</th>
<th>Blade</th>
<th>Handle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mild steel rod, flat</td>
<td>Mild steel rod</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions of blade</th>
<th>Length×Width×Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120-150 × 20 – 25 × 2-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions of handle</th>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20 - 25</td>
<td>120-150</td>
<td>0.13-0.17</td>
</tr>
</tbody>
</table>

**Uses**
Used for cutting and cleaning of betel nuts.

**Sources**
Various blacksmiths of Mizoram state.

CARDAMOM KNIFE  
*Local Name: Elaichi kata*

**Features**
The tool is mostly used in cardamom cultivation. It consists of curved tip blade and handle. The blade is made of square section rod, flattened at the tip and the tip is made to hook shape. Both convex and concave sides of the tip are sharpened. The convex side is sometimes serrated for easy cutting of the cardamom plants and pods. The blade is made from old leaf spring steel, mild steel flat or angle section and forged to shape. The tang is inserted in the wooden handle. The tool is used by pulling or pushing action.

**Specifications**

<table>
<thead>
<tr>
<th>Raw materials used</th>
<th>Blade</th>
<th>Handle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leaf spring steel, mild steel flat</td>
<td>Wood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions of blade</th>
<th>Length×Width×Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150-180 × 10-15 × 4-5</td>
</tr>
</tbody>
</table>
Dimensions of handle

| Diameter (mm) | 20-30 |
| Length (mm) | 150-200 |
| Angle between blade and handle (degrees) | 180 |
| Weight (kg) | 0.10-0.20 |

**Uses**

The tool is used for harvesting cardamom fruits and cutting old cardamom plants.

**Sources (Appendix)**


**KHUKRI**

*Local Name: Cheumte*

**Features**

It is a special cutting tool used in Mizoram State for cutting of twigs and branches of trees and felling of bamboos. It is also used for domestic purposes. The blade of the tool is made from old leaf spring steel by forging operation. The shape of the blade is similar to domestic kitchen knife and cutting edge is straight with tip slightly curved. The blade is hardened and tempered to suitable hardness for longer service life of the tool. A plastic handle is fitted to the tang of the blade. A wooden made cover is generally provided with every knife.

**Specifications**

- **Raw materials used**
  - Blade: Leaf spring
  - Handle: Plastic

- **Dimensions of blade**
  - Length x Width x Thickness (mm): 220 - 250 x 30-32 x 5 - 6

- **Dimensions of handle**
  - Diameter (mm): 35 - 40
  - Length (mm): 150 - 200

- **Weight (kg)**: 0.27 - 0.32

**Uses**

Used for cutting and cleaning tree branches. Also used for preparation of meat, fish etc.

**Sources**

Various blacksmiths of Mizoram state.

**MANUALLY OPERATED FERTILIZER BROADCASTER**

**Features**

It consists of a hopper with tapered bottom, with a side slope of about 46 degrees. A circular disc having 8 sections is fitted on a vertical shaft below the fertilizer hopper and is rotated by
a handle through gear arrangement. The gear ratio between the handle and the spreading disc is 1:8.4. A metered quantity of the fertilizer through adjustable opening falls on the disc, which spreads uniformly due to centrifugal force. Machine is mounted on the shoulders and is operated at a forward speed of about 2.0 km/h.

**Brief Specifications**

<table>
<thead>
<tr>
<th></th>
<th>One person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power source</td>
<td>Cone</td>
</tr>
<tr>
<td>Hopper bottom</td>
<td></td>
</tr>
<tr>
<td>Shaped</td>
<td></td>
</tr>
<tr>
<td>Length (mm)</td>
<td>280</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>410 - 415</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>441 - 450</td>
</tr>
<tr>
<td>Hopper capacity (kg)</td>
<td>12 -15</td>
</tr>
<tr>
<td>Shape of metering hole</td>
<td>Circular</td>
</tr>
<tr>
<td>Spreading disc spinner diameter (mm)</td>
<td>225 - 273</td>
</tr>
<tr>
<td>Vertical clearance from hopper bottom (mm)</td>
<td>24 - 44</td>
</tr>
<tr>
<td>No of fins</td>
<td>8</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>3.8 - 10</td>
</tr>
</tbody>
</table>

**Uses**

It is suitable for broadcasting granular fertilizers like urea, DAP etc in the field uniformly. The effective width of coverage is about 630 cm.

**Sources (Appendix)**

326, 726, 1405

**CHAFF CUTTER**

**Features**

The chaff cutter consists of a feeding tray, curved blade fixed on to a spring loaded lever, anvil which also acts as cutting blade and a suitable frame work. The cutting action is similar to the shearing machine used in the workshop. The blades are made from medium carbon steel or low alloy steel, hardened and tempered to about 45 HRC. For operation, fodder is fed in the tray pushed by one hand, and the other hand and a leg actuates the curved cutting blade. A thin layer of fodder is spread on the anvil blade and the curved blade progressively shears the fodder into small pieces.

**Specification**

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (mm)</td>
<td>920</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>540</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>1225</td>
</tr>
<tr>
<td>Type</td>
<td>Manually operated</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>40</td>
</tr>
<tr>
<td>Power requirement</td>
<td>Single person</td>
</tr>
<tr>
<td>Capacity (kg/h)</td>
<td>300</td>
</tr>
</tbody>
</table>
Uses
It is used to cut chaff, grass, green and dry fodder crops and paddy straw into bits for feeding to animals.

Sources (Appendix)
825, 1187, 1698

HAND CHAFF CUTTER

Features
The hand chaff cutter consists of a trough, cutting blades, flywheel, cover plate, feed rolls, shear plate, handle and stand. The blades are made of high carbon steel or alloy steel hardened and tempered to suitable hardness. The cutting edges are made sharp. These cutting blades are mounted on the flywheel. Two persons operate the machine, one feeds the forage or grass in the feeding trough and another rotates the flywheel with handle. The material fed in the hopper is gripped between the feed rolls which pull it and the material get chopped between blades mounted on the flywheel and stationary shear plate. The length of chopped material can be changed. Dry or green fodder can easily be chopped with the machine.

Specifications
Number of blades : 2
Diameter of flywheel (mm) : 900-1200
Chaff length (mm) : 16-32
Weight of flywheel (kg) : 30-32
Weight (kg) : 80-85
Power source : Manual, two persons

Uses
It is used for chopping of grass, fodder and fodder crops.

Sources (Appendix)

CHAFF CUTTING MACHINE

Features
The machine consists of heavy-duty frame mounted on wheels, feeding chute, conveyor chain, chopping mechanism, blowing mechanism and transmission mechanism. The chopping mechanism has flywheel on which cutting knives are mounted. In some of the machines, cylindrical type cutter head is used. The cutting knives are made from high carbon steel, hardened and tempered to suitable hardness. For operation the green or dry fodder is placed on the automatic conveyor feeding system, which in turn feeds the fodder into the feeding rolls. These feeder rolls feed the fodder into cutter head and simultaneously hold the fodder firmly while cutting. The rotating cutter head knives chop the material and deliver the cut
chaff to desired place. The machine is capable of cutting grass, hay or silage to different sizes. The chopped material is discharged directly in a trailer through a discharge spout. The unit comes with self-feeding device with feed reversal mechanism for safety.

### Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Power operated, automatic feeding type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (mm)</td>
<td>1750-2500</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>625-1500</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>1380-1450</td>
</tr>
<tr>
<td>Capacity (kg/h)</td>
<td>2500-10,000 for green fodder</td>
</tr>
<tr>
<td>Capacity (kg/h)</td>
<td>1000-4000 for dry fodder</td>
</tr>
<tr>
<td>Length of cut (mm)</td>
<td>10-60</td>
</tr>
<tr>
<td>Source of power (hp)</td>
<td>3-15 electric motor or tractor</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>180-800</td>
</tr>
</tbody>
</table>

### Uses

It is used for chopping of grass, hay and silage.

### Sources (Appendix)

534, 649, 663, 1665

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**WHEEL BARROWS**

### Features

Different designs of wheelbarrows are available. A wheel barrow consists of frame, transport wheels, axle, handle and hopper or box. Usually the wheels are made of cast iron and on the rims solid rubber ring is mounted. The hopper or box is made of mild steel sheet or moulded plastic. The shape of the hopper varies from rectangular to trapezoidal or flat bottom with curved sides. The loaded barrow is lifted with the handles and pushed by the operator to transport the material loaded in the hopper. The weight of the material comes on the wheel and the operator simply pushes the barrow. The carrying capacity of wheel barrows varies from 0.1 – 0.4 cu m.

### Uses

It is used to transport grass cuttings, compost, leaves, seed and fertilizer, plants and other materials.

### Sources (Appendix)

961, 308,

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**LADDER**

### Features

Ladders are required in farm work for harvesting and other miscellaneous works. There are various types of ladders such as straight, platform type with folding system, self-supporting extension, extension and wheeled tower. Straight and extension types are called wall ladders as they get support from a vertical wall and the others are self-supporting type ladders. Different parts of the ladders are made of aluminium and rubber grips are provided at ground support points to prevent slippage.
Specifications
Closed length (mm) : 3050-6100
Extended length (mm) : 5150-10650

Uses
For harvesting of fruits, repair and maintenance work and other farm jobs.

Sources (Appendix)
249, 961, 1491, 784, 1136

ANIMAL LOADING CAR

Features
It is an equipment used to study draftability of draught animals i.e. bullocks, buffaloes, camels, donkeys, mules etc under field conditions. It consists of frame assembly, hydraulic pump, oil tank, transmission system, control valve, check valves, relief valves, jeep tyre wheels etc. The ground wheels drive the hydraulic pump. Braking effect on the wheel is created by restricting the flow of hydraulic oil through control valve, thus causing load on the animal.

Specifications
Overall Dimensions
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (mm)</td>
<td>3350</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>1420</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>1800</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>500</td>
</tr>
<tr>
<td>Differential ratio</td>
<td>1:4:27</td>
</tr>
<tr>
<td>I(^{st}) Stage chain drive ratio</td>
<td>1:1:9</td>
</tr>
<tr>
<td>II(^{nd}) Stage chain drive ratio</td>
<td>1:3:7</td>
</tr>
<tr>
<td>Wheel to pump ratio</td>
<td>180-900</td>
</tr>
<tr>
<td>Speed range (km/h)</td>
<td>1.8-5.0</td>
</tr>
<tr>
<td>Draft range (N)</td>
<td>300-5000</td>
</tr>
</tbody>
</table>

Uses
It is used to study draftability of draught animals under field conditions.

Sources (Appendix)
254

ANIMAL TREAD MILL

Features
Animal tread mill is suitable for studying the draftability and fatigue characteristics of draft animals in the laboratory. It has provision for adjusting the speed of operation, slope and other instrumentation needed can be easily adapted. It consists of a sturdy frame at the bottom of which an endless conveyor belt moves at a pre-determined speed to simulate the actual walking speed of the animal. It is driven by a 5 kW three-phase variable speed electric motor.
The various types of harnesses can be used on the animals and the required parameters measured for evaluating the draftability and fatigue of the animals.

**Specifications**

<table>
<thead>
<tr>
<th>Overall Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (mm)</td>
<td>7600</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>2000</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>2400</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>250</td>
</tr>
<tr>
<td>Slope adjustment (Degrees)</td>
<td>Up to 5</td>
</tr>
<tr>
<td>Belt size</td>
<td></td>
</tr>
<tr>
<td>Length (mm)</td>
<td>7500</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>1000</td>
</tr>
<tr>
<td>Speed adjustment (km/h)</td>
<td>Up to 2.5</td>
</tr>
</tbody>
</table>

**Uses**

It is used to study the draftability and fatigue of animals under different loads and speeds.

**Sources (Appendix)**

254

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**SUGARCANE CRUSHER**

*Vertical type*

**Features**

The vertical type sugarcane crusher, consists of crushing roller, king and extracting roller. The crusher can be operated either by a pair of bullocks or electric motor/stationary engine with gear drive. The rollers are made of special grade cast iron. The crushing roller has horizontal V-grooves on its periphery that help in crushing the sugarcane. The other rollers have straight grooved for extracting and removing juice.

**Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Vertical rollers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rollers</td>
<td>3</td>
</tr>
<tr>
<td>Roller dimensions</td>
<td>Roller (1) 216 x 216, 230 x 216</td>
</tr>
<tr>
<td>(diameter x length)</td>
<td>Roller (2) 216 x 216, 230 x 216</td>
</tr>
<tr>
<td></td>
<td>Roller (3) 178 x 191, 165 x 180</td>
</tr>
<tr>
<td>Power requirement</td>
<td>5-6 or a pair of bullock</td>
</tr>
<tr>
<td>Crushing capacity</td>
<td>200 - 250 (bullock operated)</td>
</tr>
<tr>
<td></td>
<td>600 - 650 (power operated)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>410 - 650</td>
</tr>
</tbody>
</table>

**Uses**

It is used for sugarcane crushing to extract juice.
SUGARCANE CRUSHER

Features
The horizontal type sugarcane crusher consists of crushing rollers, roller axles, and set of gears, side blades, trash blades and gear guard. There are three rollers, one for feeding and other two for crushing. The rollers are made of high-grade cast iron and V-grooved in order to hold the sugarcane. The rollers are held between cast iron side plates and mounted on heavy cast iron frame. The rollers receive power from motor or engine through a set of gears. The machine is operated by electric motor or stationary engine.

Specifications
<table>
<thead>
<tr>
<th>Type</th>
<th>Horizontal rollers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rollers</td>
<td></td>
</tr>
<tr>
<td>Roller dimensions (mm) (diameter × length)</td>
<td>Roller (1) 222× 216, 236 × 254, 264 × 356</td>
</tr>
<tr>
<td></td>
<td>Roller (2) 152 × 216, 233 × 254, 251 × 356</td>
</tr>
<tr>
<td></td>
<td>Roller (3) 150 × 216, 233 × 254, 248 × 356</td>
</tr>
<tr>
<td>Power requirement (hp)</td>
<td>8 – 10, 14 – 15, 26 - 28</td>
</tr>
<tr>
<td>Crushing capacity (kg/hr)</td>
<td>550 – 675, 1135 – 1270, 1850 – 2270 (sugarcane)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>750, 1335, 2662</td>
</tr>
</tbody>
</table>

Uses
It is used for extraction of sugarcane juice.

Sources (Appendix)
67, 187, 325, 382, 661, 734, 735, 1099, 1361, 1450, 1664, 1665

MULTI-UTILITY ELEVATOR PLATFORM

Features
Close aerial access to the fruits provides better control on the harvesting operation thereby reducing the damage to fruits and tree branches. The tractor operated elevator attachment is a versatile and reliable worker-positioning platform from which the delicate fruits can be picked up or harvested very safely and efficiently from the trees. The positioning is adjustable by the operator himself both vertically and horizontally. Hence selective picking of superior quality fruits with negligible fruit drop and higher capacity of harvesting fruits is achieved as compared to the traditional methods.
Specifications
Capacity of fruit harvesting (kg/hr) 70 - 150
Maximum height of harvesting (cm) 762
Load bearing capacity (kg) 200
Power requirement Hydraulic system of any tractor
Labor requirement Two including tractor driver

Uses
Used for safe and efficient harvesting of fruits. Also used for efficient spraying, pruning, training of orchard crops.

Sources (Appendix)
28

JIB CRANE

Features
Jib crane is a simple and useful accessory and can be attached to the tractor easily. It consists of a tubular steel beam curved (goose-neck shape) at one end, lifting hook, and a frame, the one end of which is welded to the beam and the other rests on the draw bar of the tractor. The lifting hook is a forged component attached to the curved end of the tubular beam. The other end of beam has sturdy clamp with pin for mounting it on the tractor. A flat iron is welded along the length of beam for its strengthening. The jib crane when mounted on the tractor can be raised or lowered by the hydraulic system of the tractor. For lifting the load, it is attached to the hook of crane with sling, and the beam is lowered or raised by the hydraulic system of the tractor.

Specifications
Diameter of the tubular beam (mm) 89
Length (mm) 2300
Height of lift (mm) 510 - 2540
Lift capacity (kg) 476
Power requirement (hp) 35 and above, tractor

Uses
It is used for jobs like loading and unloading of large drum of fuel, seed and fertilizer bags, feed, building materials, cotton bales, farm machines etc.

Sources (Appendix)
1598

TRACTOR MOUNTED TELESCOPIC HOIST

Features
The tractor-mounted hoist can be used in orchards and plantation crops for trimming, pruning, plant protection and harvesting operations. It consists of two square aluminium ladders, each made of U-section as frames and round hollow pipes as cross members. The U-sections of the outer ladder are inward facing while U-sections of the inner ladder face outward, sliding one over the other. Two wire ropes are provided, which are driven with a hydraulic motor. The
motor, while running in clockwise direction helps in lifting the inner ladder and while running in anti clockwise direction, lowers the inner ladder down. A support frame fitted to the platform on the top end of the inner ladder helps as a safety frame. While transporting, the hoist can be folded and tilted to horizontal position over tractor canopy.

**Specifications**

| Maximum height of platform (mm) | 9500 |
| Minimum height of platform (mm) | 5500 |

**Performance results**

| Plant to plant spacing (m) | 10 |
| Field capacity, min/tree    | 30 |

It is used in orchards and plantation crops for trimming, pruning, plant protection and harvesting operations.

**Sources (Appendix)**

28, 1605

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**TRACTOR-TRAILER**

**Features**

The tipping type tractor-trailer are two wheeled with capacity of two to three tonnes. Tipping up to 50 degrees is achieved using tractor hydraulics. The trolley is hitched to the tractor and power for tipping is obtained from auxiliary hydraulics of tractor. A single acting cylinder is used for tipping the trolley. Trolleys are also available in four-wheel model with tipping facility. In four wheel models, the two front wheels are mounted on an articulated shaft to facilitate turning. Trolleys are also available without tripping arrangement.

**Specifications**

<table>
<thead>
<tr>
<th>Types</th>
<th>2 wheels and 4 wheels trolleys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>3 to 5 t</td>
</tr>
<tr>
<td>Overall size (L×W×H) (mm)</td>
<td>3048-3658 × 1829 × 690</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>860 to 1230</td>
</tr>
<tr>
<td>Tyre size</td>
<td>7.50 × 16-19 ; 9.00 ×16-20</td>
</tr>
<tr>
<td>Power requirement (hp)</td>
<td>35-60, Tractor</td>
</tr>
</tbody>
</table>

**Uses**

Transportation of farm produce and as well as rural transportation
Sources (Appendix)