SECTION : II
CHAPTER : V

PROCESSING OF RAW CROPS BY PEASANT

* Recommendation in respect of Rice (Normal Ahu) crop processing.

* Recommendation in respect of Rice (Transplanted Normal Ahu) crop processing.

* Recommendation in respect of Sali Rice Processing.

* Recommendation in respect of Blackgram crop processing.

* Recommendation in respect of Jute crop processing.

* Recommendation in respect of Wheat crop processing.

* Recommendation in respect of Mustard Crop processing.

* Recommendation in respect of Vegetable crop processing.

* Processing of crop at study area.
CHAPTER : V
PROCESSING OF RAW CROPS BY PEASANT :

Processing of raw crops by the peasants in agricultural field is the primary function of crops production. Systematic processing of raw crops leads to increase of production extensively and systematic processing of raw crops required planning and recommendation on scientific manner by the experts time to time.

The following recommendation of Assam Agricultural University and Department of Agriculture, Assam of major crops are mentioned below.

Recommendation in respect of Rice (Normal Ahu) :-

A. Rice (Normal Ahu)

(1) Land selection

Area having surface soils with medium to sandy texture overlying a silty clay sub soil should preferably be selected.
## Rice varieties (zonal) Recommendations:

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Agro-climatic zone</th>
<th>Duration days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semidwarf</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govind</td>
<td>2, 3, 4, 5, 6</td>
<td>105 - 110</td>
</tr>
<tr>
<td>IR 50</td>
<td>2, 3, 4, 5, 6</td>
<td>105 - 110</td>
</tr>
<tr>
<td>IR-8/Jaya</td>
<td>6</td>
<td>130 - 140</td>
</tr>
<tr>
<td>Bale</td>
<td>1, 2,</td>
<td>90 - 100</td>
</tr>
<tr>
<td>Subhadra(DR 92)</td>
<td>1, 4, 5</td>
<td>100 - 110</td>
</tr>
<tr>
<td>Pusa 2-21</td>
<td>1, 2, 3, 4, 5, 6</td>
<td>100 - 110</td>
</tr>
<tr>
<td>Cauvery</td>
<td>4, 5</td>
<td>100 - 110</td>
</tr>
<tr>
<td>Rasi</td>
<td>1, 2, 4, 6</td>
<td>110 - 115</td>
</tr>
<tr>
<td>IR-36</td>
<td>1, 3, 4, 6</td>
<td>110 - 120</td>
</tr>
<tr>
<td>IET 6223</td>
<td>2</td>
<td>100 - 110</td>
</tr>
<tr>
<td><strong>Culture - 1 (Kalinga 3)</strong></td>
<td>2, 3, 4, 5</td>
<td>80 - 90</td>
</tr>
<tr>
<td>B-Tall Bangalni</td>
<td>1, 4</td>
<td>115 - 120</td>
</tr>
<tr>
<td>Rangadoria</td>
<td>1, 3, 4</td>
<td>115 - 120</td>
</tr>
<tr>
<td>Dubaichenga</td>
<td>1</td>
<td>115 - 120</td>
</tr>
<tr>
<td>Garem</td>
<td>2</td>
<td>110 - 110</td>
</tr>
<tr>
<td>Kola Sopila</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Jhajit</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Panjasali</td>
<td>3, 4</td>
<td>110 - 115</td>
</tr>
<tr>
<td>Fapori Abu</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Koijaporl</td>
<td>4</td>
<td>95 - 105</td>
</tr>
<tr>
<td>Varieties</td>
<td>Agro-climatic zone</td>
<td>Duration days</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Hasakumra</td>
<td>4</td>
<td>80 - 85</td>
</tr>
<tr>
<td>Guni</td>
<td>4</td>
<td>80 - 85</td>
</tr>
</tbody>
</table>

**SOURCE:** Package of practice for Kharif Crops of Assam.

(1) Department of Agriculture, Assam, Guwahati.

(11) Assam Agricultural university, Jorhat.

**Notes I**

(1) North Bank Plain.

(2) Upper Brahmaputra Valley zone.

(3) Central Brahmaputra Valley zone.

(4) Lower Brahmaputra Valley zone.

(5) Barak Valley zone

(6) Hills zone.

**Notes II**

Durations of semi-dwarf varieties are based on experiments conducted at Titabar. Durations of tall varieties are collected from the field Trail station of respective zones.
(iii) **Seed Selection**

As per recommendation seeds are to be kept in plain water and are required to be stir well. Seeds which are required to be selected from the sunk seeds and floating seeds are required to be rejected.

(iv) **Sowing time:**

As per recommendation seeds should be shown in the month of March and April.

(v) **Dry Seed treatment:**

Treatment of dry seed required to be kept in a tin of fungicides according to the following recommendation and also required to agitate for five minutes for through mixing.

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithane M-45</td>
<td>2.5 g/kg of seed</td>
</tr>
<tr>
<td>Captaf</td>
<td>2.5 g/kg of seed</td>
</tr>
<tr>
<td>Foltaf</td>
<td>2.5 g/kg of seed</td>
</tr>
<tr>
<td>Thiram</td>
<td>2.5 g/kg of seed</td>
</tr>
</tbody>
</table>

(vi) **Field preparation:**

Preparation of land by 3 to 4 ploughings followed by ladderings. Laddering is to be done properly to retain water uniformly in the field. FYM should be applied during initial field preparation.
(vii) **Manures and Fertilizers**:

Compost of FYM at 10 ton per hectare or 15 quintal per bigha should be applied.

**Nutrient requirement form fertilizer**

<table>
<thead>
<tr>
<th></th>
<th>kg/ha</th>
<th>kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A. Semi-dwarf varieties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>40</td>
<td>Urea 88</td>
</tr>
<tr>
<td>( P_{2}O_{5} )</td>
<td>20</td>
<td>SSP 125</td>
</tr>
<tr>
<td>( K_{2}O )</td>
<td>20</td>
<td>MOP 32</td>
</tr>
<tr>
<td><strong>B Tall varieties and Kalinga 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>20</td>
<td>Urea 44</td>
</tr>
<tr>
<td>( P_{2}O_{5} )</td>
<td>10</td>
<td>SSP 62</td>
</tr>
<tr>
<td>( K_{2}O )</td>
<td>10</td>
<td>MOP 16</td>
</tr>
</tbody>
</table>

**Source:** Package of practices for Kharif crops of Assam, Deptt. of Agriculture, Assam and Assam Agricultural University, Jorhat.

(viii) **Time of application of fertilizers**:

(i) Full dose of phosphatic fertilizer at the time of final ploughing

(ii) Application of half of nitrogenous fertilizer and half dose of potash 15-25 days after germination of second weeding.
Seed sowing:
Sowing of seeds are to be done in lines with interrow spacing of 20 cm. 10 to 20 kg seed per bigha and 75 kg seed per hectares are recommended for line sowing.

Interculture:
Wheel hoe or dry land weeder or bindha for laddering after 2 to 3 weeks from sowing are required for weeding.

Second weeding should be done with wheel hoe or dry land weeder at 4-5 weeks from sowing. Manual weeding can be applied in the absence of wheel hoe or dry land weeder.

Chemical weed control - Application of preemergence herbicide Butaclor at the rate of 2.0 kg per hectare at 2-3 days after sowing. This is to be supplemented by a manual weeding at 30-35 days after sowing.

Plant protection measures:
(1) Measures should be adopted against insect pests at their economic threshold levels wherever threshold level is not mentioned. Control measures be taken with the appearance of the pest.
(ii) Insecticides should be used as per recommendation as and when situation arise.

(xii) Pre harvest treatment on standing crop for better grain quality

Harvest of Ahu crop usually coincides with rainy weather. Discolouration as well as sprouting of seeds in the panicle itself or after harvest due to high moisture content of the seeds. To overcome such problem - Diquat 0.05% or paragquat 0.1% or common salt 10% should be sprayed on the earhead at the rate of 1000 l/ha in terms of chemical solution at 20-25 days after 50% flowering. These chemicals enhance the maturity ranging from 5 to 7 days.

Recommendation in respect of Rice (Transplanted Normal Ahu)

(B) Rice : (Transplanted Normal Ahu)

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Agro-climatic zone</th>
<th>Duration days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi Dwarf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govind</td>
<td>1,3,5,6</td>
<td>110 - 115</td>
</tr>
<tr>
<td>IR 50</td>
<td>1,2,3,4,5,6</td>
<td>110 - 115</td>
</tr>
<tr>
<td>Pusa - 2-21</td>
<td>1,2,3,4,5,6</td>
<td>110 - 115</td>
</tr>
<tr>
<td>Krishna</td>
<td>5</td>
<td>115 - 120</td>
</tr>
<tr>
<td>IR 36</td>
<td>1,3,5,6</td>
<td>115 - 120</td>
</tr>
<tr>
<td>IR 8</td>
<td>2,4,5,6</td>
<td>130 - 140</td>
</tr>
<tr>
<td>Jaya</td>
<td>1,2,3,4,5,6</td>
<td>130 - 140</td>
</tr>
<tr>
<td>Sonamukhi</td>
<td>5</td>
<td>100 - 110</td>
</tr>
</tbody>
</table>
Land selection:
Area with assured irrigation facilities should be selected. Heavy to medium textured soil are preferred.

Seed selection:
Seed are kept in plain water, stirred well and floated ones are rejected.

Sowing in Nursery bed:
Seed should be shown in nursery bed during March - April.

Seed Treatment:
Wet Method: After seed selection, the seeds should be soaked directly in any one of the following fungicidal suspensions for 24 hours.
Fungicides | Concentration
--- | ---
Diathane M-45 | 2.5 g/1 of water
Captaf | 2.5 g/1 of water
Foltarf | 2.5 g/1 of water
Bavistin | 1.0 g/1 of water
Thiram | 2.5 g/1 of water

One litre of fungicidal solution is required to treat one kg. of seed.

(vi) Raising of Seedlings

(a) Preparation of seedlings:

Land is throughly puddled and seed bed of 10 m length and 1.25 m breadth is prepared with 30 cm gap in between beds.

(b) Manures and fertilizers:

In each seed bed 20-30 kg cowdung/compost 80g urea, 80g SSP and 40g MOP are to be applied.

(c) Seed rate:

Well germinated seed are to be sown at 650 to 1000 gm per bed. Seed requirement for transplanting one hectare of main field is 40 to 45 kg.
(vii) Water management:

Irrigation water should be supplied in furrows to maintain saturation condition in the surface soils of the nursery bed. However, standing water to a depth of 2-3 cm should be maintained at least 2-3 days before uprooting.

(viii) Plant protection in seed bed.

(ix) Preparation of seedlings for initial protection in the main field is necessary.

(x) Field preparation:

(a) One ploughing should be given at least 21 days prior to transplantation. An irrigation for land soaking be applied before preparatory tillage.

(b) Second irrigation should be applied at 10-12 days prior to transplantation followed by ploughing, laddering and pudding, accompanied by repairing and mud plastering of bunds. Thereafter, another irrigation should be applied for land submergence.
The final pudding should be done 4-5 days prior to transplantation. One irrigation should be applied before final puddling (Depth of each irrigation: 5-7 cm).

(xi) Manures and Fertilizers:

Well rotten FYM or compost has to be applied at 10 t/ha in addition to the fertilizer at the rates given below in areas with moderate fertility level.

Nutrient requirement:

A Semi dwarf varieties

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Urea</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>40</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>P₂O₅</td>
<td>20</td>
<td>SSP</td>
<td>125</td>
</tr>
<tr>
<td>K₂O</td>
<td>20</td>
<td>MOP</td>
<td>33</td>
</tr>
</tbody>
</table>

B Tall varieties

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Urea</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>20</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>P₂O₅</td>
<td>10</td>
<td>SSP</td>
<td>62</td>
</tr>
</tbody>
</table>

Above rates of fertilizers will be valid for most of the rice growing areas of Assam. In case of poor soil, the rates of fertilizers may be required to the extent of 60:30:30 kg/ha of N, P₂O₅ and K₂O respectively.
Diammonium phosphate (DAP) in combination with rock phosphate or alone at the recommended level of fertilizers (40:20:20) can be applied as substitute for SSP and MRP or their combination as an economic source of phosphate.

Time of application of fertilizer.

(a) Only 1/3 of the total urea, full doses of superphosphate and potash at the time of final puddling should be applied.

(b) The second (1/3) and third doses (1/3) of urea should be applied at tillering and panicle initiation stages respectively. Top dressing of urea should be preceded by weeding.

(c) Superphosphate can also be incorporated into the soil at active tillering stage (25-35) days after transplanting along with second dose of nitrogenous fertilizer.

(xii) Time of Transplanting:

Transplanting should be done during April/May.
Transplanting:
Transplanting should be done with 2-3 seedling per hill. Space should be 20 x 15 cm for semi dwarfs and 20 x 20 cm for tall traditional varieties. The depth of planting should be 4-5 cm.

Gap filling:
Replanting of dead hills should be done within 7-10 days of transplanting with seedling of same age.

Water management:
After 2-3 days of transplantation, 7 cm of irrigation water should be applied. Then 3 days after disappearance of ponded water again 7 cm of water is applied. Such intermittent irrigation should be given up to 7-10 days of harvesting. The critical stages of growth of rice crop in relation to water requirement are early tillering and the period from panicle initiation to flowering.

Interculture:
Preferably two weedings at 20 and 40 days after transplanting should be done. Alternatively weeder can be used at the time of top dressing of nitrogenous fertilizer. For chemical control of
weeds, post emergence herbicide 2,4-D and 0.5 to 0.75 at 1/ha should be applied at 2-3 leaf stage of dicol and sedges.

(xvi) **Plant Protection Measures in the field:**

(a) Insect pests:

(i) Plant protection measures should be adopted against insect pest at their economic threshold. Wherever threshold level is not mentioned, control measures should be taken with the appearance of the pest.

(ii) Insecticides should be used as per recommendation.

(xvii) Pre harvest treatment should be undertaken on standing crop for better grain quality.

**Recommendation in respect of Sali Rice crop processing :-**

(c) Sali Rice :-

(i) Variety (zonal recommendations)

(a) **Transplanted**  | **Agro climatic zones**  | **Duration Sowing**
---------------------|--------------------------|------------------------
Normal sali          |                          | 125-130 July           

(i) Semidwarf

<table>
<thead>
<tr>
<th>Variety</th>
<th>Agro climatic zones</th>
<th>Duration Sowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaya</td>
<td>1,2,3,4,6</td>
<td>125-130 July</td>
</tr>
<tr>
<td>IR 8</td>
<td>2,6</td>
<td>125-130 July</td>
</tr>
<tr>
<td>Sita</td>
<td>4</td>
<td>125-130 July</td>
</tr>
<tr>
<td>Transplanted</td>
<td>Agroclimatic Duration</td>
<td>Sowing</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Vijoy Mahsuri</td>
<td>2</td>
<td>140-150 Mid June</td>
</tr>
<tr>
<td>Pankaj</td>
<td>1,2,3,4,5,6</td>
<td>145-150 Mid June</td>
</tr>
<tr>
<td>Monohar Sali</td>
<td>1,2,3,4,5,6</td>
<td>150-160 July</td>
</tr>
</tbody>
</table>

6 Post flood transplanted
(late sali)

| Phulpakhri | 4 |   |

C Direct seeded 2,4,5 75-80 Upto 15th September
(Late Sali)
Culture-1
(Kalinga 3)
Sonamukhi 5 85-95 -do-

Source: Packages of practices for kharif crops of Assam Deptt. of Agriculture, Assam and Assam Agricultural University.

(ii) Seed selection: Seed are kept in plain water, stirred well and the floated ones are rejected
Seed Treatment:

(a) Wet method

After seed selection the seeds should be soaked directly in one of the following fungicidal suspension for 24 hours.

<table>
<thead>
<tr>
<th>Fungicides</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithane M-45</td>
<td>2.5 g/1 of water</td>
</tr>
<tr>
<td>Captaf</td>
<td>2.5 g/1 of water</td>
</tr>
<tr>
<td>Faltaf</td>
<td>2.5 g/1 of water</td>
</tr>
<tr>
<td>Bavistin</td>
<td>1.0 g/1 of water</td>
</tr>
<tr>
<td>Thiram</td>
<td>2.5 g/1 of water</td>
</tr>
</tbody>
</table>

One litre of fungicide solution is required to treat one kg of seed.

(b) Dry method for dry sowing:

Seed and anyone of the following fungicides are put in a closed container and then agitated for five minutes through mixing.

<table>
<thead>
<tr>
<th>Fungicides</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithane M-45</td>
<td>2.5 g/1 of seed</td>
</tr>
<tr>
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<tr>
<td>Faltaf</td>
<td>2.5 g/1 of seed</td>
</tr>
<tr>
<td>Thiram</td>
<td>2.5 g/1 of seed</td>
</tr>
</tbody>
</table>
(iii) **Raising of Seedlings**: 

(a) **Preparation of seed bed**:
Land is thoroughly puddled and seed beds of 10m length and 1.25m breadth are prepared with 30 cm gap in between the beds.

(b) **Manures and fertilizers**:
In each seed bed 20-30 kg cowdung compost, 80g urea, 80g SSP and 40g MOP are to be applied and mixed well with the soil.

(c) **Seed rate**:
Well germinated seeds are to be shown. Requirement of seed for transplanting one hectare of main field is 40 to 45 kg.

(iv) **Water management**:
Irrigation water should be applied to maintain saturation condition in the surface soils of the nursery bed. However, standing water to a depth of 2-3 cm should be maintained at least 2-3 days before uprooting.

(v) **Plant protection in seed bed**:
Measures in respect of plant protection should be taken.
Field Preparation:

Field should be prepared thoroughly by ploughing 4 to 5 times followed by harrowing and laddering. Ploughing should be started at least 21 days ahead of transplanting. The final puddling should be done just before transplantation.

Manures and fertilizers:

Well rotten FYM or compost at 10 t/ha has to be applied during field preparation.

The following are the recommendation for application of fertilizer.

<table>
<thead>
<tr>
<th>Nutrient requirement</th>
<th>Forms of fertilizer</th>
<th>Requirement of fertilizer in kg per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kg/ha)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A. Semidwarf varieties

<table>
<thead>
<tr>
<th>N</th>
<th>40</th>
<th>Urea</th>
<th>88</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₂O₅</td>
<td>20</td>
<td>SSP</td>
<td>125</td>
</tr>
<tr>
<td>K₂O</td>
<td>20</td>
<td>MOP</td>
<td>33</td>
</tr>
</tbody>
</table>

B. Tall varieties

<table>
<thead>
<tr>
<th>N</th>
<th>20</th>
<th>Urea</th>
<th>44</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₂O₅</td>
<td>10</td>
<td>SSP</td>
<td>62</td>
</tr>
<tr>
<td>K₂O</td>
<td>10</td>
<td>MOP</td>
<td>16</td>
</tr>
</tbody>
</table>
Above rate of fertilizer will be valid for most of the rice growing areas of Assam. In case of poor soil, the rates of fertilizer may be required to increase to the extent of 60:30:30 of $N$, $P_2O_5$ and $K_2O$ respectively.

Diammonium phosphate (DAP) in combination with rock phosphate or alone at the recommended level of fertilizer (40:20:20) can be applied as substitute for SSP and MRP or their combination as an economic source of phosphate.

**Time of application of fertilizers :-**

(a) For early duration varieties (100-200 days)

(i) Half of the urea and whole of super phosphate and muriate of potash should be applied at the time of final puddling. In standing water urea alongwith super phosphate and muriate of potash can be applied in pallet form.

(ii) Second dose (half) of urea should be applied at the time of panicle initiation stage.

(b) For medium and Late varieties (120-150 days)
(i) Half of the urea and entire quantity of super phosphate and muriate of potash should be applied at the time of final puddling.

(ii) Of the remaining parts of urea, half at tillering state i.e. 20-30 days after transplanting and other half at panicle initiation stage should be applied.

(iii) For long duration varieties under rainfed low land situation with water depth between 30-50 cm, basal incorporation of prilled urea at 30 kg N/ha is recommended.

(iv) Standing water as far as practicable should be drained out before application of fertilizer.

(viii) Age of seedling and spacing for Normal Sali.

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Age of seedling(days)</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Short and medium duration</td>
<td>25</td>
<td>20 x 15</td>
</tr>
<tr>
<td>2. Medium and long duration</td>
<td>30-35</td>
<td>20 x 15</td>
</tr>
<tr>
<td>3. Long duration</td>
<td>30-40</td>
<td>20 x 20</td>
</tr>
</tbody>
</table>
(ix) **Number of seedling per Hill:**

(i) 2-3 seedling for normal planting (July-August)
(ii) 4-6 seedling for late planting (September)

(x) **Depth of planting:**

4 to 5 cm depth of planting should be maintained for all varieties.

(xi) **Interculture:**

Two weedlings should be given at 20 and 40 days after transplanting with paddy weeder or hoe.

(xii) **Field Management:**

After 2-3 days of transplanting, 7 cm of irrigation water should be applied. Then 3 days after disappearance of ponded water, again 7 cm of water is applied such intermittent irrigation should be given upto 7-10 days of harvesting.

(xiii) **Plant protection measurement:**

Measures in respect of plant protection should be taken.

**Recommendation in respect of Black gram crop processing:**

(i) Sowing time: Mid August to mid September, Saonia mah from mid July to mid August.
(ii) Duration: 70 to 95 days.

(iii) Soil type: Black gram can be grown on a wide range of soils, but sandy loam soil is preferable.

(iv) Land preparation: Ploughing 2-3 times followed by leveling.

The stubbles are to be removed. Surface drains should be provided to facilitate quick removal of excess water from the field.

(v) Liming: Requisite amount of lime is to be applied after soil test in order to bring the soil PH around 6.0

(vi) Manures and fertilizers:

Compost or FYM at 4-5t/ha should be applied.

Nutrient requirement:

<table>
<thead>
<tr>
<th></th>
<th>Without rhizobium</th>
<th>culture</th>
<th>Fertilizer kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>15</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>$\frac{P_2O_5}{N}$</td>
<td>35</td>
<td></td>
<td>220</td>
</tr>
<tr>
<td>$\frac{K_2O}{N}$</td>
<td>0</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
(b) With rhizobium culture

\[
\begin{array}{ccc}
N & 10 & 22 \\
P_2O_5 & 35 & 222 \\
K_2O & 0 & \\
\end{array}
\]

(vii) **Spacing**:

Raw to raw : 30 cm

Plant to plant : 10 cm

(viii) **Interculture**:

One weeding at 20-25 days after sowing is to be done.

(ix) Plant protection measures should be adopted.

**Recommendation in respect of Jute crop processing**:

(i) Land preparation : Land is to be ploughed, cross ploughed and laddered 5-6 times. Weeds and stubbles are to be removed to obtain a fine and clean seed bed.

(ii) Soil : Loamy and sandy loam in upland situation.

(iii) Time of sowing : June for zone 3 and July and August for other zones.
(iv) Seed rate: For line sowing.
Capsularis: 6 kg/ha
Olitorious: 4 kg/ha
For broadcasting
Capsularis: 10 kg/ha
Olitorious: 7 kg/ha

(v) Spacing: Line sowing 30cm x 15cm ensuring plant population about 2.2 lakh/ha

(vi) Broadcasting: 20cm between plants after thinning (ensuing plant population 2.5 lakh/ha)

(vii) Manures and fertilizers: Application of fertilizers should be utilized as per norms.

(viii) Interculture: Usually two manual weedings are to be given, first at 3-4 weeks along with thinning operation and second weeding at 5-6 weeks of crop age.

(ix) Plant protection: Plant protection measures should be taken.

(x) Harvesting: At full maturing.
Recommendation in respect of wheat crop processing:

(i) Soil: Sandy loam to silty loam soil rich in organic matter are suitable. Clay soil is not suitable for wheat.

(ii) Field preparation: Four to five ploughings followed by ladering are required to obtain a good tilth.

(iii) Time of sowing: November to December.

The optimum time of sowing of wheat is when mean temperature of 25°C prevails in the area.

(iv) Seed rate, spacing and method of sowing should be maintained properly.

(v) Fertility management is an important aspect.

(vi) Irrigation schedule: In case of dry top soil, one presowing irrigation to be applied 3-4 days before sowing for quick and uniform germination of seeds.

6 cm depth of irrigation has been recommended for all the agro climatic zones.

The first irrigation has to be applied at 20-25 days after sowing and the second one at 70-75 days after sowing.
(vii) Weed control: 30-35 days after sowing.

(viii) Plant protection: Measures of plant protection should be taken.

Recommendation in respect of Mustard crop processing:

(i) As per zonal recommendation.

(ii) Duration 85 to 120 days.

(iii) Soil types: Sandy soils, however other light soils are also equally good.

(iv) Field preparation: The field should be ploughed 4-6 times followed by laddering in order to obtain good result.

(v) Fertilizer management: Application of fertilizer as per prescription.

(vi) Application of lime.

(vii) Seed rate: As per recommendation.

(viii) Time of sowing: Generally at middle of October to middle of November.
(ix) Irrigation: In absence of rainfall, irrigation of 6 cm depth of water may be applied either at 50% flowering or at early pod formation stage. However, in dry areas one pre-sowing irrigation may be applied.

(x) Interculture: Whenever necessary one weeding at 15-20 days after sowing is significant to keep the field free from weeds.

(xi) Plant protection: Measures of plant protection should be adopted.

Recommendation in respect of Vegetable crop processing
I. Cauliflower:

(i) Soil: Well drained sandy loam for early and loam to clay loam in mid and late crop seed bed preparation and seedling raising are necessary.

(ii) Field preparation: It is advisable to apply slaked lime in every 3 years according to the soil test result. Lime should be applied at least 30 days before planting.

(iii) Seed rate:
- 600g/ha for early crop
- 400g/ha for mid crop
- 600g/ha for late crop.
(iv) Time of sowing: Early from mid July to first week of August (matures by October)

Mid: From first week of September to last week of October.
Late: Upto first week of November (matures by February/March)

(v) Spacing: (Row to row x plant to plant)
   Early 45cm x 45cm
   Mid 60cm x 60cm
   Late 45cm x 45cm

(vi) Manure and fertilizer: Application proportionately.

(vii) Interculture:
   1. Irrigation
   2. Weeding - 1st at 20 days and second at 40 days after transplanting.

2. Cabbage:
   (i) Soil: Well drained sandy loam

   (ii) Seed bed preparation and seedling raising.

   (iii) Field preparation - same as cauliflower.
(iv) **Seed rate:**
- 800g/ha for early
- 450g/ha for late
- 10g/ha seeds should be sown per sq.metres

(v) **Time of sowing:** First week of September to last week of November.

(vi) **Spacing:**
- Row to row x plant to plant
  - Early 60cm x 30cm
  - Late 60cm x 60cm

(vii) **Manure and fertilizer as per norms.**

(viii) **Interculture:**
- (a) **Irrigation:** Immediate after transplanting a light watering should be given and continued till the seedlings are established and subsequent irrigation should be given whenever required.
- (b) **Weedling:** 1st weedling at 20 days and 2nd weedling after 40 days after transplanting.
- (c) **Plant protection measures** should be taken as and when necessary.
3. **Tomato**

(i) Soil: Well drained sandy loam rich in organic matter.

(ii) Nursery bed preparation and seedling raising.

(iii) Field preparation: Liming should be done to raise the soil pH to optimum level.

(iv) Time of sowing: October/November.

(v) Spacing: (Row to row x plant to plant)
   - 50cm x 30cm
   - 75cm x 30cm

(vi) Manure and fertilizers: Application of manures and fertilizers as per norms.

(vii) Interculture: The first irrigation is to be given immediately after transplanting and subsequent at 10-15 days interval depending on soil condition.

(viii) Weedling: One weeding at 20 days after transplanting.

(ix) Plant Protection: Plant protection measures as and when necessary.

4. **Brinjal**:

(i) Soil: Well drained rich sandy loam for early and silt loam to clay loam for late crop.

(ii) Seed bed preparation and seedling raising.

(iii) Field preparation: Lime should be applied.

(iv) Seed rate: 700 - 800g/ha.
(v) Time of sowing: First week of September to October in winter crop and January to February spring crop.

(vi) Spacing: Row to row x plant to plant
75 x 60cm

(vii) Manure and fertilizer as per norms.

(viii) Interculture: Same as tomato.

These are the procedures formulated by the agricultural scientists. These norms and proceedings are generally important for crop production.

Processing of crop at study area:

In study areas at Barpeta and Nagaon district it is observed among the samples household of sample villages that the practices adopted by different sample household are not similar.

(1) Sowing and harvesting time is not similar in all the study area. Sowing of paddy at some floodprone area are done after the flood is over and sowing at flood free area is done comparatively at the same period recommended by agricultural experts. Preparation of seedling are not similar among the sample villages. Two process are found among the sample household one
is seed are kept in water for 48 hours and spreaded it to the seed bed nursery (field No.1) and after one month is over, plants are sown at low lying main field (No.II). This commonly known as Lawakathia in the study area. Another preparation of seedling is known as Dhulia Kathia. Dry seeds as spreaded at seed bed (Field No.I) and planted at the field (Main field No.II. Subsequently Lewa Kathia is more productive. These practices are not similar with the recommendation of the agricultural experts.

(2) Weeding is more among the immigrant Muslim villages. Weeding among the immigrant Muslim villages is 2 to 3 times in respect of paddy, Jute and 15 times of weeding in respect of vegetables like Brinjal etc. But in mixed populated villages weeding is too negligible.

(3) Ploughing is not similar among the sample villages. Ploughing is more among some mixed populated villages.

(4) Mixed cropping in the same plot of land with brinjal and other vegetable like potato are also a practices. These practices are common among the immigrant Muslim villages of both the district.

(5) Some vegetable crop like cabbage etc. are grown even three times at the same plot of land at the immigrant Muslim villages of both the district.
(6) Samples household of some sample villages of immigrant villages utilise the same plot of land for two season. Examples of vegetables like brinjal in the sample village at Bengnaati are cultivated two season in the year.

(7) Application of fertilizer is disproportionate among the sample household of sample villages and no norms and the guidelines are followed by the household especially the sample household of immigrant villages.

The practices adopted by the sample household are not similar among the sample households of different sample villages. From the study, it is found that at immigrant Muslim villages, sample households utilized the same plot of land several times for cultivation as a result production is better. Practices are not uniform among the sample households of different villages as a result variation of productions among different households among the sample villages are found.

Though there are established norms and conditions of processing of crops, yet the practices adopted by the sample household are not uniform with the recommendation and guidelines prescribed by the concerning department of Agriculture and University of Agriculture.
The practices are not uniform throughout Assam among the peasant classes of different localities. Thus production variation is due to absence of uniform practices.

To sum up, through there are recommendation and guidelines yet the sample households of study area follow of their own norms and conditions adopted and cultured of their own localities.

Variation of production is the result of different practices adopted by different sample villages of the study area and same is equally true in respect of entire Assam.

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