

Technologies for intensive cropping in different Agro-Climatic Zones of Assam.

A) Situation : Upland

a) Upper Brahmaputra Valley Zone :

i) Annual crop

Sugarcane (spring) + Cowpea

Sugarcane (autumn) + Toria

Pigeon pea + Ginger/turmeric

Summer rice/vegetables

Black gram/green gram (Sept)Pea/Rajmah (Oct)/Vegetables (Chilli + French bean + Cucumber).

Cowpea/maize (fodder)Soybean/Toria

ii) Perennial crop

Areca nut + Banana + Pineapple

Areca nut + Black pepper + Banana + Pineapple.

b) North Bank Plains Zone :

Summer green gram - Groundnut/Potato/Pea/Toria

Summer rice - Vegetables/lentil/Pea/Rajmah

c) Central Brahmaputra Valley Zone :

Summer green gram - Kharif vegetables

Lentil/pea/toria

Summer rice - Kharif vegetables/Rabi vegetables

Vegetables - Kharif vegetables/Rabi vegetables

Rice - Kharif vegetables/Rabi vegetables

Sesamum + Blackgram (1 : 1)

Pigeonpea + Sesamum

d) Lower Brahmaputra Valley Zone :

i) Annual

1) As in CBV and Rice-Black gram-Potato Rice-Sesamum-Wheat.

2) Vegetables+vegetable; Vegetables flower intercropping.

Brinjal+Frenchbean/Knolkhol/Methi

Pea+Tube rose

Corriander+marigold

ii) Perennial crop :

1) Coconut+ginger+Turmeric

Coconut+betelvine+Assam lemon+banana+Pineapple+Ginger.

e) Hills Zones (Slopes of 20-25%):

Rice (DS) - Black gram/green gram

Rice (DS) - Cotton

Rice - Green gram – toria

Pigeon pea+Sesamum/black gram/green gram

Rice (DS) + Green gram/Black gram (2 : 1)

f) Cropping System for Forage Crop Production :

A) Sequential cropping

- i) Intensive forage production.
 - 1) Cowpea-Teosinte/maize/Dinanath-oats
 - 2) Cowpea/Ricebean-Cowpea/Ricebean-Oats/maize.
 - 3) Maize+Cowpea-Teosinte+Cowpea-Oats
 - 4) Maize_Cowpea-Dinanath-Oats.

- ii) With food/Commercial crops :
 - 1) Rice-Oats
 - 2) Cowpea-Rice-Oats
 - 3) Rice(S)-Cowpea/Ricebean-Maize
 - 4) Rice+Ricebean/Cowpea-Rice-Oats/Maize.

B) Mixed/intercropping :

i) Forage crop mixture :

- 1. Oats+Pea
- 2. Oats+Khesari
- 3. Maize+Pea/Lathyrus
- 4. Maize+Cowpea/Ricebean
- 5. Teosinte+Cowpea/Ricebean
- 6. Sorghum+Cowpea.

ii) Food-Forage mixture :

- 1) Pea (Grain) + Oat (F)
- 2) Rapeseed/Niger + Oat (F)
- 3) Lentil/gram + Oat (F)
- 4) Rice + Cowpea (F)

iii) With perennial grass :

- 1) Guinea/Seteria+Ricebean/Cowpea–Dinanath/Cowpea/Ricebean–Oat/Pea/Khesari
- 2) Hybrid Napier+Cowpea-Cowpea-Oat.

B) Situation : Medium/medium lowland :

a) Upper Brahmaputra Valley Zone

i) March-June	June-Oct.	Nov. Feb/March
	Early rice(T)	Toria/niger/linseed
	Early rice(T) (for light textured soils)	Potato/Pea/vegetables
Rice (DS)	Rice (T)	Toria/relaypea/Pat (F)
ii) April-July	July – Nov.	Nov./Dec – Feb.
Rice (T)	Rice (T)	Oat (F)/Wheat (irrigated)
Vegetables	Rice (T)	Vegetables (Chilli/Radish+Frenchbean/Tomato/Potato)

First rice crop of sequence is of 100-110 days duration Viz. Luit, Kapilee, second rice of 130-140 days duration, viz. Mahsuri, Jaya, Satya.

b) North Bank Plain Zone:

ii) March-July	July – Aug-Nov.	Nov./Dec /Feb.
Green gram	Rice (T)	Potato Torja (with low input level)
	Rice (T)	Rajmah/pea
	Rice (T)	Wheat/vegetables
	Rice (T)	Oat (fodder)

First rice crop of 100-110 days duration, 2nd one of long duration 150 days in two crop sequences.

a) Central Brahmaputra Valley/Zone :

March-June	July – Nov.	Nov. Feb/March
Jute	Rice (T)	Toria/Wheat
Summer moong	Rice (T) Early Rice (T)	Pea/vegetables Vegetables
Cow pea (Fodder)	Rice (T) Rice (T)	Toria Rice (T) (Irrigated Lowland)
Lady's finger	Rice (T)	Toria
Jute	-	Wheat/Toria/Pea/Potato

d) Lower Brahmaputra Valley Zone :

March-July	July/Aug-Oct/ Nov.	Oct. Nov-Feb
Rice (DS)	Rice (T)	Potato
Greengram	Rice (T) Rice (T)	Toria Vegetables/Pea
Jute	Rice	Potato

e) Barak Valley Zone :

Rice (T)	Rice	-
Early rice (T)	-	Pea/toria/niger
Rice (T)	Rice (T)	Toria/Pea

Post-rice mustard can be sown till late November, while niger/linseed can be sown till December.

a) Hills Zone :

Maize	Green gram/Black gram/Arhar	
Rice (DS)	Green gram	Toria
Rice (DS)	Black gram	Wheat

C) Flood prone areas :

Flood prone areas spread along the river systems and are to be found in all the districts of the state. Since advent of floods only differ in different areas while intensity differs from year to year in the same areas and since the features of the areas are almost identical the recommended technologies apply to all the areas.

Feb-May	Late Aug-Nov.	Dec. Feb.
Early Summer rice (DS)	Late winter rice (T)	
Summer Vegetables	-do-	Pea-potato
Summer vegetables	-do-	Groundnut/Pea

Summer rice/ Summer pulse	Fallow	Potato/Vegetable/Toria/Wheat/Pea
Groundnut melons	Fallow	Early pulse/Vegetables
Summer rice (Feb.-June)	-	Sweet potato (Sept.-Feb.)

For late planting seedling of 50-55 days of age can be used in closer spacings of 15 cm x 15 cm and 20 cm x 15 cm. For semi-dwarf and tall varieties, respectively.

Rice varieties of short duration for pre and post flood situations are – Luit, Kapilee, (100-110 days duration) and also Lachit, Govind (120 days duration), Kalinga 3, Sonamukhi, Heera. In post flood situation sprouted seeds to be sown in wet condition.

Technologies for Management of Specific System:

Rice (T) –Wheat :

Rice transplanting – Mid July, Wheat sowing – Mid Nov.

Recommended fertilizer for both the crops.

Need based irrigation for wheat

Rice (T) – Toria/Rajmah/Pea

Rice-Mid duration variety

Toria- Sowing to be completed by early November, varieties –TS-36, TS-38, M-27.

Application of organic manure at 5t/ha and 25% of recommended level of fertilizers to both the crops raise yields.

Rajmah/Pea – Sowing to be over by early November.

Rice – relay pea :

Pea to be sown 7-10 days before rice harvested with 25-50% higher seeding rate.

(In upper Brahmaputra Valley, pea and Rajmah to be harvested by February end.)

Rice (T) – Oat (fodder) :

Oat can be sown after rice till late December. Two cuttings can be taken from early sown Oat.

Rice (T) – Rice (T) :

Substitution of 25-50% of inorganic N in one of the crops through azolla/FYM or straw helps cutting down fertilizer requirements. FYM/cut residues to be applied @ 270-540 kg/bigha at the time of puddling. Azolla @ 22-44 kg/ha to be inoculated one week after transplanting.

Closer spacing of 15 x 15 cm or 15 x 10 cm for short duration varieties like Luit/kapilee.

Second rice var. is to be of long duration 150-160 days for low land viz. Ranjit, Bahadur, Kushal, Moniram to be transplanted in July.

Direct seedling of the first rice crop in wet condition with application of (pre-emergence) herbicide, viz. butchlor @ 2.0 kg a.i./ha and with supplementary irrigation is recommended.

Rice – Pulses/Oilseed :

Green manuring with *S. aculeate*, *S. rostrata* or green leaf manuring for the rice crop is beneficial in the establishment of rabi crops after rice.

Use of 60 kg P₂O₅ as rock phosphate 20 days ahead of planting the 1st rice crop and no phosphatic fertilizer for the second crop.