

## MAJOR FRUIT CROPS

### BANANA (Var. BARI Kola-1, BARI Kola-2 & others)

Table 1: Establishment and Fruiting Plants(Yield:  $25 \pm 2.5$  t/ha)

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)						CD/OM (t/ha)
	N	P	K	S	Zn	B	
Optimum	0—45	0—10	0—43	0—16	—	—	2
Medium	46—90	11—20	44—86	17—32	0.0—0.6	0.0—0.6	4
Low	91—135	21—30	87—129	33—48	0.7—1.2	0.7—1.2	6
Very low	136—180	31—40	130—172	49—64	1.3—2.0	1.3—2.0	8

#### Notes:

- a) When establishing the plantation, all cowdung, phosphorus and one half of potassium, sulphur, zinc and boron should be applied to the bottom of hole and covered with 5 cm soil before planting the sucker.
- b) At three months after planting, one third of nitrogen should be applied around the sucker and covered lightly with soil.
- c) Six months after planting, the remaining nitrogen (2/3) and potassium, sulphur, zinc and boron (1/2) should be applied around the sucker and covered lightly with soil.
- d) Thereafter, the same levels of fertilizer nitrogen and potassium and one half the quantities of phosphorus and sulphur should be applied annually in two equal installments. One application should be made in March and other in September.
- e) All fertilizer applied to the growing tree should be in a half circle on the side of the plant where the next producing plant will be located.

**PINEAPPLE**  
(Var: Giant kew, Honey queen, Ghorasal & others)

**Table 1: High Yield Goal (Yield: 30 ± 3 t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					CD/OM (t/ha)
	N	P	K	S	Zn	
Optimum	0—75	0—28	0—75	0—10	—	2
Medium	76—150	29—54	76—150	11—20	0.0—1.3	4
Low	151—225	55—84	151—225	21—30	1.4—2.6	6
Very low	226—300	85—112	226—300	31—40	2.7—4.0	8

**Table 2: Moderate Yield Goal (Yield: 24 ± 2 t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					CD/OM (t/ha)
	N	P	K	S	Zn	
Optimum	0—55	0—20	0—55	0—7	—	1.5
Medium	56—110	21—40	56—110	8—14	0.0—1.0	3.0
Low	111—165	41—60	111—165	15—21	1.1—2.0	4.5
Very low	166—220	61—80	166—220	22—28	2.1—3.0	6.0

Notes: For All Yield Goals

- a) All cowdung, phosphorus, sulphur and zinc should be applied broadcast and incorporated during final land preparation.
- b) One half of nitrogen and potassium should be side dressed and covered 3-4 months after planting.
- c) Remaining nitrogen and potassium should be applied 7-8 months after planting as top dressing and covered.
- d) Nitrogen and potassium should be applied in subsequent years in two equal installments.

**PAPAYA**  
**Var: Shahi papaya & others varieties)**

**Yield : 7-8 ton/ha**

**Table 1: Fertilizer recommendation from planting to fruiting**

Manure/ nutrient	Fertilizer Doses/plant							
	Total	Basal (At planting)	1 <sup>st</sup> top dressing	2 <sup>nd</sup> top dressing	3 <sup>rd</sup> top dressing	4 <sup>th</sup> top dressing	5 <sup>th</sup> top dressing	6 <sup>th</sup> top dressing
FYM/ Cowdung/ Compost (kg)	10	10	-	-	-	-	-	-
N (g)	225	-	25	25	25	52	52	50
P (g)	100	100	-	-	-	-	-	-
K (g)	225	-	25	25	25	50	50	50
S (g)	43	43	-	-	-	-	-	-
Zn (g)	2.5	2.5	-	-	-	-	-	-
B (g)	4.0	4.0	-	-	-	-	-	-

**Notes:**

- a) The basal dose should be applied during pit preparation.
- b) The first top dressing of N and K should be applied when the seedlings have established preferably about 2 months after transplanting.
- c) The rest of the fertilizer applied at a interval of 45 days from the first top dressing.
- d) N and K should be applied at the rate of 25 g per plant up to flowering and thereafter the doses of fertilizers are doubled.
- e) The application of fertilizer should be stopped two months before final harvest.

## WATER MELON

(All varieties)

**Table 1: High Yield Goal (Yield:  $35 \pm 3.5$  t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					
	N	P	K	S	Zn	B
Optimum	0—33	0—11	0—27	0—10	—	—
Medium	34—66	12—22	28—54	11—20	0.0—0.6	0.0—0.6
Low	67—99	23—33	55—81	21—30	0.7—1.2	0.7—1.2
Very low	100—132	34—44	82—108	31—40	1.3—1.8	1.3—2.0

**Table 2: Moderate Yield Goal (Yield:  $28 \pm 3$  t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					
	N	P	K	S	Zn	B
Optimum	0—23	0—8	0—18	0—7	—	—
Medium	24—56	9—16	19—36	8—14	0.0—0.4	0.0—0.4
Low	57—69	17—24	37—54	15—21	0.5—0.8	0.5—0.8
Very low	70—92	25—32	55—72	22—28	0.9—1.2	0.9—1.2

**Notes: For All Yield Goals**

- a) One half of nitrogen, and all phosphorus, potassium, sulphur, zinc and boron should be applied in the planting furrow and covered with 6 to 8 cm of soil before planting the seed
- b) One half of the remaining nitrogen (1/4 of total) should be applied 10 days after plant emergence. The remaining portion should be applied about 30 days later. Both applications should be made 25—30 cm around the main stem.

# MANGO

(BARI Aam-1, BARI Aam-2, BARI Aam-3, BARI Aam-4 & others varieties)

**Table 1: Fertilizer recommendation from planting to fruiting/plant**

Manure/ nutrient	Before planting	Age of trees (Year)						
		0-1	2 <sup>3</sup> / <sub>4</sub> 4	5 <sup>3</sup> / <sub>4</sub> 7	8 <sup>3</sup> / <sub>4</sub> 10	11 <sup>3</sup> / <sub>4</sub> 15	16 <sup>3</sup> / <sub>4</sub> 20	>20
FYM/ Cowdung/ Compost (kg)	0-20	5-9	10—15	16—20	21—25	26—30	31—40	14—50
N (g)	0	46	115	230	345	460	690	920
P (g)	100	15	32	53	84	105	158	211
K (g)	125	25	50	100	125	175	200	250
S (g)	45	-	18	36	45	63	72	90
Zn (g)	12	-	3.6	3.6	5.4	5.4	7.2	9.0

**Notes:**

- a) The whole amount of organic manures, phosphorus, potassium, sulphur and zinc should be thoroughly mixed with soil and applied in the pit prior to planting
- b) Trees should be fertilized in two split doses, one half immediately after harvesting of fruits in June or July and the other half in September—October in both young and old orchards followed by irrigation if there is no rain.

## JACKFRUIT (All varieties)

**Table 1: Fertilizer recommendation from planting to fruiting/tree**

Manure/ nutrient	Before planting	Age of trees (Year)					
		0-1	2 <sup>3</sup> / <sub>4</sub> 4	5 <sup>3</sup> / <sub>4</sub> 7	8 <sup>3</sup> / <sub>4</sub> 10	11 <sup>3</sup> / <sub>4</sub> 15	>20
FYM/ Cowdung/ organic manure Compost (kg)	25-35	0—1	2—4	5—7	8—10	11—20	100
N (g)	0	20-30	30-40	40-50	50-60	60-75	920
P (g)	100	100	180	260	380	550	300
K (g)	125	60	100	150	200	250	500
S (g)	45	100	150	200	300	400	85

**Notes:**

1. The whole amount of organic manure, phosphorus, potassium and sulphur should be applied at the time of final pit preparation.
2. Nitrogen and potassium should be incorporated with the top soil around the tree in two equal installments in April-May and another in September-October.
3. From second year to onward all the fertilizers should be applied around the tree in two equal installments in April-May and another in September-October.
4. Sulphur should be applied in every alternate year.

# GUAVA

(Var: Payara -1, BARI Payara -2, BARI Payara-3 & others)

**Yield: 5 ton/ha**

**Table 1: Recommended fertilizer doses from planting to fruiting/tree**

Manure/ nutrient	Before planting	Year					
		1st	2nd	3rd	4th	5th	6th and above
FYM/ Cowdung/ Compost (kg)	10	10	10	15	20	25	25
N (g)	0	45	92	138	184	230	230
P (g)	50	50	50	50	50	100	100
K (g)	125	50	50	150	200	250	250
S (g)	27	5	7	9	11	13	15

**Notes:**

- a) Before planting all the recommended cowdung, nitrogen, phosphorus, potassium & sulphur should be thoroughly mixed with soil and applied in the pit prior to planting.
- b) Trees should be fertilized annually in a split application, one half of all fertilizer should be broadcast around the trees and lightly incorporated in March-April and remaining half of fertilizer should be similarly applied in September i.e at the end of rainy season.

**LITCHI**  
(All varieties)

**Table 1: Fertilizer recommendation from planting to fruiting/tree**

Manure/ nutrient	Before planting	Age of tree (Year)						
		0-1	2-4	5-7	8-10	11-15	16-20	>20
FYM/ Cowdung/ Compost (kg)	20	10	10	15	20	30	40	50
N (g)	0	138	184	230	345	552	690	920
P (g)	120-140	—	100	150	300	400	500	700
K (g)	175-225	—	100	200	400	600	750	1000
S (g)	34-50	—	18	18	18	27	36	45
Zn	10	—	2.5	5.0	5.0	7.5	10.0	12.5

**Notes:**

- a) Before planting all the recommended phosphorus, potassium, sulfur & zinc should be thoroughly mixed with soil and placed in pit.
- b) Ten to twelve days later, trees can be transplanted
- c) Trees should be fertilized annually in a split application; one half of all fertilizer should be broadcast around the trees and lightly incorporated in March. Remaining half of fertilizer should be similarly applied in September i.e at the end of rainy season.

**CITRUS**  
**(Oranges and Pomelo)**

**Table 1: Before planting**

Soil Analysis Interpretation	Fertilizer Recommendation (g/pit)						OM (kg/pit)
	N	P	K	S	Zn	B	
Optimum	0—26	0—5	0—19	0—13	0—2	—	1
Medium	27—52	6—10	20—38	14—26	3—4	0.0—0.6	2
Low	53—78	11—15	39—57	27—39	5—6	0.7—1.2	3
Very low	79—104	16—20	58—76	4.0—52	7—8	1.3—2.0	4

**Table 2: Plants (3<sup>3</sup>/<sub>4</sub>5 years old)**

Soil Analysis Interpretation	Fertilizer Recommendation (g/pit)						OM (kg/tree)
	N	P	K	S	Zn	B	
Optimum	0—37	0—9	0—19	0—2	—	—	0.5
Medium	38—74	10—18	20—38	3—4	0.0—0.6	0.0—0.6	1.0
Low	75—111	19—27	39—57	5—6	0.7—1.2	0.7—1.3	1.5
Very low	112—148	28—36	58—76	7—8	1.3—2.0	1.3—2.0	2.0

**Table 3: Plants (6<sup>3</sup>/<sub>4</sub>10 years old)**

Soil Analysis Interpretation	Fertilizer Recommendation (g/pit)						OM (kg/tree)
	N	P	K	S	Zn	B	
Optimum	0—42	0—24	0—51	0—3	—	—	0.5
Medium	43—84	25—48	52—102	4—6	0—1.3	0.0—0.6	1.0
Low	85—112	49—72	103—153	7—9	1.4—2.6	0.7—1.2	1.5
Very low	127—168	73—96	154—204	10—12	2.7—4.0	1.3—2.0	2.0

**Table 3: (above 10 years old)**

Soil Analysis Interpretation	Fertilizer Recommendation (g/pit)						OM (kg/tree)
	N	P	K	S	Zn	B	
Optimum	0—83	0—27	0—54	0—68	—	—	0.5
Medium	84—166	28—54	55—108	69—136	0.0—1.3	0.0—0.6	1.0
Low	167—249	55—81	109—162	137—204	1.4—2.6	0.7—1.2	1.5
Very low	250—332	82—108	163—216	205—272	2.7—4.0	1.3—2.0	2.0

**Notes:**

- a) For lime and lemon, the doses recommended in the tables 2—4 may be reduced by 50 percent.
- b) In acid soils, 500 grams of lime should be applied per tree every 3 years.
- c) Citrus plants often suffer from the deficiency of iron and copper, the latter is associated with die back. It is desirable to apply foliar sprays of ferrous sulphate and copper sulphate to the trees once or twice every year.
- d) Zinc should be applied where the soil is known to have this element deficiency.

## SOME INDIGENOUS FRUITS GOLDEN APPLE

**Table –1: Fertilizer recommendation per pit**

<b>Name</b>	<b>Amount per pit</b>
Phosphorus	50 g
Potassium	125 g
Cowdung	10-15 kg

Notes:

After plantation of the seedling each plant should receive 46 gm nitrogen, 20 gm phosphorus, 50 gm potassium each year. Fertilizer should be increased by 10 % each year after the first year of plantation. A full grown plant should receive 460 gm nitrogen, 160 gm phosphorus 300 gm potassium and 10-15 kg cowdung before and after monsoon.

## SAPOTA

**Table –1: Fertilizer recommendation per pit**

<b>Name</b>	<b>Amount per pit</b>
Phosphorus	50 g
Potassium	125 g
Cowdung	15 kg

**Table –2: Fertilizer recommendation per plant each year**

<b>Name</b>	<b>Amount per plant</b>
Nitrogen	345-390 g
Phosphorus	70-90 g
Potassium	350-400 g
Cowdung	35-45 kg

## CARAMBOLA

**Table –1: Fertilizer recommendation per pit**

<b>Name</b>	<b>Amount per pit</b>
Phosphorus	50 g
Potassium	125 g
Cowdung	15-20 kg

**Table –2: Fertilizer recommendation per plant each year**

<b>Name</b>	<b>Amount per pit</b>
Nitrogen	230-460 g
Phosphorus	60-100 g
Potassium	250-500 g
Cowdung	40-50 kg

## BLACK BERRY (Jamun)

**Table –1: Fertilizer recommendation per pit**

<b>Name</b>	<b>Amount per pit</b>
Phosphorus	50 g
Ash	4-5 kg
Organic Fertilizer	15-20 kg

**Table –2: Fertilizer recommendation per full grown plant each year**

<b>Name</b>	<b>Amount per pit</b>
Nitrogen	460 g
Phosphorus	160 g
Potassium	350 g
Cowdung	40-50 kg

# PLANTATION CROPS

## SUGARCANE

(All varieties)

**Table 1: High Yield Goal (Yield: 100 ± 10 t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					
	N	P	K	S	Mg*	Zn
Optimum	0—55	0—18	0—60	0—15	0—10	—
Medium	56—110	19—36	61—120	16—30	11—20	0.0—2.6
Low	111—165	37—54	121—180	31—45	21—30	2.7—5.2
Very low	166—220	55—72	181—240	46—60	31—40	5.3—8.0

**Table 2: Moderate Yield Goal (Yield: 80 ± 8.0 t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					
	N	P	K	S	Mg*	Zn
Optimum	0—40	0—12	0—50	0—10	0—8	—
Medium	41—80	13—24	51—100	11—20	9—16	0—2.0
Low	81—120	25—36	101—150	21—30	17—24	2.1—4.0
Very low	121—160	37—48	151—212	31—40	25—32	4.1—6.0

\* Only in Mg deficient areas

**Notes: For All Yield Goals**

- a) For heavy textured soils one half of nitrogen and potassium and all phosphorus, sulphur and zinc should be applied in trenches and thoroughly mixed with the soil by spade or hoe, just prior to planting of sugarcane. Zinc and phosphorus should not be mixed together and applied at a time. The remaining nitrogen and potassium should be applied as top dressing at tillering stage (120-150 days)
- b) On light textured soils one third of nitrogen and one half of potassium and all phosphorus, sulphur and zinc should be applied in trenches and thoroughly mixed with the soil by spade or hoe prior to planting of sugarcane. Remaining potassium and one third nitrogen should be applied as top dressing at tillering stage (120-150 days). The rest one third nitrogen should be top dressed after completion of tillering (about 180 days).
- c) For transplanted sugarcane top dressing of nitrogen and potassium in both of above cases (a and b) are done only if rain is available to make soil moisture adequate. If soil is dry, top dressing should be delayed until there is sufficient rainfall.
- d) For transplanted sugarcane basal nitrogen and potassium should be applied 20-30 days after transplanting of sugarcane settling.
- e) For ratoon cane additional 40 kg nitrogen/ha to be applied. All other nutrients to be the same as plant cane.

**TOBACCO**  
(Var: Sesmeria)

**Table 1: High Yield Goal (Yield:  $2.5 \pm 0.3$  t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)				
	N	P	K	S	Zn
Optimum	0—20	0—11	0—27	0—4	—
Medium	21—40	12—22	28—54	5—8	0.0—0.6
Low	41—60	23—33	55—81	9—12	0.7—1.2
Very low	61—80	34—44	82—108	13—14	1.3—2.0

**Table 2: Moderate Yield Goal (Yield:  $2.0 \pm 0.2$  t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)				
	N	P	K	S	Zn
Optimum	0—14	0—8	0—19	0—3	—
Medium	15—28	9—16	20—38	4—6	0—0.6
Low	29—42	17—24	39—57	7—9	0.7—1.2
Very low	43—56	25—32	58—76	10—12	1.3—2.0

**Notes: For All Yield Goals**

- a) All phosphorus, potassium, zinc and two thirds nitrogen should be applied at the time of final land preparation in a band 5-7 cm below and 5-7 cm to the side of the transplanted plants.
- b) Remaining nitrogen should be applied at 30 days after transplanting.
- c) Potassium should be in the form of  $K_2SO_4$  and not as muriate of potash. No further sulphur will be necessary.

**TEA**  
(All varieties)

**Table 1. Young tea**

Age of the plants (year)	Fertilizer Recommendation (kg/ha)			Cowdung/ Compost
	N	P	K	
1 <sup>st</sup>	80	40	80	1 kg/plant
2 <sup>nd</sup>	90	45	90	1 kg/plant
3 <sup>rd</sup>	120	40	80	5 ton/ha
4 <sup>th</sup>	135	45	90	5 ton/ha
5 <sup>th</sup>	150	50	100	5 ton/ha

Notes:

- a) The application of fertilizer should be made after six months of planting
- b) The ideal time of fertilizer application is considered when the soil is sufficiently moist, usually after a good shower. Thus, the month of April may be an ideal time for the 1<sup>st</sup> split of application

**Table 2. Mature tea\***

Yielding (kg/ha)	Fertilizer Recommendation (kg/ha)				
	For 1 <sup>st</sup> split	N	P	K	Zn
up to 1000			50	9.0	25
1000-2000 2000-2000	For 2 <sup>nd</sup> split	60	-	25	3.6

\*The fertilizer recommendation has been made on the basis of production of made tea in kg/ha

Notes:

- a) Amount of N/ha will be increased by 5 kg for every 100 kg increase in yield up to 2000 kg/ha. Above 2000 kg yield, increase of N will be 6 kg/100 kg up to the yield 3000 kg. For every 100 kg increase in yield, the increase of P & K will be 1 kg & 3 kg respectively up to the yield of 2500 kg/ha and after that the amount will remain constant
- b) The ideal time of fertilizer application is considered when the soil is sufficiently moist, usually after a good shower. Thus the month of April may be fixed for the 1<sup>st</sup> split of application.
- c) As a source of nitrogen, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> is generally used in tea cultivation, if it is not mentioned otherwise. P and K are taken from TSP and MP respectively.

- d) Application of 2<sup>nd</sup> split of fertilizer must be completed by the last week of July or 1<sup>st</sup> week of August depending on the climatic condition or this amount may be applied as foliar spray in 10 equal doses between mid July and early December.
- e) Foliar spray with urea @ 4.5 kg in 450 litres of water per hectare is beneficial to encourage growth in the field. Spraying may, however, be restricted to 3-4 times a year.
- f) Application of zinc at the early stage encourages vegetative growth. Zinc fertilizer may be applied at the time of usual fertilizer application in soil.
- g) The same amount of zinc may be applied as foliar spray in 10 split doses. It may be mentioned that zinc sulphate may be used for soil and foliar application but chelamin is best for foliar sprays.
- h) If soil pH is below 5.0, dolomite [(CaMg (CO<sub>3</sub>)<sub>2</sub>] application is suggested, usually after a good shower of rain.

### Nucleus Clone Plot :

The tea plants which are nourished for vegetable cuttings, fertilized with NPK, recommended as follows.

**Table 3. Fertilizer recommendation for Nucleus Clone Plot**

Age of the plant (year)	NPK ratio	Mixture (g/hush)	Fertilizer mixture (kg/ha)		Method of application
			Planting spacing		
			Square	Triangular	
			6944 bushes/ha	8019 bushes/ha	
1	2:1:2	30	208	240	Ring
2	2:1:2	50	347	400	Ring
3	2:1:2	70	485	560	Ring
4	2:1:2	-	530	530	Ring
Onwards	-	-	-	-	Broadcasting

### Notes:

- a) The fertilizer is applied in two equal splits yearly
- b) The rate of N is 90 kg in 1<sup>st</sup>-3<sup>rd</sup> year; 4<sup>th</sup> year onwards rate of N is 100 kg.

### Seed Bari :

A seed garden is popularly known as seed bari and the plants are not plucked. The plants are reared for collection of tea seeds.

Table 4: Fertilizer recommendation for Seed-Bari/plant

Age of plant	Cowdung (kg)	Oilcake (kg)	Ammonium sulphate(g)	Triple super phosphate(g)	Muriate of potash(g)
1	5	0.5	100	50	50
2	5	0.5	200	100	100
3	10	1.0	300	300	300
4	10	1.0	400	400	400
Onwards	10	1.0	500	500	500

**Notes:**

The mode and method of application of fertilizers are similar to that of nucleus clone plants as described in Table-3.

## COCONUT (All varieties)

**Table 1: Fertilizer recommendation before planting**

kg/pit			
P	K	OM	Common Salt
0.05	0.125	25	0.5

**Notes:**

- a) Pits should preferably be 75 cm wide and 50 cm deep. The recommended fertilizers should be mixed with the soil of the pit.
- b) Common salt is optional, but it is beneficial specially in red clay soil.
- c) Better results will be obtained if 4-5 kg of ash are applied instead of chemical potassium fertilizer.
- d) Fifteen days after planting, 100-125 grams of urea should be applied.

**Table 2: Moderate Yield Goals in Bearing Trees**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)					
	N	P	K	S	Zn	B
Optimum	0—100	0—30	0—200	0—10	—	0—0.5
Medium	101—200	31—50	201—300	11—20	0—0.6	0.6—1.0
Low	201—300	51—70	301—400	21—30	0.7—1.2	1.1—1.5
Very low	301—400	71—90	401—500	31—40	1.3—2.0	1.6—2.0

**Notes:**

- a) The recommended fertilizers should be applied in two equal installments, preferably in February-March and September-October. These should be mixed with the soil around the base of the tree over a radius of 2-3 meters.
- b) If available, 30 kg of cowdung/compost should be applied per tree per year.
- c) In acid soils, one kg of lime should be applied per tree every 3 years. Dolomite which contains both calcium and magnesium is preferable to lime, because coconut is a magnesium loving plant.

- d) Severe drop and sterility of nuts/buttom in coconut are associated with a deficiency of potassium and boron.
- e) Prolonged drought reduces the yield of coconut severely. In order to get desired benefits from the application of fertilizers the trees should be irrigated during the dry season.
- f) At the pre-bearing stage, the dose of fertilizers should be determined according to the age of the tree. In the second year of planting, about 25% of the N,P and K dose recommended above is likely to be sufficient. It should be increased by 10% of the full dose every year.
- g) Zinc should be applied only in soils known to have deficiency. Boron is essential for bearing trees.

**RUBBER**  
(All varieties)

**Table 1: Young trees**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)			
	N	P	K	S
Optimum	0—50	0—20	0—65	0—10
Medium	51—100	21—40	66—130	11—20
Low	101—150	41—60	131—195	21—30
Very low	151—200	61—80	196—260	31—40

**Notes:**

All fertilizers should be applied in three equal splits in March, June and September around the tree starting about 20-30 cm from the tree base but remaining under the leaf canopy.

**BETELNUT**  
(All varieties)

**Table 1: Average Yield Goal (Yield: 2.0± 0.2 t/ha)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)			
	N	P	K	S
Optimum	0—15	0—4	0—5	0—2
Medium	16—30	5—8	6—10	2.1—4
Low	31—45	9—12	11—15	4.1—6
Very low	46—60	13—16	16—20	6.1—8

**Notes:**

- a) All fertilizers should be mixed with soil and placed in planting hole before two weeks of transplanting.
- b) Mandar trees may be grown as an intercrop for supply of organic manure to the soil.

**BETEL LEAF**  
**(All Varieties)**

**Table 1: Average Yield Goal (Yield: 3.5— 6.0 t/ha/Yr)**

Soil Analysis Interpretation	Fertilizer Recommendation (kg/ha)				Oilcake (t/ha)
	N	P	K	S	
Optimum	0—20	0—15	0—15	0—5	4
Medium	21—40	16—30	16—30	6—10	6
Low	41—60	31—45	31—45	11—15	8
Very low	61—80	46—60	46—60	16—20	10

**Notes:**

- a) At the time of final land preparation, 1100-1500 kg/ha of oilcake, 25-30 kg/P/ha and 30-40 kg K/ha should be applied.
- b) After 30-40 days of planting, 3000-4000 kg/ha of oilcake should be applied at 15-20 days interval in rows until the vine grows upto 1-1.5 meter in length.
- c) After one year, the above fertilizer doses should be applied in 3 equal installments before the monsoon rains, in the month of September and in the month of December.

## ***10.2 Use of Upazila Nirdeshika for making location specific fertilizer recommendations***

Location specific balanced dose of fertilizer recommendation for different crops using Upazila Nirdeshika can be made in three different ways. These are

Upazila wise average soil test value  
Mapping unit wise average soil test value  
Location specific soil test value

### ***Steps for making fertilizer recommendations using upazila nirdeshika***

Methodologies for calculation of balanced doses of fertilizers based on mapping unit or upazila wise average soil test value are:

#### 1. Identification of land type-wise soil groups

Steps for identification of land type-wise soil groups using Upazila Nirdeshika are given below:

- Step-i : Consult upazila soil and land type map
- Step-ii : Identify the Union following Union boundary provided in the Soil and Land Type Map
- Step-iii : Identify your plot(s) in the mapping unit(s) present in that particular union
- Step-iv : Note down soil group(s) in each mapping unit consulting upazila soil and land type map
- Step-v: Identify the land type consulting Annexure-8 of the Upazila Nirdeshika.
- Step-vi: For confirmation with your identified soil group(s) you may dig out the soil with the help a of spade or an auger and note down the colour, texture, consistency, pH and drainage class of the soil

2. Collect land type and soil group wise average analytical soil test values (results) from Annexure-2 of the Nirdeshika.

3. Select suitable crop and cropping pattern of your area/location

4. Calculate appropriate doses of fertilizer for different crops on the basis of average soil test value and the procedure as described in the Appendix 8 of the FRG 2005.

5. Calculate appropriate doses of fertilizers for different cropping patterns consulting rationales as described in the chapter 6.3 of the FRG 2005.

6. Methods of fertilizer application for the desired crop are given in the chapter 10.1 of the FRG 2005.

For example, land type and soil group are identified using Gazipur Sadar Upazila Nirdeshika.

The land type is high land and the soil group is Chandra and the content of N = 0.11%, P = 6.41 µg/g soil, K = 0.15 m.e/100g soil, and S = 23.29 µg/g soil.

If farmers existing cropping pattern under irrigated condition is Wheat-T. aus-T. aman, we should calculate balanced fertilizer dose for wheat (high yield goal, 4.0-5.0 t/ha), T. Aus (high yield goal, 3.6-4.4 t/ha) and T. Aman rice (high yield goal, 4.5-5.5 t/ha) based on soil test value and the

procedure as described in the Appendix 8 of the FRG 2005. In calculating fertilizer dose for a cropping pattern, rationales (chapter 6.3 of FRG 2005) need to be followed.

### ***10.3 Fertilizer recommendation for cropping patterns under different AEZs***

The most efficient and economic use of chemical fertilizers and organic manures requires a knowledge of the basic data on the soil, climate and the crops. The useful soil related data include pH, texture, organic matter content and some other soil properties. The requirements for nutrients of a particular crop depend on the overall environmental conditions as well as the yield potential of the crop in question. The more the climate and the physical conditions of the soil are favourable for crop growth, the higher will be the need for nutrients. High yielding varieties require more nutrients than the traditional (local) varieties. Utilization of the applied nutrients thus depends on the cropping system, efficiency of crop management and time and method of application of the fertilizers. The processes through which the applied nutrients are lost (leaching, volatilization, denitrification etc) and the immobilized should be kept in mind at the time of preparing schedules for the application of fertilizers to different crops in the patterns.

In this section, important data required for determining fertilizer doses in the different agro-ecological zones of the country, namely, the major cropping patterns, land type, soil type, pH, organic matter content and K bearing minerals have been furnished. In all cases the rabi crops have been assumed to be the first crops of the patterns. Since the fertilizer recommendations are not based on location specific soil test, only moderate yield goals are intended and the suggested fertilizer doses are not absolute but only indicative and subject to variations as situations demand. It is expected that the local officials will use their judgement while making decisions on fertilizer doses for each crops of the patterns in the light of the factors that affect the requirement and utilization of the applied nutrients as mentioned in the above paragraph. The residual effect of P, K, S and Zn should specially be taken into consideration also, as mentioned in section 6.3.