

Soybean (*Glycine max*)

Varieties:

Varieties	*Agroclimatic zones	**Duration (days)	**Grain yield (q/ha)
Bragg	C,L,B	120	25
JS2	N,U,L,H	90-95	25
Ankur	U,L,H	120-125	25
#DS 73-16 (Pusa soybean)	U,C,H	100-106	25
#PK 327	N,U,B,H	105-110	25
#PK 271	N,U,H	110-115	26
#PK 262	U,B,H	110-115	27
PK 308	U	115-120	25
Moti	N,U,C,H	95-100	27
Kalitur (Fodder)	All zones	120-125	20

* Refer to page iii for full forms of agro-climatic zones

** Duration and grain yield are based on Jorhat centre.

These varieties can be sown even during first fortnight of September for seeds.

Newly recommended varieties:

JS 97-52 (Adaptation: NBPZ)

Sowing Time:

- **May-June:** North Bank Plains Zone, Upper Brahmaputra Valley Zone & Central Brahmaputra Valley Zone
- **Mid May-Mid June:** Hills Zone
- **June-April:** Lower Brahmaputra Valley Zone & Barak Valley Zone

Soil:

Soybean can be grown on wide range of soils but it grows best on fertile well drained loamy soils. Water logging is injurious to the crop. In acidic soils where pH is below 6.0, lime (200 mesh powder form) should be added @ 2 t/ha, atleast 7 days before sowing. Liming is necessary once in three years.

Land Preparation:

Soybean should be grown on well pulverized bed. Land should be prepared by giving deep ploughing followed by laddering. There should be provision of surface drains with gentle slope for good drainage.

Fertilizers:

Nutrient	Requirement (kg/ha)	Form	Fertilizer requirement	
			kg/ha	kg/bigha
N	20	Urea	45	6
P ₂ O ₅	60	SSP	375	50
K ₂ O	40	MOP	70	10

Potash is required for healthy development of seeds. Foliar application of MOP is recommended in soils with low potash content.

Fertilizer should be placed in furrows at a depth of 5 to 7 cm below the seeds and should be covered with a layer of 3-4cm soil and make it level with the field. In case placement is not possible, the fertilizers should be evenly broadcast and incorporated in the soil.

Foliar-Spray of MOP: MOP should be sprayed at the flower initiation stage in between 30 and 35 days after sowing with hand sprayer for proper grain filling in pods.

Preparation of MOP solution for spraying with hand sprayer:

Quantity of MOP (kg)	Quantity of water (l/ha)	Strength of MOP solution (%)	No. of spray	Type of sprayer
12.00	400	3	1	Hand Sprayer

Seed Inoculation:

The seed should be moistened with clean water with care so as to avoid excessive wetting. Rhizobium culture should be mixed with seeds @ 15g/kg so that a thin coat of inoculum is deposited on each seed. The inoculated seeds should not be exposed to the sun. One packet (150 g approx.) of AAU culture which is available in the Production Unit of AAU is sufficient to inoculate seeds required for one bigha of land.

Seed Rate and Time of Sowing:

For branched type soybean varieties (Bragg, Alnkar, Ankur, Silajit, PK 271, and PK262) the seed rate is 60 kg/ha or 8.5 kg/bigha when sown early, normal and late to obtain a plant population of about 0.2 million/ha. For less branching type soybean varieties (JS2, Moti, Kalitrand Pusa soy bean) the seed rate is 75 kg/ha or 10.5 kg/bigha for the same period of sowing to obtain a plant population of 0.4 million/ha. For late sown crop, seed rate is 80 kg/ha or 11.5 kg/bigha for a population of 0.6 million/ ha. Germination is affected if it rains within 72 hours of sowing.

Seeds are sown in lines 45 cm apart at a distance of 5 to 10 cm between seeds. Depth of seedling should not exceed 4cm. The depth can further be reduced to 2 to 3 cm if moisture content in soil is high. The rows should be covered with a thin layer of paddy straw for better germination.

Interculture Operations:

Two manual weedings at 15 and 36 days after sowing should be done.

Plant Protection:

A. Diseases: Soybean seeds should be treated with Carboxin 2g/kg of seed. Soybean is susceptible to yellow mosaic virus. In order to stop the spread of the vector of yellow mosaic disease in field, spray dimethoate 30EC @ 1 to 1.5 lit in 800-1000 lit water/ha.

Rhizoctonia solani induced dry root rot in soybean can be effectively managed by seed treatment with *Trichoderma* spp by slurry method @ 5 g/kg of seed.

B. Insect Pests: Spraying of flubendiamide 39.35 SC @ 72 g a.i. /ha should be done against hairy caterpillars, semi looper, leaf roller and flea beetle.

Harvesting:

At maturity all the leaves turn yellow and fall off and the stalks stand only with pods. Harvesting can be done at this stage by cutting the plants with sickle or by breaking at the base.

Seed Storage:

The grains should be dried before storage to ensure that the moisture content of seeds does not exceed 10 percent. Seeds can be stored in dry bins or polythene bags (250 gauge thickness) in air tight condition. Bins should be kept on wooden racks so that it does not come in direct contact with the ground. Treatment of seeds with Carboxin @ 2 g/kg of seed is absolutely necessary when stored for seed purposes.

Drenching:

Drenching of soybean seeds should be done before any kind of soybean preparation. For this purpose 0.5% sodium carbonate solution be prepared and mixed with seed @ 2 lit/ kg of seed and boiled for 20 minutes. Then the boiled seeds should be washed with plain water 2-3 times to remove the trypsin inhibitor.

Use of Soybean:

Soybean contains 40% protein and 20% high quality oils. Besides this it is also a source of vitamin B complex, thiamine and riboflavin. Several food products can be prepared from soybean.

Soybean Milk:

1. Seeds should be soaked in water for 12 hours.
2. Seed coats should be removed by rubbing the soaked seeds between palms.
3. A paste should be made by grinding the peeled seeds.
4. The paste should be boiled in water which should be about three times of its weight and the milk should not be over boiled. Otherwise its nutritive value may be lost. A few drops of ginger juice and a few bay leaves should be added for removing the beany odour.

Soybean milk is useful against intestinal disorder. It prevents summer diarrhoea. It is easily digestible and can be used as diet for old debilitated and convalescents. Soybean can also be used for preparation of *Chapati, Kachuri, Malpowa, Bhujia, Ladoo, Chutni, Bor, Cake* etc.

Soybean Curd:

To prepare curd, soy milk should be poured in an appropriate container while it is moderately hot.

Green Beans:

Green soybeans are widely used as much in the same way as the pea is used. When the bean reaches its full size, but yet green and tender, it is collected from the plant. It is usually boiled and taken as green vegetable. Green beans are also used in salads. In order to secure the best flavour, the beans should be cooked when they still remain affixed in the pods. In such cases, they are soaked in boiling water for a few minutes to make it easy to shell.

Poultry Feed:

Soybean and maize mixture is an excellent poultry feed.