

A few observations on the growing of *Sesbania speciosa* at Aduthurai*

by

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Synopsis: In this paper, a few useful observations made on the cultivation of *Sesbania speciosa* at the Regional Research Station, Aduthurai are reported.

Sesbania speciosa was first introduced from South Africa for tri... green manure crop in Madras State during the year 1935-'36 from the seeds supplied by H. W. Sampson. An observational trial was first laid during that year at Agricultural Research Station, Aduthurai. This trial revealed that sesbania can be grown as a suitable green manure crop and it was found superior to daincha (*Sesbania aculeata*) in all respects. Daincha becomes woody within two months after sowing while sesbania does not become woody especially when it is sown thick, thus making the incorporation of the stalks in the soil quite easy. Sesbania attains 10 ft. height within four months. The shedding of leaves is comparatively less in sesbania than in daincha and there is less wastage in taking it from one field to another.

Germination studies: Normally well dried fresh seeds give 33 - 45 per cent germination indicating that they have no dormancy. Even after six months time, the germination percentage does not improve. Usually one year old seeds germinate upto 45 per cent only. The main difficulty in getting maximum germination is due to the mechanically resistant seed coat. A study on permeability of moisture through the seed coat in seeds treated with hot water was made. The seeds were treated with two different temperature and durations viz., at 70°C - 15, 20 and 25 minutes and at 80°C - 10, 15 and 20 minutes. The seeds treated at 80°C for 10 minutes have given the best germination percentage (92 per cent).

Temperature	Duration	Percentage		
		I	II	III
70°C	15 minutes	78	76	78
	20 minutes	73	71	70
	25 minutes	60	62	59
80°C	10 minutes	87	85	86
	15 minutes	85	83	84
	20 minutes	47	46	44
Control		60	58	58

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The effect of storing seeds in gunny bags and tins on viability was studied. It was observed that seeds stored in tin containers give better germination than those stored in gunny bags.

Effect of pounding sesbania seeds with sand, was also studied. There was 95 per cent germination in the pounded seeds. Sand treatment was equally good in the case of one year old seeds also. This being a cheap and easy method to adopt it can be taken up with advantage. Care must be taken to see that the pounding is not so much as to break the seed. Thus nearly 80 per cent of the seed can be saved by adopting this method.

Green manuring for Kuruvai and Samba: In *samba* fields, 8 - 10 days prior to the harvest of the crop, sesbania is to be sown at the rate of 60 - 75 lb. per acre. The germination and subsequent sprouting will be complete by the time the harvest commences. The trampling that results while harvesting, does not affect the young sesbania seedlings that are just emerging. The plants attain an average height of 10 ft. and an acre yield of 50,000 to 60,000 lb. of green matter has been recorded. The crop stands the summer heat throughout and remains green. It is resistant to water logging. Thus the produce obtained from one acre can be utilised as green manure for 8 - 10 acres at the rate of 5,000 lb. per acre.

As soon as the channel water is received (i. e. by the third or last week of June) sesbania seeds can be sown in single crop lands. It comes up vigorously and attains 3 - 4' at the time of preparing main field for transplanting (i. e. middle of August). This can be incorporated *in situ* by iron mould board plough. Since the stems are tender, the decomposition is complete in 3 - 5 days.

Green manure for Thaladi: (a) *Nursery:* The sesbania seeds are sown in dry nursery beds after treating with sand and irrigated at suitable intervals. The seeds can also be sown in the beds prepared for *Kuruvai* nursery, 10 days prior to the sowing of *Kuruvai* seeds, in order to have sturdy seedlings for planting along the borders when *Kuruvai* seedlings are planted in the field. Young sesbania seedlings do not stand water logging in the early growth period. After 20 - 25 days the seedlings withstand water logging very well. The nursery bed may be manured at the rate of 100 - 150 lb. of superphosphate. The seed rate of sesbania in the nursery bed is at 4 oz. per cent.

(b) *Planting:* The seedlings are best planted when they are 30 to 45 days old. The experimental evidence goes to show that the mortality of the seedlings can be brought down to minimum and also to get

quick growth, the seedlings are to be planted on 45th day. Closer planting on the margin of the field with a spacing of 2" to 3" is most suitable to produce enough green manure for the succeeding *thaladi* crop. From the marginal planting of sesbania seedlings, an acre yield of 2500 - 3500 lb. of green manure can be obtained. Ordinarily 2 women labourers will be able to plant a distance of 1,200 to 1,500 ft. of field margin in a day with two or three seedlings (approximately one acre) per hole.

Planting for seed production: At the time of green manuring *thaladi* fields, the sesbania plants are to be removed leaving one plant for every 2 ft. and it may be pruned to a height of 3 - 4 ft. This will branch sideways and produce more number of flowers resulting in good number of pods. The seeds obtained from these pods will be useful for raising nursery for the next season, thus saving the trouble of raising a fresh nursery as well as planting during *thaladi* season. In the case of *Samba*, one foot spacing between plants will be enough for getting the required seeds.

Seed collection: In sesbania, flowering is seasonal. The flowering starts by the end of August and continues upto the end of February. Isolated flowering may continue even up to the end of April, but the seeds that set from this are not filled properly resulting in the failure of germination.

A healthy normal plant yields on an average 6 oz. of seed per plant. Sesbania planted during the beginning of *thaladi* season produced 4 oz. of seeds per plant. One woman labourer can collect four bags of sesbania pods per day (i. e., nearly 40 lb. of pod = $8\frac{1}{2}$ lb. of seeds). It is expected that about 55 to 70 lb. of seed will be available from border plants of one acre (Two fifty cent plots of length of 1,300 ft.).

Proportion of pods to seed	= 24.5 per cent
Duration taken from flowering to picking of pods	= 49 days (range 45-51 days)
Number of seeds in a pod	= 59.4 or 60 seeds (range 53-70)
One lb. of seed will have	= 32,000 seeds.

Pests and Diseases: 1. Cater pillar: *Prodenia litura* (Noctuid moth) It feeds on the leaves. Control: Spray with stomach poisons.

2. Stem borer: *Azygophleps scalaris* (Zeuzeridae-moth) The stout whitish caterpillar bores into the stem and often kills the plant. Control: Cut the affected plants and destroy the larvae and pupae.

3. Weevil: *Alcides bubo* (Curculionid beetle). The weevil and the grub feed and breed on the tender shoots. Control: Clip the attached top shoots in young plants. Spray or dust with BHC or DDT.

1. Bacterial diseases: *Xanthomonas sesbaniae*. Circular water soaked spots surrounded by a halo appear on lower surface. Upper surface chloritic with brown centre, vertical streaks develop on stem and rachis from which pearly gummy beads exude. Control: Destruction of diseased material.

2. Leaf spot: *Cercospora sesbaniae*. Small yellowish irregular spots appear on the upper surface of leaves while lower surface show scant dark brown mycelial growth. Control: Destruction of diseased plant debris.

3. Seedlings blight: *Colletotrichum capsicae*. Collar region of affected seedlings show elongated or oblong cankers with black bristle like tufts of setae. Control: Spray with boardeaux mixture 1% solution.

Summary: 1. *Sesbania* can be raised as an off-season green manure crop in single crop lands and it is capable of yielding 50,000 to 60,000 lb. of green manure for the succeeding paddy crop.

2. For planting along the margins of double crop lands, *sesbania* nurseries can be raised and seedlings planted at the time of *kuruvai* planting. When cut at the time of *thaladi* planting it yields about 3,000 lb. green manure per acre.

3. Seeds collected from the pruned *sesbania* plants and seedlings in *samba* field margins yield more than enough seed required for the next season.

4. *Sesbania* seed should be pretreated with sand before sowing for obtaining maximum germination.

5. It is seen that about 25 to 30 kg. of *sesbania* seeds can be collected from an acre as border crop and this will be an additional revenue for the cultivators.

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