

EFFECT OF SEASON, SPACING AND PHOSPHORUS ON SEED PRODUCTION *SESBANIA* SPECIES

R.RENGALAKSHMI and S.PURSHOTHAMAN

Department of Agronomy,
 Tamil Nadu Agricultural University,
 Coimbatore-641 003.

ABSTRACT

Two independent sets of field experiments were conducted for two consecutive seasons during 1993 and 1994 at Wetland Farm of Tamil Nadu Agricultural University, Coimbatore, to determine the optimum time of sowing, influence of Phosphorus fertilisation and plant density on seed production of green manure species such as *Sesbania rostrata*, *S. aculeata* and *S. speciosa*. From this study it was concluded that growing *S. rostrata* or *S. aculeata* during summer with a spacing of 120 X 15cm under a phosphorus level of 50kg per ha can be considered as optimum management techniques for increased quality seed yield.

KEY WORDS: *Sesbania* species, Seasonal influence, Seed production, Spacing, Phosphorus

In the present day context of emphasis on organics in agriculture, green manure is the cheapest and best source of improving soil fertility and maintaining the health of an agro-ecosystem. Though the value of green manure crops of supply nutrients is well proved green manuring practices

Table 1. Effect of season, spacing and phosphorus on growth characters of three *Sesbania* species

Treatments	SWM			Summer		
	Plant height (cm) 120 DAS	Biomass production (t/ha)	Dry matter production (t/ha)	Plant height (cm) 120 DAS	Biomass production (t/ha)	Dry matter production (t/ha)
Species						
G ₁	310.3	46.2	9.4	331.2	33.2	10.9
G ₂	286.1	52.8	10.3	283.8	42.4	11.5
G ₃	376.1	64.8	12.1	365.5	52.3	12.4
SE ₁₉ :8.9=8.1					0.8	0.03
CD (P=0.05)	3.5	0.4	1.3	0.3	2.2	0.1
Spacing						
S ₁	349.8	65.7	13.7	324.7	51.6	13.9
S ₂	321.7	54.8	10.6	313.1	42.6	11.3
S ₃	301.2	40.5	7.5	302.8	33.3	8.6
SE _d	1.0	0.3	0.1	0.4	0.7	0.1
CD (P=0.05)	2.2	0.5	0.2	0.9	1.6	0.2
Phos. (kg/ha¹)						
P ₁	316.7	51.8	10.1	309.7	40.6	10.6
P ₂	323.9	53.8	10.5	314.1	42.1	10.3
P ₃	332.1	55.5	11.2	316.8	45.2	11.8
SE _d	0.6	0.2	0.06	0.3	0.8	0.05
CD (P=0.05)	1.3	0.4	0.13	0.7	1.7	0.11

DAS - Days After Sowing

have not been widely adopted by the farmers due to multiple factors. Among the constraints non-availability of good quality seeds at the appropriate time when farmers need them is the foremost one.

S.rostrata is an exotic annual stem nodulating potential green manure crop for lowland rice and it fixes 60-200 kg of N ha⁻¹. *S.rostrata* is grown as a green manure crop due to its high nitrogen fixation potential, rapid growth and flooding tolerance compared to other green manure crops (Dreyfus *et al.*, 1983). *S.speciosa* is the oldest indigenous green manure crop and fixes upto 60 kg of N ha⁻¹. Inclusion of green manures for nutrient supply is gaining momentum in the context of sustainable agriculture. But so far no serious attempt has been made to grow these crops as a seed crop with proper management practices. The present study was carried out to evolve optimum management

techniques for increased seed production in common green manure species in Tamil Nadu.

MATERIALS AND METHODS

Field experiments were carried out in southwest monsoon (SWM) and summer season of 1993-94 at Tamil Nadu Agricultural University, Coimbatore. The soil of the experiment field is a deep clay loam with neutral pH (7.5), electrical conductivity 0.3 ddm⁻¹, low in available nitrogen, medium in phosphorus and high in potassium. The experiment was laid out on new sites in each season in a split-split plot design with three replications. The treatment comprised of *S. rostrata* (G₁), *S. aculeata* (G₂) and *S. speciosa* (G₃) and spacing of 60 x 15 cm (S₁), 90 x 15 cm (S₂), 120 x 15 cm (S₃) and phosphorus levels of 0 kg ha⁻¹ (P₁), 25 Kg ha⁻¹ (P₂) and 50 kg ha⁻¹ (P₃). Phosphorus was applied as a basal dose at the time of sowing.

Table 2. Effect of season, spacing and phosphorus on seed production of *Sesbania* species

Treatments	SWM				Summer			
	Total no. of flowers formed/plant	Flower shedding (%)	Total No. of Pods/Plant	Shelling (%)	Total no. of flowers formed/plant	Flower shedding (%)	Total No. of Pods/Plant	Shelling (%)
Species								
G ₁	181.5	51.2	91.4	43.9	191.7	54.5	86.2	41.5
G ₂	149.8	48.9	72.7	47.6	135.8	50.10	67.4	40.9
G ₃	36.9	38.6	20.8	30.1	122.1	50.6	47.6	32.8
SEd	1.3	0.6	1.1	0.1	0.7	0.2	1.5	0.2
CD (P=0.05)	3.7	1.7	3.0	0.2	2.0	0.5	4.0	0.4
Spacing								
S ₁	37.8	47.6	44.4	37.9	107.8	50.3	48.2	38.2
S ₂	119.8	48.2	63.3	41.2	148.6	50.2	65.6	38.3
S ₃	160.4	48.1	77.2	42.6	193.1	50.6	87.7	38.7
SEd	1.0	1.0	1.2	0.2	0.9	0.2	1.8	0.10
CD (P=0.05)	2.2	NS	1.5	0.4	1.9	NS	3.9	0.20
Phos. (kg ha⁻¹)								
P ₁	106.1	44.2	55.5	39.0	139.8	53.1	61.8	37.6
P ₂	125.9	48.9	61.3	40.8	148.6	51.8	65.7	38.5
P ₃	136.1	45.7	68.1	41.9	161.1	50.2	73.9	39.0
SEd	1.2	1.8	0.9	1.2	1.1	0.2	1.6	0.1
CD (P=0.05)	2.4	3.8	1.8	0.4	3.8	0.3	3.2	0.2

NS - Non Significant

The results of the study revealed that the growth characters of different green manure species exhibited wide variation among themselves (Table 1). Though *S. rostrata* and *S. aculeata* showed variation in growth and flowering pattern between two seasons, *S. speciosa* showed much irregular flowering pattern, which indicated higher degree of response to seasonal effects rather than other species. Weera koon (1992) reported its seasonal behaviour, which was largely due to its genetic nature and photo period sensitiveness. The yield attributing characters viz., number of flowers and pods per plant, pod and seed yield per plant, and shelling percentage were significantly superior in *S. rostrata* than other species of *Sesbania*. The number of seeds per pod and length of the pod was higher in *S. speciosa* but number of pods per plant was less (Table 2 and 3).

Impact of environment variables on seed production of different green manure species was well pronounced. The present study showed that

summer season was ideal for better seed production compared to south west monsoon season. The seed yield of *S. rostrata* was 817 and 861 kg ha⁻¹ and in *S. aculeata* it was 782 and 820 kg ha⁻¹ and in *S. aculeata* it was 782 and 820 kg ha⁻¹ during South West Monsoon (SWM) and summer season respectively. But in *S. speciosa* it was 60 and 391 kg ha⁻¹ during SWM and summer season respectively. Palaniappan and Reddy (1990) studied the performance of *S. rostrata* under year-round monthly planting cycles and recommended that summer season was better than sowing at other times of the year, while crop duration was positively correlated to day length. Also, the strong influence of day length on the flowering behaviour of *Sesbania* species was reported by Visperas *et. al.* (1987). The increase in yield might probably be due to the favourable dimensional variation and high solar energy obtained during summer, which was found congenial for the production of photosynthates needed for proper seed development.

Table 3. Effect of season, spacing and phosphorus on seed production of *Sesbania* species

Treatments	SWM				Summer			
	Pod length (Cm)	No. of seeds/pod	Test weight (g)	Seed Yield kg ha ⁻¹	Pod length (Cm)	No. of seeds/pod	Test weight (g)	Seed Yield kg ha ⁻¹
Species								
G ₁	20.4	28.4	18.4	817	21.0	24.7	21.1	861
G ₂	21.7	27.5	19.2	782	22.1	22.4	21.7	820
G ₃	27.2	22.9	9.3	60	28.6	31.3	11.3	391
SEd	0.5	0.7	0.01	4.1	0.2	0.2	0.1	8.2
CD (P=0.05)	1.3	2.0	0.04	11.5	0.6	0.5	0.3	22.7
Spacing								
S ₁	22.2	25.7	17.5	530	22.9	25.6	15.5	659
S ₂	22.8	26.7	18.0	555	23.8	26.0	15.7	693
S ₃	24.1	26.0	18.5	574	25.0	26.1	15.8	716
SEd	0.5	1.1	0.5	4.1	0.2	0.2	0.1	8.2
CD (P=0.05)	1.0	NS	NS	8.9	0.59	NS	NS	22.2
Phos. (kg ha⁻¹)								
P ₁	21.9	23.9	17.9	490	23.7	25.9	15.7	616
P ₂	23.0	25.7	18.0	569	23.8	26.2	15.7	686
P ₃	24.3	29.2	18.0	610	24.2	26.3	15.7	765
SEd	0.4	1.1	0.1	14.2	0.2	0.2	0.03	19.7
CD (P=0.05)	0.8	2.2	NS	28.8	0.34	0.3	NS	39.9

NS - Non Significant

Increased vegetative growth through tall plants, production of more number of leaves and subsequent increase in photosynthetic source were the multiple reasons for high biomass and dry matter production (Table 1) under high density conditions (1, 11, 111 plants ha⁻¹). Though the growth parameters were higher, the seed yield was less. The seed yield under 60 x 15 cm spacing was 595 kg ha⁻¹ and 620 kg ha⁻¹ under 90 x 15 cm and the highest seed yield under wider spacing (120 x 15 cm) was 782 kg ha⁻¹. It could be primarily due to the production of lesser number of secondary (or) fruit bearing branches and further severe competition among plants resulted in mutual shading led to abortion of reproductive structures. Akinola and Whiteman (1976) reported that greater competition among plants due to high population in legumes resulted in reduced seed yield.

Green manure responded well to phosphorus application. Among the various levels of phosphorus, 50 kg ha⁻¹ promoted better growth and utilization of applied phosphorus. It helped the plant to produce higher values of all the morphometric parameters studied. Higher levels of phosphorus application (50 kg ha⁻¹) increased the seed yield by 24.48 per cent in SWM season and 24.2 per cent in summer in *Sesbania* species (Table 3). The yield increase with the application of phosphorus was due to marked increase in the fruit

bearing branches. The result was in consonance with Singh (1971).

In conclusion it may be stated that raising of *S. rostrata* or *S. aculeata* during summer at 120 x 15 cm spacing with 50 kg phosphorus ha⁻¹ can be considered as suitable agrotechniques for increased seed production.

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CONTENT ANALYSIS OF FARM INFORMATION IN TAMIL DAILIES

P.VANNIARAJAN, V.RAVICHANDRAN and R.VELUSAMY

Department of Agricultural Extension and Rural Sociology
Agricultural College and Research Institute
Tamil Nadu Agricultural University
Madurai- 625 104.

ABSTRACT

A study was conducted to know the extent of coverage of different subject matters, modes of presentation, contributors of farm information in two Tamil dailies. The results showed that, the subject matters agriculture and horticulture were predominantly covered. Press correspondents and university scientists were the major contributors of farm information. Popular article as mode, more number of articles without illustrations and mostly black and white photographs are also observed.

KEY WORDS: Farm information, Newspapers, Content analysis

Even though electronics media conquer major mass media channel, the importance of two century old print media in disseminating the technologies

has not declined. The advanced farm technologies, developed in the country, are to be communicated to the real consumer-farmers effectively. At present