seems to be an accurate index for detecting deterioration and finally the loss of viability in rice seeds. Similar findings were reported in soyabean seeds (Srivastava and Sareen, 1974).

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Research Notes

Effect of certain growth regulators on growth and yield of greengram

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The importance of phenolics as plant growth regulators is well recognized. Though phenolics play a very significant role in regulating the growth and development of plants, they remain an almost untapped potential for increasing crop productivity (Nanda and Kumar, 1982). Only few attempts have been made. Phenolic compounds have been reported to act as analogues of growth hormones (Vendaring and Buffel, 1961). Application of salicyclic acid increased yield parameters in Cheena millet (Datta and Nanda, 1985), while 1% triacontanol significantly increased the growth and grain yield in rice (Datta, 1996). Much work was not done on the effect of growth regulators on growth and yield of greengram. Hence, the present investigation was carried out to study the effect of certain growth regulators on the growth and yield of greengram.

The present experiment was carried out at Regional Agricultural Research Station, Lam, Guntur, Andhra Pradesh during *rabi* 2000 and 2001. The experiment was carriedout in black soil under rainfed conditions in a randomized block design with 8 treatments, replicated thrice. Cultivar LGG 460 was sown in an individual plot size of 3.0m x 3.6m with a spacing of 30cm x 10cm. The treatments consisted of foliar application of salicylic acid (0.1% and 0.2%) triacontanol (0.1 and 0.2%) mixtalol (0.1% and 0.2%), water spray and control. The treatments were imposed at the vegetative and flowering stage. Recommended package of practices were followed. The data on plant height, number of branches, leaf area index, dry matter, yield and yield components and harvest index were recorded at the time of harvest.

All the treatments significantly increased the growth in terms of plant height, number of branches, leaves and dry matter production over water spray and control (Table 1). Among the treatments, foliar application of triacontanol at 0.2% and mixtalol at 0.1% were on par with each other regarding plant height, number of branches and dry matter production. Application

Table 1. Effect of growth regulators on growth and development of greengram (Pooled data of *Rabi* 2000 and 2001)

Treatments	Plant height (cm)	No. of branches/ plant	No. of leaves/ plant	Dry matter /plant (g)	Leaf area index	Days to 50% flowering	Days to maturity
Salicylic acid 0.1%	41.00	6.26	8.80	217	4.03	43	78
Salicylic acid 0.2%	38.23	6.30	7.50	210	3.40	44	79
Triacontrol 0.1%	40.00	5.86	8.50	215	3.79	44	79
Triacontrol 0.2%	45.00	7.23	9.50	225	4.52	41	76
Mixtalol 0.1%	42.56	6.73	9.00	220	4.30	42	77
Mixtalol 0.2%	42.33	5.50	8.00	213	3.55	43	78
Water spray	38.00	5.16	7.00	208	3.23	45	80
Control	37.50	4.63	6.00	205	3.10	45	80
CD at 5%	2.84	1.23	1.62	5.33	1.06	NS	2.4

Table 2. Effect of growth regulators on yield and yield components of greengram (Pooled data of *Rabi* 2000 and 2001)

Treatments	No. of pods/plant	No. of seeds/pod	100 seed weight (g)	Seed yield (g ha^{-1})	Harvest index (%)
Salicylic acid 0.1%	20.0	11.2	3.51	8.15	37.55 (37.82)
Salicylic acid 0.2%	18.0	10.5	3.42	7.62	36.28 (37.05)
Triacontrol 0.1%	19.0	11.0	3.47	8.02	37.30 (37.64)
Triacontrol 0.2%	23.0	10.8	3.60	8.90	39.55 (39.00)
Mixtalol 0.1%	20.5	11.6	3.53	8.32	37.82 (37.94)
Mixtalol 0.2%	18.5	10.8	3.45	7.92	37.18 (37.58)
Water spray	16.2	10.4	3.40	7.30	35.10 (36.33)
Control	15.1	9.5	3.38	7.10	34.63 (36.03)
CD at 5%	3.73	NS	NS	0.36	1.50

Figures in parentheses indicate arcsine percentage transformed values.

of salicyclic acid (0.1%) improved the dry matter, whereas 0.2% salicylic acid had detrimental affect on plant growth as it caused leaf scorching and drying of leaves. Chemical like triacontanol was reported to improve the translocation efficiency and dry matter accumulation in rice (Datta, 1996). Maximum leaf area index of 4.52 was recorded by foliar application of triacontanol 0.2% followed by mixtalol 0.1% (3.10). Application of 0.2% triacontanol advanced the crop maturity by 4 days as compared to control. This will help the crop particularly under drought conditions.

All the treatments, except salicylic acid at 0.2%, significantly increased the seed yield as compared to water spray and control (Table 2). Foliar application of triacontanol (0.2%) at vegetative and flowering stages recorded maximum seed yield of 8.90 g ha^{-1} followed by mixtalol 0.1%, salicylic acid 0.1% and control (Table 2). There was 25% increase in seed yield due to application of triacontanol 0.2%. The increased seed yield might be due to more dry matter accumulation and number of pods per plant. The number of pods per plant was maximum in triacontanol 0.2% followed by mixtalol 0.1%. Similar results were reported by Datta and Nanda (1985) in cheena millet and Datta (1996) in rice. Harvest index reflects the physiological capacity of a crop to mobilize and translocate photosynthates (sink capacity) to organs having economic value. Harvest index was the highest in triacontanol (0.2%) followed by mixtalol

0.1% (37.82%). Application of triacontanol has improved the partitioning of drymatter to reproductive structures (Prasad and Prasad, 1994). From the above results, it can be concluded that foliar application of triacontanol at 0.2% and mixtalol at 0.1% significantly increased the seed yield in greengram.

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Research Notes

Status of biomass briquetting units in Tamil Nadu

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Biomass residues and by products are available in abundance at the agro processing centres (rice husk, bagasse, molasses, coconut shell, groundnut shell, maize cobs, potato waste, coffee waste, whey), farms (rice straw, cotton sticks, jute sticks), animal sheds (cow dung, poultry excreta) and forests (bark, chips, shavings, sawdust).

Agricultural or agroindustrial biomass is generally difficult to handle because of its bulky and scattered nature, low thermal efficiency and copious liberation of smoke during burning.

In order to achieve maximum and efficient exploitation of local available resources, it is essential to compress them into manageable and compact pieces, which have a high thermal value per unit weight. This process is called biomass briquetting or pelleting. Compressed biomass briquettes are usually cylindrical in shape with a diameter between 30 to 90 mm and length varying between 100 to 400mm. Briquetting consists of applying pressure to a mass of particles with or without a binder and converting it into compact aggregate.

Briquette manufacturing units are commercially making briquettes by adopting various technologies. They use different raw materials or their combinations to make briquettes. A study was conducted to evaluate commercially available briquetting industries and to assess their status by getting detailed information on the working, market potential, economics and the problems.

Briquetting technology

Two types of briquetting machinery are being mainly used for the manufacture of briquettes from agro-residues. They are ram type and screw type machinery. Ram type consists of a plunger or rod which forces the material received from a hopper into a die, which is not usually heated by external means. The screw type machine employs a screw auger which forces the material into a pipe heated by electricity. The choice of the type of machinery depends on many factors.

Market potential

There is no dearth of market for briquette as it can efficiently compete with other fossil