

REFERENCES

- KAREEMULLA, K., 1985 Sheep production and marketing in Punganur Taluk of Andhra Pradesh, (M.Sc.(Agri) Thesis, Department of Agricultural Economics, University of Agricultural Sciences, Bangalore).
- KAPOOR, S.A., 1983 Sheep and Wool development prospects, constraints and limitations in Gujarat State, In Proce. of National Convention of Sheep : Nov. 11-13, Bangalore.
- SHARMA, K.K and PANDY, R.N., 1983 "Cost and Return from Sheep rearing enterprise", *Agricultural Situation In India*, 38(8) : 547-550.
- REDDY, C.O. and REDDY, Y.V.R. 1981 "Economic role of sheep rearing", *Livestock Adviser*, 6(1) : 7-9,
- SWAIN, N., JAIN, P.M. and ACHARYA, R.M. 1982 Relative Economics of Sheep and Goat : In Proce. of 3rd International Conference on goat production and Diseases, Jan. 5-9, 1982, Juson, Arizona, 290, *Dairy, Goat Journal*, Pub. Co. Scottsdale, Arizona.
- ATCHUTA KUMAR, S., 1980 "Economics of Nellore sheep and other relative factors", *Livestock Adviser*, 5(1) : 35-40,
- MARIMUTHU, N. and SUBBARAYALU, M., December 1985, "Goat rearing to increase employment opportunity and earning", *Vignana Vivasayam*, 10: 26-28, December, 1985.

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INFLUENCE OF TIME OF FORAGE CUTTING ON SEED YIELD AND QUALITY OF LUCERNE (*Medicago sativa* L.) Cv CO 1

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A field study involved 12 treatments represented by 12 monthly forage cutting given to the seed crop of cv Co 1 lucerne viz. during February 1980 (M₁), March 1980 (M₂), April 1989 (M₃), May 1980 (M₄), June 1980 (M₅), July 1980 (M₆), August 1980 (M₇), September 1980 (M₈), October 1980 (M₉), November 1980 (M₁₀), December 1980 (M₁₁) and January

1981 (M₁₂). Observations were recorded on pod and seed yields, recovery of quality seeds retained in 5/63" round perforated sieve, germination and vigour index (Germination % x seedling length). The seed crop which received a forage cutting during the 1st week of June recorded the highest seed yield of 197 kg/ha while the minimum seed yield of

16 kg/ha was recorded by a crop whose strands were cut for pod harvest during October. Seed performance in terms of germination (90%) and vigour index (435) was also excellent in the summer periods from March-July than the rest.

Lucerne aptly known as the "queen of forage legumes" contains 20 per cent nitrogen and is chiefly raised for the requirement of dairy industry in India. Information on this crop in relation to time of forage cutting for seed setting and quality is meagre. Hence, field trails were conducted to study the influence of monthly forage cutting on seed yield and quality under Coimbatore conditions.

MATERIALS AND METHODS

A bulk crop of lucerne cv Co 1 was raised by sowing in solid rows of 20 cm apart and fertilized with NPK @ 20:120:40 kg/ha. The seed crop was given an uniform forage cutting after 3 months, subsequently the crop came to flowering after three weeks. The crop was provided with bee hives @ 2/ha for facilitating seed set by tripping. The bulk crop was divided into 12 treatment plots of one cent each set in 3 replications. The treatments represented the twelve monthly forage cuttings given to the seed crop viz. during February 1980 (M1), March 1980 (M2), April 1980 (M3), May 1980 (M4), June 1980 (M5), July 1980 (M6), August 1980 (M7), September 1980 (M8), October 1980 (M9), November 1980 (M10), December 1980 (M11) and January 1981 (M12). During the treatmental forage cutting

one meter row of plants were earmarked at random in each replication. At each harvest, pods were allowed for curing and drying for a week then weighed and threshed and the seed yield was recorded. The bulk seed was graded using the 5/64" round perforated sieve and the percentage of seed recovery was recorded. Besides, seed samples were drawn at random from the graded seeds retained by the sieve and tested for seed performance in terms of percentage of germination (Canon, 1985) and vigour index i.e. the product of percentage of normal seedlings x seedlings length (Abdul Baki and Anderson, 1973) (Table).

RESULTS AND DISCUSSION

Significant differences were observed between treatments in pod and seed yield, recovery of graded seed, germination and vigour index.

Seed set and maturity are the two factors that decide seed yield in lucerne. The high temperature that prevailed during the summer months from March to July accelerated bee activity during flowering and facilitated pod and seed set. Besides, the fairly high night temperature experienced during May to June was found to be conducive for better seed development and maturity and thus, the seed crop which received the forage cutting in the 1st week of June (M5) recorded the highest pod and seed yield of 775 and 197 kg/ha respectively followed by that in which the forage cuttings were given in the months of May-April. Dotzenko et al. (1967) also observed a similar trend of increased

TABLE : Pod and seed yields, recovery of seeds, germination and vigour of seeds as influenced by time of forage harvest in lucerne Cv Co 1

Monthly cutting	Pod yield kg/ha	Seed yield kg/ha	Recovery % of seed retained in 5/64" sieve	Shelling (%)	Germination (%)	Hard seed (%)	Vigour Index	Temperature °C	
								Max.	Min.
M ₁	273	55	93.6	20.2	92(74.00)	0.0	331	32.3	17.3
M ₂	385	78	79.0	20.3	96(78.00)	0.0	346	34.0	19.9
M ₃	409	96	92.5	23.5	94(75.82)	0.0	357	34.9	23.2
M ₄	496	100	92.4	22.4	90(71.50)	6.0	387	34.7	23.2
M ₅	775	197	94.3	25.4	90(71.50)	6.0	435	31.2	23.0
M ₆	388	45	57.2	11.6	80(63.73)	10.0	424	30.9	22.8
M ₇	195	33	84.3	16.9	88(69.73)	3.5	281	31.1	22.1
M ₈	164	30	89.0	18.3	88(69.73)	2.5	270	32.0	21.4
M ₉	95	16	43.1	18.4	76(60.67)	4.0	228	30.9	21.3
M ₁₀	51	35	41.2	50.0	76(60.67)	4.0	252	29.4	20.3
M ₁₁	58	37	24.3	63.8	76(60.67)	3.5	183	29.6	19.0
M ₁₂	190	34	34.5	17.9	88(69.73)	2.5	252	30.1	18.1
C.D.	30.3**	8.63**	4.4		3.10*		75**		

**Significant at 1% level.

seed yield due to high temperature after flowering in lucerne. Parson and Hunt (1972) reported that temperature played a dominant role in controlling alfalfa productivity in the field. It was also reported that high temperature increased the nectar production (Doull, 1967) and this probably enhanced the pollinator efficiency (Pedersens et al., 1972) in better seed setting by tripping. Jones and Pomeroy (1972) reported that timing the flowering to occur during the early June was more favourable for highest seed yield. In the present study, the recovery of graded seed was more in M₄ (92.4%) and M₅ (94.37%) and their percentage of shelling was also more i.e. 20.1 to 26.0.

Forage cutting given in the month of June (M₅) induced profuse flowering within another three weeks and resulted in production of quality seeds with good germination and vigour. Seeds harvested

from the crop cut in February (M₁), March (M₂) and April (M₃) are free of hard seeds and recorded the maximum germination of 92 to 96 per cent respectively, while in the subsequent four harvests (M₄ to M₇) hard seeds were recorded to a tune of 6-10 per cent. In general, the germination was good in seeds of all treatments except the cutting treatments given in October (M₉) to December (M₁₁) and even in January (M₁₂). It was clearly evident (Table) that in the later half of the year (August 1980 to January 1981) the vigour declined significantly. The maximum vigour was registered in seeds of M₅ and M₆ i.e. the treatment that the fairly high temperature without much variation between day (31.2°C) and night (23.1°C) temperature as observed in June accelerated metabolic processes in the plant that resulted in proper seed setting and thus higher seed yield with better seed quality was obtained.

REFERENCES

- ABDUL BAKI, A.A. and ANDERSON, J.D. 1973. Vigour determination in soy bean seed by multiple criteria *Crop Sci.*, 13 : 630-633.
- ANONYMOUS, 1985. International rules for seed testing *Seed Sci. and Technol.*, 13(2) : 307-355.
- DOTZENKO, A.D., COOPER, C.S., DOBRENZ, A.K., LAUDE, H.M. MASSENGALE, M.A., FELTNER, K.C. 1967. Temperature stress on growth and seed characteristics of grasses and legumes. Technical bulletin, Colorado Agricultural Experiment Station, Colorado.
- DOULL, K.M. 1967. A review of the factors affecting seed production in lucerne. In the Lucerne crop. Wellington A.Z.A.Z. and H.W. Road.
- JONES, L.G. and POMEROY, C.R. 1962. Effect of fertilizer, row spacing and clipping on Alfalfa seed production. *Calif. Ag.*, 16(2) : 8-10.
- PEARSON, C.J., HUNT, L.A. 1972. Effects of temperature on primary growth and regrowths of alfalfa. *Canadian Journal of Botany*, 50 : 1377-84.
- PEDERSENS, M.W., BOHART, G.E., MORBLE, V.L., KLOSTERMEYER, E.C. 1972. Seed production practices. In alfalfa Science and Technology, Madison, Wisconsin USA. American Society of Agronomy, 689-720.