Madras Agric. J., 98 (1-3): 39-40, March 2011
https://doi.org/10.29321/MAJ.10.100238

Short Note

Effect of Date of Sowing of Ajowan (*Trachyspermum ammi* L.) Sprague on Seed Yield in Southern Telangana, Andhra Pradesh

T. Susila[1]* and M. Rajkumar[2]
[1]Herbal Garden Scheme, Rajendranagar, Hyderabad - 500 030
[2]Fruit Research Station, Sangareddy, Andhra Pradesh

A field experiment was carried out at Herbal Garden, Rajendranagar, Hyderabad during 2007-08 and 2008-09 to study the seasonal influence on seed yield of Ajowan under Southern Telangana conditions. The crop was sown at ten days interval starting from 10th August to 10th October. The experiment was laid out in randomized block design and replicated thrice. Sowing of Ajowan at 1st September recorded higher yield (11.96q/ha) followed by sowing on 10th September and 20th August. Reduction in yield was observed with delay in sowing.

Key words: *Ajowan*, *Trachyspermum* ammi, spice crop, sowing date, yield

Ajowan fruit (*Trachyspermum ammi* L.) belongs to family Apiaceace (Umbelliferae) cultivated around the Mediterranean Sea and in south West Asia extending from Iraq to India. In India the essential oil of Ajowan and its main component thymol is used as medicine, particularly for cholera. Ajowan is one of the most important medicinal and seed spice crops of Rajasthan, Gujarat and Madhya Pradesh. Ajowan seed is considered as hot medicine and is used for relief of pain in human digestive track and as an anti-blot (Mirheidar, 1993). Ajowan seeds are reported to be useful in flatulence, colic, diarrhoea and spasmodic affections of bowels. In Andhra Pradesh ajowan is grown in Kurnool, Medak and Rangareddy districts of Southern Telangana region. Sowing in these areas is mostly done during first week of August and it often results in poor yields. Timely sown crop may be able to utilize the optimal environmental conditions for attaining proper growth and development. The present investigation was therefore carried out to evaluate the effect of sowing date on yield and yield components of ajowan under the agro-climatic conditions of Southern Telangana zone of Andhra Pradesh.

Materials and Methods

The field experiment was carried out during 2007 and 2008 at Herbal Garden, Rajendranagar, Hyderabad with seven dates of sowing *viz*., 10th August, 20th August, 1st September, 10th September, 20th September, 1st October and 10th October. The experiment was laid out in randomized block design with three replications. The soil type was red sandy loam with neutral pH (7.0), Electrical conductivity of 0.24 ds/m and 0.5% organic carbon.

[1]*Corresponding author email: susilatheeda@gmail

Ajowan seed was sown at a row spacing of 45 cm. The recommended dose of fertilizers *viz*., 40 Kg N, 30 Kg P_2O_5 and 30 Kg K_2O per hectare were uniformly applied at sowing and remaining 40 Kg N was top dressed at 30 and 60 days after sowing. All the recommended cultural practices for Ajowan were followed during the entire cropping period. Data on plant height, number of branches, number of umbels per plant and drymatter accumulation were recorded from randomly selected five plants for each replication. The data collected were statistically analyzed using the Analysis of Varience (ANOVA) procedures. The mean maximum and minimum temperatures were presented in table 1. The average rainfall received was 445.1 mm and 777.1 mm during August - February in 2007-08 and 2008-09 respectively (Table 1).

Results and Discussion

The pooled data of two years presented in Table 2 shows that significant effect of planting dates on growth and yield parameters. Plant height is considered as genetically controlled character. However environmental conditions might have modified this genetic potential which was evident from the data presented in Table 2. Maximum plant height (109.49 cm) was recorded in crop sown during 20th August and were on par with crop sown on 10th August. This could be attributed to the receipt of higher rainfall and maximum mean daily temperatures received during the early period of crop growth. Plant height was minimum (83.33 cm) in 10th October sown crop. The decrease in plant height with delayed sowing might be due to shorter period of vegetative growth and lower temperature at early growth stages which might have slowed down the vegetative growth of crop. Pillai *et al*. (1995)

Table 1. Meteorological data during the cropping period

Month	Temperature (°C)				Rainfall (mm)	
	Maximum		Minimum			
	2007-08	2008-09	2007-08	2008-09	2007-08	2008-09
August	30.2	29.3	23.4	23.1	172.5	506.3
September	29.7	30.1	23.2	22.4	167.6	204.6
October	30.6	31.4	19.4	20.1	14.8	53.6
November	29.5	29.6	13.8	16.6	15.8	12.6
December	29.6	29.5	14.3	14.2	0.0	0.0
January	30.3	30.2	13.0	13.7	0.0	0.0
February	30.5	33.9	18.2	16.8	74.4	0.0

concluded that plant height is dependent upon the environmental factors. Mohan *et al*. (2001) also reported decrease in plant height with delayed sowing in fennel.

The number of branches per plant were highest (12.00) in 1st September sown crop followed by crop sown during 10th September (9.67). Minimum number of branches were produced in October sown crop.

Sowing date significantly influenced the drymatter production. Higher dry matter production was observed in early sown crop. Delay in sowing from August to October significantly decreased the drymatter production. Sowing of crop during 1st September also produced highest drymatter per plant (21.43 g). The crop sown on 10th October produced lowest dry matter content (7.32 g). Accumulation of higher dry matter could be due to more number of heat units accumulated by the crop during the life cycle. Villalobos *et al.* (1996) reported that sunflower biomass production is positively correlated with temperature and photoperiod.

Table 2. Effect of different dates of sowing of Ajowan on growth and yield parameters

Treatment	Plant Height (cm)	No.of Branches/ plant	Drymatter accumulation/ Plant (g)	No.of Umbels/ plant	Seed yield/ ha (q)
10th August	105.33	7.67	9.94	36.67	5.90
20th August	109.49	8.17	12.24	39.67	7.03
1st September	103.99	12.00	21.43	52.16	11.96
10th September	97.66	9.67	13.8	44.00	7.84
20th September	98.33	8.17	11.72	36.33	6.89
1st October	90.99	7.17	7.96	32.33	5.43
10th October	83.33	7.00	7.32	22.5	2.11
SEm	1.465	0.756	1.185	1.380	0.336
CD (0.05)	4.251	2.193	3.692	4.004	0.969

The number of umbels produced per plant (52.16) were significantly highest in 1st September sowing compared to other sowing dates. Lowest number of umbels per plant (22.5) was produced in crop sown during 10th October. The seed yield of ajowan was affected significantly by different sowing dates in both the years. The maximum seed yield was obtained when the crop was sown on 1st September (11.96 q/ha) and the yield was significantly higher over other sowing dates. Sowing on 10th October resulted in lowest seed yield (2.11 q/ha). The mean daily temperature is the major environmental factor that influences the crop development and yield (Elkarouri and Masi, 1980). Crop sown on 1st September received maximum mean daily temperatures during the early stages of crop growth which was resulted in greater leaf area, plant height, number of branches per plant and maximum number of umbels per plant. The results further indicated that shorter growth period of plants in late sown crop were unable to make full use of the available resources which resulted in lower number of umbels per plant and ultimately the lower yield. Leto *et al.* (1996) reported early sowing of fennel resulted in higher yield. Yadav and Dahama (2003) also reported higher yield in early sown cumin. The results are in line with the findings of Yadav and Khurana (1999), Ayub *et al*. (2008) and Kaya *et al*. (2000).

The present study revealed that the substantial higher seed yield of ajowan can be obtained by sowing during 1st September in Southern Telangana zone of Andhra Pradesh.

References

Ayub, M., Nadeem, M.A., Tanveer, A., Tahir, M., Saqib, M.T.Y. and Nawaz, R. 2008. Effect of different sowing methods and times on the growth and yield of fennel (*Foeniculum vulgare* Mill). *Pak. J. Bot*., **40**: 259-264.

Elkarouri, M.O.H. and Masi, M.G. 1980. Performance of sorghum (*Sorghum vulgare*) and maize (*Zea mays*) as forages in irrigated saline soils of the Sudan. *Expl. Agric.*, **16**: 431-436.

Kaya, N., Yilmaz, G. and Telci, I. 2000. Agronomic and technological properties of coriander population planted on different dates. Turkish *J. Agric. Fore*., **24**: 355-364.

Leto, C., Carruba, A. and Tarapani, P. 1996. Effect of sowing dates on seed fennel in semi arid Sicilian environment. Atti Convegno international: Coltivazione e miglioramento di piante Officinaliali, Trento, Italy, Giugno: 513-522.

Mirheidar, H. 1993. Knowledge on Plants: Use of Plants in prevention and remedy of diseases. Vol :2. Daftar-e- Nashr Farhang Eslami.

Mohan, V. P., Batra, V. K. and Thakral, K. K. 2001. Response of sowing dates and seed rate on growth and yield of fennel. *Haryana J. Hort. Sci.,* **30**: 271-73.

Pillai, M.A., Ramalingam, P., Sridharan C.S., Murugan, S. and Vanniarajan, C. 1995. Stability analysis for seed and its components in sunflower hybrids. *Annals Agric. Res.,* **16**: 409-412.

Villalobos, A.J., Hall, J.T., Ritchie and Orgos, F. 1996. Seasonal impact on growth, development and yield model of sunflower crop. *Agron. J.*, **88**: 403-415.

Yadav, B.D. and Khurana, S.C. 1999. Effect of planting methods and sowing dates on growth and yield of fennel. *Haryana Agri. J. Res.*, **29**: 3-4, 81-87.

Yadav, R.S. and Dahama, A.K. 2003. Effect of planting Date on yield and water use efficiency of Cumin. Indian *J. Agric. Sci.*, **73**: 8, 494-96.

Received: August 5, 2010; Accepted: December 20, 2010