

Evaluation of ajowan (*Trachyspermum ammi* L.) introductions for growth, yield and quality

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Abstract

Five ajowan (*Trachyspermum ammi* L.) introductions (RA-6, HAJ-S-I, RA-2, RA-7 and RA-4) and a local cultivar were evaluated for their growth, yield and quality under alluvial zone of West Bengal (India). Among the introductions, RA-2 exhibited superiority over other introductions in respect of morphological characters such as plant height, number of primary branches per plant and number of leaves per plant and seed yield. The essential oil content was significantly higher in local cultivar (4.53%), while essential oil yield per hectare was significantly higher in RA-7 (14.50 kg) which was on par with RA-4 (14.13 kg).

Key words: ajowan, evaluation, *Trachyspermum ammi*.

In India, ajowan (*Trachyspermum ammi* L.) is mainly grown in Madhya Pradesh, Andhra Pradesh, Gujarat, Maharashtra, Rajasthan, Bihar and West Bengal. The yield of ajowan is very low in West Bengal due to cultivation of low yielding local cultivars coupled with poor management practices. The present study was undertaken to evaluate five ajowan introductions (along with a local cultivar) for their yield and quality in the alluvial zone of West Bengal.

Five ajowan introductions (RA-6, HAJ-S-1, RA-2, RA-7 and RA-4) were collected from Rajendra Agricultural University, Pusa and a trial with these materials along with a local cultivar was laid out in a Randomized Block Design at Horticultural Research Station, Mondouri (West Bengal) with four replications during 1999-2000. The plot size was 3.0 m x 1.5 m and a spacing of 30 cm x 20 cm was adopted. Observations on morphological characters such

as plant height, number of primary branches, number of secondary branches, number of leaves per plant, number of umbels per plant, number of umbels per plant and yield and yield characters like seed weight per umbel, seed weight per plant were recorded on 10 randomly selected plants from each replication. Yield per hectare was calculated from the yield obtained per plot. The essential oil content was estimated as per the method described in ASTA (1960).

The data on morphological characters of different ajowan introductions are presented in Table 1 and data on yield, yield attributed and oil content are presented in Table 2. Among the various introductions, RA-2 recorded significantly higher growth characteristics compared to local cultivar. RA-4 was next in the rank for plant height and was on par with local cultivar.

Table 1. Morphological characteristics of ajowan introductions

Accession	Plant height (cm)	No. of primary branches plant ⁻¹	No. of secondary branches plant ⁻¹	No. of leaves plant ⁻¹	No. of umbels plant ⁻¹	No. of umbels plant ⁻¹
RA-6	73.88	6.85	12.33	33.38	10.03	21.80
HAI-S-1	75.88	8.13	15.70	36.50	11.15	29.00
RA-2	94.13	11.50	20.53	64.13	12.23	38.05
RA-7	84.75	9.38	18.55	49.38	11.28	33.38
RA-4	85.25	8.88	18.43	53.75	11.18	30.83
Local	81.00	7.53	12.95	46.50	9.23	23.38
SEm ±	2.35	0.50	0.97	2.08	0.51	1.64
CD at 5%	7.08	1.51	2.92	6.26	1.54	4.94

Table 2. Yield and yield attributes, essential oil content and essential oil yield of ajowan introductions

Accession	Seed weight umbel ⁻¹ (mg)	Seed weight umbel ⁻¹ (mg)	Seed weight plant ⁻¹ (g)	Test weight (g)	Seed yield (kg ha ⁻¹)	Essential oil content (%)	Essential oil yield (kg ha ⁻¹)
RA-6	8.78	86.78	1.87	0.57	273.50	3.20	8.75
HAI-S-1	7.21	82.35	2.28	0.46	333.50	3.95	13.18
RA-2	7.95	94.62	3.33	0.53	503.32	2.48	12.48
RA-7	7.64	88.61	2.72	0.52	402.89	3.60	14.50
RA-4	8.65	98.67	2.81	0.56	418.11	3.38	14.13
Local	8.59	84.44	1.91	0.59	292.86	4.53	13.27
SEm ±	0.41	2.63	0.098	0.013	12.09	0.09	0.44
CD at 5%	NS	7.92	0.295	0.04	36.41	0.27	1.325

NS = Not significant

RA-7 was on par with local cultivar for plant height and number of leaves.

HAI-S-1 recorded significantly higher number of primary branches per plant, number of umbels per umbel and umbels per plant but leaves per plant were significantly lower compared to local cultivar. RA-6 was on par with local cultivar, except for plant height and number of leaves per plant.

RA-2 recorded significantly higher seed weight per umbel, seed weight per plant and seed yield but test weight and oil content were

significantly lower compared to local cultivar. Except RA-6, all the introductions recorded significantly higher seed yield but were on par with local cultivar for essential oil yield. RA-6 was on par with local cultivar for seed yield but essential oil yield was significantly lower. De (2000) reported oil content of 2-4% while Chadha (1989) opined oil yield to vary from 2.0-3.5%. However, in the present study the oil yield was higher ranging from 2.48 to 4.53%. The study revealed that all the introductions, except RA-6, were superior in seed yield compared to local cultivar.

References

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