



Evaluation of ajwain (*Trachyspermum ammi* L.) genotypes under northern dry zone of karnataka

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INTRODUCTION

- Ajwain (Oma/ Carum seed/ Bishop’s weed) is one of the minor seed spices. It is botanically known as *Trachyspermum ammi* (L.), which is an important rabi season seed spice with 2n=18 and belonging to Apiaceae family.
 - Ajwain are seeds contain an essential oil, which consists nearly 50 per cent of thymol, which has a strong anti-spasmodic, fungicide and germicidal effect. Most important use of ajwain is a home remedy for indigestion (Dhirendrasingh and Choudhary, 2008).
- There is a lot of scope for identification of appropriate genotypes for local environment with desirable characteristics which will increases the production. Keeping this in view, the present investigation was conducted with the following objectives:
1. Evaluation of ajwain genotypes for growth and morphological characters.
 2. Evaluation of ajwain genotypes for yield and yield attributing characters.
 3. To assess the quality of ajwain genotypes by estimating the essential oil, oleoresin and thymol content.

MATERIAL AND METHODS

- The present investigation on ajwain was undertaken during *rabi* 2019-20 at Department of Plantation, Spices, Medicinal and Aromatic Crops, College of Horticulture, Bagalkote. The experiment was laid out in randomized complete block design with 16 treatments and 4 replications.
- The plot size was 3 m × 2.25 m with a spacing of 45 cm × 30 cm. The crop was sown in the first week of November. Observations were recorded systematically at monthly interval and analyzed as per the standard procedure.
- The essential oil from the dried ajwain seeds was extracted by hydro-distillation using Clevenger apparatus (Sadgrove and Jones, 2015) and oleoresin by using Soxhlet apparatus (Sontakke *et al.*, 2018).

RESULTS & DISCUSSION

- The results of the present study revealed that,
- GA-1 showed a maximum plant height (111.2 cm). Minimum days to 50 per cent flowering (86), maximum number of flowers per umbel was found in AA-93 (304.10) which was on par with AA-1 (304.05) and the minimum days to maturity was found in AA-93 (131). Similar findings were also recorded by Meena *et al.* (2014) in ajwain.
 - Genotype AA-1 recorded maximum number of umbels per plant (213), umbellets per umbel (15.33), number of branches at harvest (18.2), which was on par with AA-93 (17.25) and DAC-1 (17.25), number of seeds per umbel (226.88) which was on par with AA-93 (223.95), seed yield per plant (10.99 g), seed yield of 4.14 q/ha, harvesting index (30.29 %) and maximum test weight (1.67 g) which was on par with DAC-1 (1.58 g), DAC-6 (1.57 g) and LTA-26 (1.53 g). This variation in yield parameters may be due to genetic makeup of genotypes. Yield of all the genotype was less due to the incidence of stem flies.
 - With respect to oleoresin content, DAC-5 recorded the highest oleoresin content (7.20 %) which was on par with DAC-4 (6.30%). The maximum essential oil content was found in AA-1 (2.33%), which was on par with DAC-3 (2.17%) and DAC-4 (2.13%). Similar findings were also recorded by Shivaprasad *et al.* (2018) in fennel.

TABLES & FIGURES

Table1. Growth parameters of ajwain genotypes at final harvest

Treatments	Plant height (cm)	Number of branches	Days to 50 per cent flowering	Number of flowers per umbel
T ₁ – AA-1	101.61	18.20	99.25	304.05
T ₂ – AA-2	101.75	15.20	95.75	239.85
T ₃ – AA-93	105.45	17.25	86.00	304.10
T ₄ – GA-1	111.20	15.10	95.00	221.13
T ₅ – AL-3	99.25	14.25	94.25	241.13
T ₆ – AL-4	99.60	13.98	95.50	150.70
T ₇ – AL-5	106.60	16.90	92.00	181.78
T ₈ – Lam selection-1	96.50	14.45	94.50	182.15
T ₉ –LTA-26	108.30	14.05	96.50	231.73
T ₁₀ -DAC-1	104.40	17.25	95.00	212.55
T ₁₁ -DAC-2	108.90	16.90	97.50	282.88
T ₁₂ -DAC-3	101.65	15.10	108.50	187.40
T ₁₃ -DAC-4	95.20	16.65	108.50	285.03
T ₁₄ -DAC-5	104.25	14.35	94.75	179.65
T ₁₅ -DAC-6	99.35	16.65	93.00	178.95
T ₁₆ -DAC-7	99.65	16.65	110.25	217.98
S. Em ±	0.73	0.38	0.70	4.10
C. D. (P = 0.05)	2.09	1.08	2.01	11.70

Table2. Yield and quality parameters of ajwain genotypes at final harvest

Treatments	Number of seeds per umbel	Number of umbels per plant	Number of umbellets per umbel	Days to maturity	Seed yield per plant (g)	Seed yield (q/ha)	Harvesting index (%)	1000 seed weight (g)	Oleore sin (%)	Essential oil (%)
T ₁ – AA-1	226.88	213.00	15.33	144.25	10.99	4.14	30.29	1.67	3.47	2.33
T ₂ – AA-2	185.33	190.10	13.30	140.75	8.53	3.12	25.20	1.36	3.25	1.77
T ₃ – AA-93	223.95	204.65	13.10	131.00	9.93	3.64	24.02	1.38	4.25	1.87
T ₄ – GA-1	181.18	203.53	11.80	140.00	9.17	3.32	20.30	1.28	4.29	1.20
T ₅ – AL-3	204.78	109.40	14.55	139.25	5.86	2.12	17.12	1.44	1.87	1.60
T ₆ – AL-4	129.45	98.25	11.70	140.50	5.20	1.88	15.15	0.89	4.34	1.40
T ₇ – AL-5	151.03	148.95	12.65	137.00	7.70	2.77	18.36	1.32	3.96	2.00
T ₈ – Lam selection-1	152.15	110.10	11.95	139.50	6.18	2.24	18.83	1.21	3.96	1.50
T ₉ –LTA-26	194.23	111.85	14.10	141.50	6.27	2.27	15.23	1.53	3.05	1.80
T ₁₀ -DAC-1	177.55	168.25	12.50	140.00	7.96	2.88	21.48	1.58	2.47	1.50
T ₁₁ -DAC-2	210.53	99.40	14.30	142.50	5.70	2.07	13.66	1.22	2.39	2.10
T ₁₂ -DAC-3	157.48	121.40	13.15	153.50	6.70	2.43	17.51	1.02	2.66	2.17
T ₁₃ -DAC-4	212.53	128.70	14.65	153.50	7.61	2.75	23.13	1.43	6.30	2.13
T ₁₄ -DAC-5	148.65	143.05	10.40	139.75	7.65	2.76	19.41	1.22	7.20	1.50
T ₁₅ -DAC-6	148.95	156.95	10.40	138.00	7.74	2.80	22.43	1.57	4.65	2.03
T ₁₆ -DAC-7	178.05	120.45	11.45	155.25	6.49	2.35	19.55	1.45	3.39	2.00
S. Em ±	3.83	2.30	0.19	0.70	0.18	0.06	0.51	0.05	0.48	0.07
C. D. (P = 0.05)	10.90	6.57	0.55	2.01	0.52	0.18	1.44	0.15	1.44	0.22

PHOTOS



Plate 1. General view of research plot



Plate 2. Best treatment

CONCLUSION

In the present investigation, AA-1 genotype recorded highest yield, maximum essential oil content and was found suitable to grow under northern dry zone of Karnataka based on growth, yield and quality

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