

AA 93: an early maturing variety of ajwain developed at NRCSS for all ajwain growing areas

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Abstract

Ajwain (*Trachyspermum ammi* L.) well known as carom seed & Bishop's weed belongs to family Apiaceae is native of Egypt. It is a popular seed spice crop of India having good medicinal value. AA-93 population of ajwain has been developed at NRCSS, Ajmer. This population starts flowering only 46 days after sowing and matures in 123 days only. It matures about 30-40 days early in comparison to normal existing improved cultivars, which takes 150-170 days. Although the productivity is less as compared to normal maturity, but can be increased through manipulation of plant population per unit area. Plant structure of this variety is erect type and more number of plants can be accommodated per hectare as compared to normal maturity variety plants. Plants of this variety can resist the lodging caused due to dew.

Key words : Ajwain, Early Maturing, Population

Ajwain also known as carom seed (*Trachyspermum ammi* L.) belongs to the family Apiaceae which is a native from Egypt (Sayre, 12) and popular seed spice crop in India. It is an annual herbaceous plant bearing small egg shaped greyish brown fruits. Ajwain is a cross pollinated crop. Flowers are self fertile, but cross pollination occurs through insects. Plant parts usually consumed are herb, volatile oil, and seeds. Seeds contain medicinal values specially for curing indigestion, stomach pain and elements concerning digestive system (Meena *et. al.* 4). It is also used in cholera, diarrhea, gastric and urinary trouble. Ajwain contains 2.5 to 4.0 per cent volatile oil which is yellow brownish in colour used in many ayurvedic medicines and industries of which 'thymol' is main constituent. In addition to volatile oil it also contains moisture 8.9 per cent, protein 15.4 per cent, fat (ether extract) 18.1 per cent, fiber 11.9 per cent, carbohydrates 38.6 per cent and minerals 7.1 per cent (Dashora, 2). Ajwain seed is an economic part which is used as spice. It is grown throughout country, mainly in plains, but flourishes equally well at higher altitudes, in plateaus and on hills. It is grown on a commercial scale in Rajasthan, Madhya Pradesh, Andhra Pradesh, Gujarat, Maharashtra, Uttar Pradesh and to considerable extent in Bihar and West Bengal. Large quantity of ajwain is consumed in India and entire demand is met by indigenous production. During 2009-10, an ajwain production in India was 5450 tonnes from 15483 hectare area (Meena *et. al.* 3). In

Rajasthan, Chittorgarh, Udaipur, Pratapgarh, Jalawar, Rajsamand, Kota and Bhilwara are important districts growing this crop. For ajwain, Rajasthan contributes 73 per cent of total production of India (Anwer *et al.*, 1). The major ajwain producing countries are India, Persia, Iran, Egypt, Afghanistan, Pakistan and North Africa. Productivity of this crop is low due to its cultivation on marginal lands with low fertility level, lack of improved varieties, short duration varieties, production and plant protection technology. National Research Center on Seed spices established at Tabiji, Ajmer has initiated work on this crop and developed an early maturing population, namely AA-93 for getting higher returns.

AA-93 is open pollinated variety developed through mass selection from different populations grown at National Research Centre on Seed Spices, Ajmer during *rabi* season 2009-10. This population attains 50 percent flowering only in 46 days after sowing irrespective of sowing dates i.e. may be in August or in October. Likewise it matures only in 120-130 days, thus it matures 30-40 days early in comparison to normal existing improved cultivars, which takes 150-170 days. This population has been tested during 2010-11 and 2012-13 at NRCSS Ajmer and 2011-12 at MPUAT, Udaipur with 4 check varieties namely AA-1, AA-2, GA-1 and Lam Sel.-2. The data are presented in Table 1. The seed yield per hectare is low as compared to other varieties, but it's per hectare yield can be increased through increase the plant population by

Table 1: Performance of AA-93, a new population for flowering, maturity and seed yield during 2010-11 to 2012-13

Variety / Population	Days to 50 % flowering				Days to 75 % Maturity				Seed Yield (kg/ha)			
	2010-11	11-12	12-13	Average	2010-11	11-12	12-13	Average	2010-11	11-12	12-13	Average
AA-1	65.00	80.88	83.50	76.46	160.12	157.17	136.12	151.14	1239.1	1150.0	1150.8	1180.0
AA-2	81.00	80.67	85.84	82.5	161.13	159.17	157.13	159.14	1663.8	2033.0	1472.6	1723.1
GA-1	81.00	83.00	86.67	83.56	162.73	158.33	157.73	159.6	1885.9	1400.0	1364.6	1550.1
Lam Sel-2	81.00	86.33	96.50	87.94	167.53	158.28	157.53	161.11	1379.2	1134.0	1133.2	1215.5
AA-93	44.00	48.00	46.17	46.06	130.80	125.00	115.80	123.87	525.4	1048.0	1049.5	874.3
S.Em±	3.08	3.32	3.47	3.29	7.12	6.87	6.55	6.85	63.61	73.33	60.69	65.33
CD(0.05)	9.69	10.47	10.93	10.36	22.44	21.64	20.65	21.58	200.45	231.08	191.23	205.86

2010-11 and 2012-13 data are from NRCSS whereas 2011-12 are from RCA, MPUA&T, Udaipur



Fig 1 : AA-93 in flowering as compare to other population

reducing row to row and plant to plant distance to 30 cm and 15cm, respectively. Morphologically AA-93 plants are erect in nature having 80 cm height with approximate 10-12 primary branches and 110-120 secondary branches per plant. It's umbel bears 300-350 seeds. This population also showed lodging resistance and therefore it will also serve as lodging resistant in the area where chances of dew are higher. This population will be most suitable for cultivating ajwain under rainfed and limited moisture conditions.

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Received : April 2014; Revised : May 2014; Accepted : June 2014.