

Pratap Raj Dhania-1 (RKD 18): Promising coriander (*Coriandrum sativum* L.) variety for farmers of South Eastern Rajasthan

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ABSTRACT

Coriander (Coriandrum sativum L.) is an important seed spice crop cultivated throughout the world for its seed and leaves, used in flavouring and seasoning of the food and food products. The coriander variety RKD 18 (Pratap Raj Dhania 1), developed by Agricultural Research Station, Agriculture University, Kota (Rajasthan) possess many desirable traits like earliness, high essential oil, semi dwarf stature for lodging resistance, tolerance to pests and diseases along with high yield. Due to earliness of the variety along with many other desirable characters, the frontline demonstrations on coriander variety RKD 18 have been conducted at farmers' fields by different Krishi Vigyan Kendras (KVKs) of Agriculture University, Kota during the past years for dissemination of improved technology and popularization of the variety. In this status paper, salient features of this coriander variety, its production and distribution scenario has been discussed.

Keywords: Coriander, quality, RKD 18, yield

Coriander (*Coriandrum sativum* L.), a member of family Apiaceae is an important seed spice crop of India cultivated for its seed and leaves, used in flavouring and seasoning of the food and food products. India is the largest producer, consumer and exporter of coriander in the world. The total production of coriander in the country was 811 thousand tons from an area of 640 thousand hectare (2021-22). The major coriander producing states are Rajasthan, Gujarat and Madhya Pradesh. It is cultivated in an area of 124286 ha in Rajasthan and produces 182705 m tonnes (2020-21) of coriander seeds. Rajasthan contributes nearly 19 and 20 percent to the country's total area and production, respectively. The south eastern part of Rajasthan *i.e.*, humid south eastern plain zone or zone V is the largest producer of coriander in the state where it is cultivated in an area of 118030 ha contributing the production of 173764 m. tonnes (2020-21), thereby contributing around 95 percent to the total area and production of the state.

A perusal of Table 1 depicting coriander statistics (Vital Agricultural Statistics, Government of Rajasthan) indicates considerable decline in area and production of coriander in Rajasthan state and

zone V during the past years, the reasons of which needs to be examined critically for reviving the area and production of this export oriented crop. In order to sustain the highest production of coriander in zone V of the state, high yielding varieties of coriander having other desirable traits like high quality in terms of high essential oil, early maturity, resistance against pests and diseases, suitable to the prevailing agro-climatic conditions are required. Pratap Raj Dhania-1 (RKD 18) having IC no. 594870 is a high yielding coriander variety notified in 2015 vide S.O.268 (E) for the state of Rajasthan. It's a selection from local germplasm of south eastern humid plain zone (Zone V) of Rajasthan. Since its notification, more than 1200 quintals of seed of the variety has been produced by Agriculture University, Kota for conducting frontline demonstrations at farmers' fields and sale to the farmers, government and private institutions as well.

The salient features of the variety **Pratap Raj Dhania-1** are as under:

- **Plant height:** 70-80 cm
- **Days to 50% flowering:** 55-58 days
- **Days to maturity:** 100-105 days

- **Test weight:** 12-15 g
- **Seed yield:** 18-20 q/ha
- **Essential oil:** > 0.4 %
- **Disease and pest reaction:** Moderately resistant to aphids, stem gall and tolerant to powdery mildew.

The details of yearwise production of the variety by the university and the revenue generated through sale have been provided in Table 2.

The frontline demonstrations on coriander variety Pratap Raj Dhania-1 have been conducted at farmers' fields by different Krishi Vigyan Kendras (KVKs) of Agriculture University, Kota during the past years for dissemination of improved technology and popularization of the variety. The variety has given higher yield as compared to local ones to the tune of 11 to 29 per cent. The farmers have also liked the variety due to its earliness, high yield, good aroma and tolerance towards diseases and pest.

Coriander is valued for its quality in terms of essential oil content as the essential oil is responsible for its aroma. The essential oil is volatile in nature and hence its concentration goes on diminishing with the rising temperature. The temperature in south eastern Rajasthan starts rising with the end of February and reaches as high as 35°C by the month of March that adversely affects not only the essential oil content in coriander seed but decreases the seed yield as well. Giridhar *et al.* (2014) reported that the low productivity of coriander under rainfed situation is mainly due to terminal moisture stress that affects growth and productivity. Growing coriander in rainfed vertisol farming situation demands highly productive types with short (75 days) to medium (85-100 days) duration for cultivation. The optimum time of sowing of coriander in south eastern Rajasthan is last week of October to first week of November (Verma *et al.*, 2017), therefore, in order to harvest high quality coriander, the demand is of an early variety that matures and becomes ready to harvest by the end of February or first week of March i.e. before the temperature starts rising. The another advantage of an early variety of coriander or any other winter (*rabi*) crop is that if the field is vacated by the month of February, the farmers can go for cultivation of spring (*zaid*) *mungbean* or other short

duration vegetable crops so that they can take up three crops in a year adding to their annual income. Therefore, the farmers' preference is for early variety of coriander in which the third order umbels also mature by February so as to harvest higher yield with good aroma and also for cultivation of *zaid* crop during spring season.

The desirable attributes like earliness in days to flowering, days to maturity, higher number of umbellets per umbel and high essential oil (0.51%) in genotype RKD-18 was also reported by Giridhar *et al.* (2014). Doshi *et al.* (2014) also evaluated the coriander varieties popularly cultivated in zone V for their quality traits and reported coriander variety RKD 18 to be most suitable for processing for the production of value added products owing to its high percent essential oil and oleoresin content as compared to other checks. Earlier, Meena *et al.* (2013) also observed RKD 18 to be superior to other varieties in terms of seed yield, test weight, essential oil and in showing highest net return and B: C ratio and therefore, reported it to be most suitable and profitable for the south eastern humid plains of Rajasthan.

Verma *et al.* (2015) performed stability analysis among coriander genotypes and found RKD 18 to be highly stable over the environments for essential oil content. Based on the stability parameters, it was concluded that the stability of yield is imparted in the genotype RKD 18 through the number of secondary branches, number of umbels and umbellets per plant. This stable genotype can be further used for varietal development programme in coriander.

Suman *et al.* (2018) evaluated the seed quality parameters in coriander and observed minimum seed metabolic efficiency in the genotype RKD18. Seed Metabolic Efficiency (SME) of the seed is the amount of dry seed weight that is required for producing one gram of dry root and shoot. Thus higher the value of seed metabolic efficiency, lower the efficiency of the seed as more seed reserve would be used for producing root and shoot. Sharma *et al.* (2019) studied twenty-three coriander genotypes to find out genetic variability using random amplified polymorphic DNA (RAPD) marker and found unique band in RKD-18 suggesting that unique sequences further can be

Table 1: Area, production and productivity of coriander in Rajasthan and zone V (South Eastern Humid Plain Zone)

Year	Area (ha)		Percent share of Zone v	Production (MT)		Percent share of Zone v	Productivity (kg/ha)	
	State	Zone V		State	Zone V		State	Zone V
2010-11	197891	193449	97.76	218899	215422	98.41	1106	1114
2011-12	267827	263881	98.53	329427	324837	98.61	1230	1231
2012-13	158678	156024	98.33	231925	229585	98.99	1462	1471
2013-14	182726	178210	97.53	117084	113898	97.28	641	639
2014-15	243910	242870	99.57	198764	195133	98.17	797	803
2015-16	212725	203020	95.44	227203	216721	95.39	1068	1067
2016-17	181712	173515	95.49	206960	197875	95.61	1139	1140
2017-18	97797	92293	94.37	130197	123654	94.97	1331	1340
2018-19	68784	65269	94.89	89306	84773	94.92	1298	1299
2019-20	60216	56054	93.09	89605	82934	92.55	1488	1480
2020-21	124286	118030	94.97	182705	173764	95.10	1470	1472

Source: Vital Agricultural Statistics, Government of Rajasthan

Table 2: Seed production of coriander variety RKD 18 under Agriculture University, Kota through CSS-MIDH (Centrally Sponsored Scheme-Mission for Integrated Development of Horticulture, Directorate of Arecanut and Spices Development, Kozhikode) funding

Year	Class of seed	Total coriander production (q)	Production of RKD 18 (q)	% Share of RKD 18	Approx. Revenue generated @ Rs. 7000/ qtl (Rs. in lakh)	Seed lifting agencies
2015-16	TL	318.86	35.80	11.22	2.51	Govt. of Raj. and farmers
2016-17	TL	375.72	265.86	70.76	18.61	Govt. of Raj. and farmers Private firms
2017-18	TL	172.83	150.07	86.83	10.50	Private firms, farmers
2018-19	TL	247.40	243.90	98.58	17.07	Private firms, farmers
2019-20	TL	185.81	185.56	99.86	12.99	Private firms, farmers
2020-21	TL	172.40	168.15	97.53	11.77	Private firms, farmers
2021-22	TL	250.19	247.04	98.74	17.29	Private firms, farmers
Total		1723	1296	75.23	90.75	

Source: University's internal official reports, annual progress reports of CSS-MIDH.

cloned to get the nucleotide sequences linked to a trait of interest. This genotype could be efficiently utilized in crop genetic improvement and breeding programs. Later, Choudhary *et al.* (2022) while studying genetic divergence in coriander genotypes also observed this genotype diverse from other genotypes and suggested inter cluster crossing among diverse genotypes for exploitation of heterosis for economically important traits.

Thus, the superiority of variety Pratap Raj Dhania 1 in various aspects has been reported by several other researchers also highlighting its suitability for mass multiplication. It can be hoped that increased seed production of this variety in larger area will help to fulfil the quality seed requirement of coriander farmers of Rajasthan.

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