



CO (CR) 4 - A new short duration coriander

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Abstract : Coriander CO (CR) 4 is a selection from germplasm received from Regional Research Station, LAM, Guntur, Andhra Pradesh. The plant grows on an average to a height of 35 cm, pink coloured at the basal portion of the main stem, semi erect in growth habit with shorter internodes, grains bold, oval shaped with 18.60 g for 1000 seed weight, attractive straw yellow coloured. It gives an average yield of 587.20 kg and 539.40 kg per ha under irrigated and rainfed conditions which is 24.57 per cent and 16.02 per cent higher than CO 3 with an essential oil content of 0.41 and 0.39 per cent respectively. It is an early maturing variety with a duration of 65-70 days compared to 85 to 105 days for CO 3 amenable for crop rotation, mixed cropping and intercropping systems, moderately field tolerant to wilt and aphids and highly suitable for dry lands and black cotton soils of South Tamil Nadu.

Key words : Coriander, CO (CR) 4, Short duration, High yield, Crop rotation

Introduction

Coriander (*Coriandrum sativum* L.) is an annual herb, mainly cultivated for its fruits as well as for the tender green leaves. The crop is cultivated in India in about 5.21 lakh ha contributing for a production of 3.08 lakh tonnes with an average productivity of 590 kg ha⁻¹. India exported around 17,300 MT of coriander seeds worth of Rs. 37.81 crore during 1998-1999 (Shailaja *et al.* 2000). It is an important subsidiary crop in black cotton soils of Deccan South India (Andhra Pradesh, Maharashtra and Tamil Nadu). Though major portion is consumed locally, a small quantity is being exported now. At present, the area under cultivation is diminishing and there is an urgent need for increasing the productivity of the crop. Developing high yielding varieties with pest and disease resistance will play a major role in increasing the productivity of this crop. In addition to this, the other objective is to evolve an early variety suitable for crop rotations, mixed cropping, inter cropping and rainfed cultivation. With these objectives, the new coriander variety CO (CR) 4 was developed by Department of Spices and Plantation Crops, HC & RI, TNAU, Coimbatore and it was released for cultivation in the year 2002.

Materials and Methods

The variety CO (CR) 4 was developed at the Department of Spices and Plantation Crops, TNAU, Coimbatore by selection. The variety CO (CR) 4 is a reselection from germplasm (ATP. 77) maintained at Regional Research Station, Lam, Guntur, Andhra Pradesh. The performance for yield potential and other morphological traits was assessed under a culture number CS.14 during 1996 -2000. Its productivity and other morphological traits were tested under Multi Location Trials (MLT), both under irrigated and rainfed conditions and Adaptive Research Trials (ART) at 15 villages under irrigated conditions and 5 villages under rainfed conditions. The desirable plant characters as well as oil content were assessed at HC & RI, TNAU, Coimbatore in comparison with CO.3 coriander.

Based on the overall performance, the culture CS.14 was also tested under comparative yield trial (1995-97) in AICRP on Spices with other seven accessions for their desirable attributes of this variety. The pest and disease incidence was scored for this variety, in comparison with CO.3 as a check and the field tolerance was evaluated.

Table 1. Performance of CO (CR) 4 (CS.14) at Horticultural College and Research Institute, Coimbatore

No.	Particulars	Grain yield (kg ha ⁻¹)					Mean
		1996	1997	1998	1999	2000	
	CO (CR) 4 (CS.14)	550	620	520	602	655	589.40
	CO.3 (Local check)	417	553	500	463	504	490.00
	Percent increase over check	31.89	12.11	4.00	30.00	20.90	29.82

Table 2. Performance of CO (CR) 4 (CS.14) under Multilocation trials (Irrigated condition)

No.	Name of Centre	Grain yield (kg ha ⁻¹)		Percentage increase over check
		CO (CR) 4 (CS.14)	CO.3 (Check)	
	Regional Research Station, Paiyur	577.50	377.00	53.18
	Vegetable Research Station, Palur	530.00	360.00	47.22
	Agricultural Research Station, Paramakudi	485.00	437.50	10.85
	Sugarcane Research Station, Sirugamani	587.50	567.50	3.52
	Agricultural College & Research Institute, Madurai	700.00	587.50	19.14
	Mean	576.00	465.90	26.78

Table 3. Performance of CO (CR) 4 (CS.14) under Multilocation trials (Rainfed condition)

No.	Name of Centre	Grain yield (kg ha ⁻¹)		Percentage increase over check
		CO (CR) 4 (CS.14)	CO.3 (Check)	
	Agricultural Research Station, Kovilpatty	590.00	490.00	20.41
	Regional Research Station, Aruppukottai	550.40	475.10	15.85
	Mean	570.20	482.55	18.13

Results and discussion

The culture CS. 14 was tested for five years in yield trials from 1996-2000 in the Department of Spices and Plantation Crops, IC & RI, TNAU, Coimbatore. An average grain yield of 589.40 kg/ha with an increase of 29.82 percent over CO.3 the check (Table 1) was recorded.

The culture CS. 14 was evaluated in multi location trial (MLT) during 2000 in 5 locations under irrigated conditions and two locations under rain fed conditions. Under irrigated

conditions, the yield in all locations was consistently superior than the check CO.3. The mean grain yield was 576.00 kg ha⁻¹ in CS.14 as against 465.90 kg ha⁻¹ in CO 3 (check) resulting in an increase of 26.78 per cent. Under rainfed conditions also, the same trend was observed. The percentage of increase over check was 18.13 in CS. 14 as compared of CO.3 (check) (Table 3).

The stability in yield potential of CS. 14 was also confirmed through 20 Adaptive Research Trials (ART) conducted both under

Table 4. Performance of CO (CR) 4 (CS.14) at Farmers holding (ART) under irrigated condition.

S.No.	Village	District	Grain yield (kg ha ⁻¹)		Per cent increase over check
			CO (CR) 4 CS.14	CO.3 (Local check)	
1.	Thuraiyur	Perambalur	520	360	14.44
2.	Erakudi	Perambalur	530	380	19.47
3.	Perambalur	Perambalur	520	390	13.33
4.	Pusampatti	Trichy	565	540	4.44
5.	Kulithalai	Karur	558	533	4.69
6.	Ayyairmalai	Karur	563	530	6.22
7.	Kottaimadu	Karur	582	552	5.43
8.	Cholakattai	Dharmapuri	696	570	2.10
9.	Chettikarai	Dharmapuri	688	600	4.66
10.	Codasalpatti	Dharmapuri	685	623	9.95
11.	Maniyampadi	Dharmapuri	498	395	6.07
12.	Kadathur	Dharmapuri	663	618	7.28
13.	Keelakaraisalkulam	Tirunelveli	600	559	7.33
14.	Subbiahpuram	Tirunelveli	650	568	4.43
15.	Devipattinam	Tirunelveli	625	535	6.82
Mean			596.20	516.87	17.11

Table 5. Performance of CO (CR) 4 (CS.14) at Farmers holding (ART) under rainfed condition

S.No.	Village	District	Grain yield (kg ha ⁻¹)		Per cent increase over check
			CO (CR) 4 CS.14	CO.3 (Local check)	
1.	Chikkanthampur	Perambalur	480	360	33.33
2.	Renganthapuram	Perambalur	490	400	22.50
3.	Kattarimadu	Trichy	543	528	2.84
4.	Rayagiri	Tirunelveli	510	488	4.50
5.	Meenakshiapuram	Tirunelveli	520	489	6.33
Mean			508.60	453.00	13.90

Table 6. Performance of CO (CR) 4 (CS.14) at Horticultural College and Research Institute, Coimbatore

S.No.	Characters	CO (CR) 4 (CS.14)	CO 3
1.	Plant height (cm)	35.00	37.35
2.	No. of branches/plant	5.5	5.47
3.	No. of umbels/plant	14.83	17.27
4.	No. of umbellets/umbel	5.07	4.13
5.	Duration (days)	65-70	85-105
6.	Essential oil %	0.41	0.39
7.	1000 grain weight (g)	18.60	16.30
8.	Yield (kg/ha)	589.40	490.00

Table 7. Quality assessment of CO (CR) 4 (CS.14)

No.	Characters	CO (CR) 4 (CS.14)	CO. 3
	Moisture content (%)	6.30	6.35
	Protein (%)	1.50	1.30
	Total ether extract (fat %)	20.00	18.70
	Volatile oil (%)	0.41	0.39
	Crude fibre (%)	32.60	30.00
	Total ash (%)	5.70	5.30
	Vitamin A (I.U/100 g)	180	165
	Vitamin C (mg/100 g)	13.00	10.00

Table 8. Performance of CO (CR) 4 (CS.14) and CO. 3 under rainfed and irrigated condition

No.	Details	CO (CR) 4 (CS.14)		CO.3		Per cent increase over check	
		Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed
	HC & RI, Coimbatore	589.40	-	490.00	-	29.82	-
	MLT	576.00	570.20	465.90	482.55	26.78	18.13
	ART	596.20	508.60	516.87	453.00	17.11	13.90
	Mean	587.20	539.40	490.92	467.78	24.57	16.02

Table 9. Comparative performance of CS.14 and other cultures

Acc.No.	No. of umbels/plant			No. of umbellets/umbel			Yield (kg/plot)			Estimated yield (kg ha ⁻¹)
	1995-1996	1996-1997	Mean	1995-1996	1996-1997	Mean	1995-1996	1996-1997	Mean	
DH 36	19.20	17.76	18.48	4.80	5.30	5.05	0.216	0.336	0.276	276
ATP 102	21.13	18.90	20.01	4.60	7.30	5.82	0.403	0.332	0.367	367
CC 462	23.87	15.66	19.76	5.07	5.83	5.45	0.400	0.449	0.424	424
JCO 123	19.00	15.60	17.30	5.13	4.93	5.03	0.700	0.750	0.725	725
UD 446	19.60	15.00	17.30	4.93	4.53	4.73	0.618	0.518	0.568	568
ATP 77 (CS.14)	14.83	17.66	13.24	4.13	4.93	4.53	0.583	0.620	0.601	601
DH 38	21.33	18.30	19.81	4.40	4.60	4.50	0.330	0.350	-	-
1080	17.80	15.73	16.76	5.60	5.10	5.40	0.883	0.850	0.866	866
748	23.53	11.60	17.56	5.20	5.70	5.50	0.667	0.610	0.638	638
462	15.50	11.73	13.61	5.30	5.20	5.30	0.352	0.370	0.361	361
CO.3	19.93	15.50	17.71	5.40	4.40	4.40	0.883	0.950	0.916	916
CD	2.34	1.96	-	NS	NS	-	0.025	0.019	-	-

(P=0.05)

Table 10. Disease incidence (wilt) in CO (CR) 4 (CS.14) at Horticultural College and Research Institute Coimbatore

S.No.	Diseases	Year					Mean
		1996	1997	1998	1999	2000	
1.	CO (CR) 4 CS. 14	16.5	12.5	10.0	11.5	13.0	12.5
2.	CO.3 (Local check)	26.4	28.5	27.5	27.8	29.5	28.2

Table 11. Powdery mildew incidence in CO (CR) 4 (CS.14) at Horticultural College and Research Institute Coimbatore

S.No.	Particulars	Year		Mean
		1999	2000	
1.	CO (CR) 4 (CS.14)	65.0	74.8	69.9
2.	CO.3 (Local Check)	71.0	80.0	75.5

Table 12. Aphid incidence in CO (CR) 4 (CS.14) at Horticultural College and Research Institute, Coimbatore

S.No.	Particulars	Aphid incidence (grade – 1-5 scales)*		Mean
		1999	2000	
1.	CO (CR) 4 (CS.14)	2	2	2
2.	CO.3 (Local Check)	4	4	4

* Grade = 1 to 10% infested plants

Grade 3 = 11 to 25% infested plants

Grade 4 = 26 to 50% infested plants

rainfed and irrigated conditions in 15 different locations. The results of 15 locations revealed that the culture CS.14 was superior than the check variety by registering an increased yield of 17.11 per cent over CO.3 by recording an average yield of 596.20 kg ha⁻¹ in 70 days duration (Table 4). At farmers holding the culture CS. 14 was superior in registering an yield of 508.60 kg ha⁻¹ than CO.3 (453.00 kg ha⁻¹) (Table 5).

The performance of CS. 14 was tested at HC & RI, TNAU, Coimbatore. The plant growth characters, yield, oil content and other

desirable attributes were recorded and compared with CO 3 (check). The cultivar CS. 14 / CO (CR) 4 is semi-tall, grows up to a height of 35 cm and it is an early-maturing variety and has a duration of 65-70 days compared to 85-105 days for CO.3. The grains are bold, oval shaped with 18.60 g for 1000 seed weight and are attractive straw yellow in colour. Hence, it is highly suitable for crop rotation, mixed cropping and inter cropping systems (Table. 6).

The quality assessment of CO (CR) 4 - CS. 14 was carried out with CO.3 as check

able 7). The quality of grains was also high in CS. 14 with an essential oil content of 11 per cent while CO 3 had 0.39 per cent. The crude fibre content is also more in CS.14 and also vitamin A and vitamin C were found to be (180 IU/100 g) and 13.00 mg/100g respectively.

The overall performance of this variety CS.14 was also tested in different trials viz. LT, ART at Horticultural College and Research Institute, TNAU, Coimbatore (Table 8) under irrigated and rainfed conditions. In all the conditions, the culture CS.14 registered the highest mean yield (587.20 kg and 539.40 in irrigated and rainfed condition respectively) than CO.3.

In AICRP trials, the culture CS.14 was tested from 1995 to 1997 with 10 accessions for yield and other characters. The culture CS.14 recorded the highest yield in all seasons tested compared to CO.3.

The disease incidence of wilt noticed in CS.14 was compared with CO.3 (local check) (Table 10). The scoring of disease incidence carried out from 1996 to 2000 revealed that the CS. 14 recorded only the mean incidence

of 12.5% as compared to CO.3 as local check (28.2%). The powdery mildew incidence was less in CS. 14 (69.9%) than CO.3 (75.5 %). (Table 11). From these results it could be concluded that the variety was moderately tolerant to wilt and powdery mildew under field conditions.

The occurrence of aphid was compared with CO.3 as local check during 1999 and 2000. (Table 12). The results revealed that the CS. 14 recorded the lowest grade of 2.00 for aphids compared to CO.3 (grade. 4). From this results it could be concluded that CS. 14 was tolerant to aphids under field conditions.

Considering all the desirable attributes and high yielding potential as well as shorter in duration, the coriander culture CS.14 was released as CO (CR) 4 during 2002 in Tamil Nadu by Tamil Nadu Agricultural University.

Reference

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