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NEW JASSID RESISTANT COTTON VARIETY KC.2 (KOVILPATTI CAMBODIA-2)

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ABSTRACT

A new cambodia cotton variety KC.2 combining moderate resistance to leaf hopper, high yield and suitable for cultivation in rainfed black soil tract of Tuticorin, Tirunelveli and Virudhunagar districts of Tamil Nadu during North-East Monsoon was released in January 1997. This cultivar was developed from a cross involving MCU.10, a black arm resistant variety and KC.1, a jassid resistant strain. It has an average seed cotton yield of 772 kg/ha under rainfed condition which is 18% increase over LRA. 5166 and 11% increase over MCU.10. It has got a good ginning outturn of 37.5% and fibre length of 24.4 mm. It comes under medium staple category. The variety KC.2 has a good CSP value of 2412 for nominal 40's count as against standard CSP value of 2040. It has got a high yielding potential of 23.65 q/ha under favourable conditions.

KEY WORDS: Cambodia cotton, KC.2, Leaf hopper, Resistance

Cotton is an important commercial crop and it is considered as "Queen among fibres". Cotton earns foreign exchange of about Rs. 150 crores annually by export of sizable quantity of long and extra long staple cotton in India. But, our requirement of medium staple cotton is more. Though India occupies first place in world cotton area, it stands only in the third place with reference to world cotton production.

The reason for low production is mainly due to the fact that cotton crop is being cultivated as rainfed crop in about 60 to 70% of cotton area in India. In Tamil Nadu, cotton is cultivated in about 2.25 lakhs hectares with an annual production of

about 5 to 7 lakhs bales of lint. We have to step up medium staple cotton production especially under rainfed condition to obtain the targetted production. In cotton, leaf hopper (Jassid) is a serious pest which limits the crop growth and yield considerably. Most of the farmers in rainfed cotton area are not taking up proper protection measures in the early stages of crop growth which result in low production.

Therefore, with a main objective of evolving a jassid resistant and medium staple Cambodia (*Gossypium hirsutum*) cotton strain with high seed cotton yield, tolerance to drought and suitable for

Table 1: Overall mean performance of New Cotton Variety KC.2(TKH. 590) (Mean of 1990-91 to 1995-96)

S.No.	Yield, economic and fibre characters	KC.2 Cotton (TKH.590)	LRA. 5166 Cotton (Check)	MCU.10 Cotton (Check)	Increase of KC. 2 over LRA. 5166	Increase of KC. 2 over MCU.10
1.	Mean Seed Cotton Yield (Kg/ha)	772	655	698	17.9%	10.6%
2.	Highest Seed Cotton Yield (Kg/ha)	2365	2120	1615	11.5%	46.4%
3.	Mean Ginning Outturn (%)	37.5	34.5	35.2	8.7%	6.5%
4.	Mean Halo length (mm)	24.4	25.4	24.6	-	-
5.	Mean 2.5% span length (mm)	24.2	25.2	24.6	-	-
6.	Mean Micronaire value (10-6 gram/inch)	3.77	3.80	3.54	-	6.5%
7.	Mean Maturity Co-efficient	0.71	0.71	0.69	-	2.9%
8.	Mean Bundle strength (gram/tex)	19.8	22.1	20.7	-	-
9.	Mean Micro spinning Value (CSP for nominal 40's Count)	2412	1992	2037	21.1%	18.4%
10.	Mean Fibre elongation (%)	5.0	5.2	5.3	-	-

Note : Standard CSP for 40's count = 2040. The New Cotton Variety KC.2(TKH.590) recorded good CSP of 2412 for 40's Count when compared to LRA 5166 and MCU.10.

cultivation in the rainfed black soil tract of Tuticorin, Tirunelveli and Virudhunagar districts of Tamil Nadu, breeding work was taken up at Agricultural Research Station, Kovilpatti. The concentrated breeding work in this line resulted in the release of jassid resistant, medium staple cambodia cotton strain KC.2 during January 1997.

MATERIALS AND METHODS

In order to achieve the above mentioned objective, crop improvement work was taken up at Agricultural Research Station, Kovilpatti to evolve a jassid resistant and medium staple Cambodia cotton variety superior to the existing strains viz., LRA 5166 and MCU.10 in seed cotton yield.

As a result of concerted breeding work, a promising culture TKH. 590 was identified which possessed resistance to jassid with higher seed cotton yield than the ruling strains LRA. 5166 and MCU.10 and suitable for cultivation under rainfed black soil condition. This culture was developed by pedigree method of breeding viz., hybridization and selection. The culture TKH.590 is a hybrid derivative obtained from the cross combination of MCU. 10 x KC.1. The ovule parent MCU. 10 is a black arm (Bacterial blight) resistant variety and the pollen parent KC. 1 is a jassid resistant variety. The performance of the culture TKH. 590 with reference to its resistance to jassid, seed cotton yield and fibre quality characters in comparison

with the ruling strains LRA.5166 and MCU. 10 was systematically evaluated in station trials from 1990-91 to 1995-96 and in All India Co-ordinated Cotton Improvement Project (AICCIP) trials and Adaptive Research Trials (ART) in farmers' fields from 1993-94 and the results reported.

RESULTS AND DISCUSSION

The results on the performance of the promising culture TKH.590 with reference to seed cotton yield and fibre quality characters are presented in Table 1 and its resistance reaction against leaf hopper is presented in Table 2.

In station trials, the culture TKH.590 has recorded a mean seed cotton yield of 667 kg/ha which is 31% higher than LRA. 5166 and 28% higher than MCU.10. In All India Trials, the culture TKH. 590 has given a mean seed cotton yield of 702 kg/ha which is 12% increase over LRA. 5166. In Adaptive Research Trials, the culture TKH. 590 out yielded LRA. 5166 by 14% and MCU. 10 by 8% by recording a mean kapas yield of 947 kg/ha over 23 trials in farmers' fields. Further, it is worth to note that the culture TKH. 590 has given the highest seed cotton yield of 23.65 q/ha at Naranapuram in Virudhunagar district which is 12% increase over LRA. 5166 (21.20 q/ha), the ruling check variety. This clearly indicates the high yielding potential of the culture TKH. 590 under favourable condition.

Table 2 : Reaction of cotton variety KC.2(TKH.590) to leaf hopper (jassids)

S.No.	Variety Check	Leaf hopper (Jassid) injury grade 1 to 4					Mean
		1990-91	1991-92	1992-93	1993-94	1994-95	
1.	KC.2 Cotton (TKH. 590)	1.67	1.30	1.10	1.00	1.03	1.22
2.	LRA. 5166 (Check)	3.67	3.00	3.00	3.08	1.77	2.90
3.	MCU. 10 (Check)	3.33	2.50	2.33	2.00	1.50	2.33

Note : Cotton Variety KC.2 (TKH.590) recorded a mean grade of 1.22 indicating moderate resistance to leaf hopper (Jassids).

The overall mean performance of the culture TKH.590 (Table 1) showed a mean seed cotton yield of 772 kg/ha with 18% higher yield over the check variety LRA.5166 and 11% increase over the other check variety MCU.10, having mean ginning outturn of 37.5% and mean fibre length of 24.4 mm. The crop duration is 140-150 days (Medium duration).

The fibre quality characters viz., fibre length, fibre fineness, fibre strength, fibre elongation and micro spinning of the culture TKH 590 tested by the Cotton technological Research Laboratory., Coimbatore over five years (Table 1) showed that this culture is capable of spinning 40's count recording a good count strength product of 2412 against the required a good count strength product of 2412 against the required standard CSP value of 2040 for nominal 40's count. As such, the culture TKH.590 is found to be better than the check varieties LRA. 5166 and MCU. 10 in fibre fineness (micronaire), fibre maturity and micro spinning.

The culture TKH.590 was tested for its resistant reaction against jassid by Entomologist over five years and test results (Table 2) indicated its moderate resistance (injury grade 2) during 1990-91 and 1991-92 and resistant reaction (injury grade 1) during 1992-93, 1993-94 and 1994-95.

The mean data over five years showed that the culture TKH. 590 is moderately resistant to leafhopper which is an added advantage of this culture.

Because of the superior performance of the culture TKH.590 in seed cotton yield and fibre

quality characters with the added advantage of its moderate resistance to jassids, it has been released as new strain KC.2(Kovidpatti Combodia 2) for general cultivation.

The new strain KC. 2 will replace the ruling strain LRA. 5166 in about one lakh hectare in the rainfed black soil tract of the southern districts. The mean seed cotton yield of the new strain KC.2 is 772 kg/ha under rainfed black soil condition with higher yield of 117 kg/ha over the ruling strain LRA. 5166 (655 kg/ha) which works out to an additional lint production of 25,000 bales which may result in an additional income of about Rs.12.77 crores annually to the Tamil Nadu State.

Key Characters

1. Flower colour is light yellow, anther colour is buff and petal spot is absent.
2. Leaves: dark green, small to medium, slightly cup shaped with 3-5 slightly cut lobes and nectary present.

Considering the better performance of the culture TKH.590 for seed cotton yield and fibre quality characters with the added advantage of jassid resistance and realising the importance of medium stable cotton production under rainfed condition, the Tamil Nadu State Variety Release Committee released this culture as new strain KC.2 (Kovilpatti Cambodia-2) for general cultivation in the rainfed black soil tract of Tuticorin, Tirunelveli and Virudhunagar districts during January 1997.

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