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Short Communication

RT 351 - A Multicapsular High Yielding White Seeded Sesame Variety

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Sesame (*Sesamum indicum* L.), commonly known as *til*, is the oldest indigenous oilseed crop cultivated in the world, particularly in Asia and Africa for its excellent nutritional, medicinal, cosmetic and cooking qualities of its oil (Duhoon *et al*. 2000). It is a rich source of protein (24%) and carbohydrate (15%) in addition to excellent source of quality oil (50%). In India it is grown in of 18.7 lakh hectares area with production of 7.6 lakh tonnes (Anonymous, 2009a). Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Maharastra, Andhra Pradesh, Orissa, Tamil Nadu, West Bengal and Karnataka are major sesame growing states of India. In Rajasthan, it is grown over an area of 5.47 lakh hectares with production of 2.23 lakh tonnes (Anonymous, 2010). Nearly 30% of the area and production of sesame is from Rajasthan state, but the productivity of the crop is low (408 kg ha^{-1}). Farmers of the state, particularly of western region, prefer to grow multicapsular sesame, but the such available cultivar is highly susceptible to diseases and pests. Although AICRP, Mandor centre has released three white seeded high yielding sesame varieties, namely RT 46 (1990), RT 127 (1999) and RT 346 (Kumhar *et. al*., 2009) which also predominate in cultivation of sesame in the state, but all these are having alternate arrangement of capsules (1-2 capsules per node) on plants.

The multicapsular, white and bold seeded sesame variety, RT 351 was developed by pedigree method from the cross between NIC 8409 × RT 127 at AICRP (Sesame) Mandor, Jodhpur. RT 351 was tested at 10 locations in 2007 and 11 locations in 2008 (AVT-I) and 2009 (AVT-II) in All India Coordinated trials of sesame (Anonymus, 2007, 2008, 2009). The recommended package of practices was followed while conducting the trials. The variety was also screened for its agronomical adaptability for different cropping situations and for diseases and pests at different coordinated centres all over India. The observations for seed yield (kg ha^{-1}) and ancillary data including insect pests were recorded and analyzed.

The seed yield data of variety RT 351 was recorded along with two checks viz., Pragati (Zonal check) and TKG 22 (National check) at different locations of National Zone-I comprising Agra, Amreli, Dhaulkuan, Hissar, Jalgaon, Latur, Ludhiana, Bhilwara, Sumerpur and Mandor) are presented in Table 1. The average seed yield of RT 351 was 629 kg ha^{-1} as against 577 kg ha^{-1} of TKG 22 and 531 kg ha^{-1} of Pragati with yield improvement of 8.9 and 18.3% over the check varieties, respectively. The RT 351 recorded an average oil yield of 308 kg ha^{-1} (Table 2) which is 14.3 and 19.8% higher over both the checks TKG 22 and Pragati, respectively. The data indicated that RT 351 is earlier in maturity (85 days) with average plant height of 100.6 cm., higher 1000- seed weight (3.0 g), oil content (49.7%) and number of capsules per plant (47) compared to the checks. The plant type is branched and dark green in colour with sparse hairy multi-capsules (2-5 capsules $node^{-1}$). Seed colour is shining white, which is suitable for export purpose. This newly selected variety also showed tolerance to *Macrophomina* stem & root rot, leaf curl, phyllody, Cercospora leaf spot and capsule borer (*Antigastra*) (Table 3). In Adaptive trials, RT 351 recorded 10.6% yield increase over the best adapted variety RT 46 (226 kg ha^{-1}) at farmers' field.

Looking to its consistence superior performance under rainfed conditions, variety RT 351 was identified by the Varietal Identification Committee in the Annual Group Meeting on Sunflower, Sesame & Niger held at TNAU, Coimbatore from 8-10 April 2010 and subsequently released by Central Sub-Committee on Crop Standards, Notification and Release of Variety Vide notification S.O. 632(E) dated 25.3.2011 for the commercial cultivation in hot and arid ecosystem areas of the National Zone-I, comprising of Rajasthan, Haryana, Punjab, Himachal Pradesh,

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Table 1. Summary seed yield (kg ha^{-1}) data of Coordinated Varietal Trials

Trial	No. of locations	RT 351	Pragati (ZC)	TKG 22 (NC)	Per cent increase over checks	
					Pragati	TKG 22
IVT (2007)	10	876	769	753	13.9	16.3
AVT-I (2008)	11	563	445	560	26.5	0.5
AVT-II (2009)	11	469	401	434	17.0	8.1
Mean	32	629	531	577	18.3	8.9
Frequency in the top 16/323 significant group (Pooled for 3 years)			5/32	9/32	-	-

Table 2. Summary oil yield (kg ha^{-1}) data of Coordinated Varietal Trials

Location/ Entry	IVT (2007)	AVT-I (2008)	AVT-II (2009)	Mean	Per cent over	
					TKG 22	Pragati
RT 351	450.3	226	258	308	14.3	19.8
Pragati (ZC)	377.6	199	195	257		
TKG 22 (NC)	327.7	214	274	270		

Gujarat, Western U.P. and adjoining areas of Maharashtra and Karnataka.

Thus, this multicapsular variety has potential for higher seed yield, oil content, more number of capsules plant^{-1} and moderately tolerance against major diseases and insect pests, which offers a promise to increase the production and productivity of sesame in Rajasthan as well in India. Also the whiteness and bold seed size of the developed variety shall increase export avenues and the variety also meets the preference of the farmers' for multi-capsular nature.

Table 3. Important characteristics of sesame variety RT 351 compared to checks (2007 to 09)

Characteristics	RT 351	Pragati (ZC)	TKG 22 (NC)
Seed colour	White	White	White
Days to 50% flowering	41.0	43.0	42.0
Days to maturity	85.0	86.0	86.0
Plant height (cm)	100.6	101.2	102.6
No. of branches plant^{-1}	3.4	3.6	3.6
No. of capsules plant^{-1}	47.0	45.0	46.0
1000 seed weight (g)	3.0	2.9	2.8
Oil content (%)	49.7	47.2	49.1
Oil yield (kg ha^{-1})	308.0	257.0	270.0
Macrophomina stem and root rot (%)	8.3	9.2	14.7
Phyllody (%)	4.3	3.6	5.6
Capsule borer damage (%) due to *Antigastra*	8.0	5.8	8.0

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