

Short communication

BRASSICA model and its testing in different agroclimatic zones of Gujarat

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Crop growth simulation models have been used in yield gap analysis and to assist in crop system decision management to increase the yield. Many workers (Agrawal and Kalra 1994; Boote *et al.*, 1991; Singh *et al.*, 1994) have evaluated the performance of crop simulation models in India for wheat (WTGROWS) and groundnut (PNUTGRO) crops. BRASSICA model was developed by Rao (1992) for mustard crop under non limiting moisture and nutrient conditions. This model was developed with the data set generated at Delhi which need to be validated for other locations.

The present study was undertaken to apply the BRASSICA model using experimen-

tal data collected during 1992-93 to 1994-95 at Anand (23° 35' N; 72° 55' E; 45.1m) and during 1992 at Sardar Krishinagar (24° 19' N; 72° 19' E; 154.5 m) stations of Gujarat Agricultural University, Gujarat. The experiment was conducted with different planting dates at both the stations. Irrigations and fertilizers were applied as per recommendation and the planting density (15m²) was kept same at both the stations.

Table 1 shows that the simulated data of various developmental stages by the model were reasonably accurate. However, the dates to maturity predicted were found to increase with delayed sowing whereas they actually decreased. The maximum seed yield was ob-

Table 1 : Observed and simulated phenological stages, seed yield and biomass yield of mustard at Sardar Krishinagar

Parameters	Observed			Simulated		
	Oct. 13	Oct. 23	Nov. 2	Oct. 13	Oct. 23	Nov. 2
Phenological Stages (DAS)						
Emergence	5	4	4	3	3	3
Flowering	39	38	39	39	39	39
Maturity	109	107	104	99	100	102
Seed yield (Kg ha ⁻¹)						
	2417	2435	2065	2145	2180	2210
Bio mass (Kg ha ⁻¹)						
	6350	6825	5873	7678	7373	7379

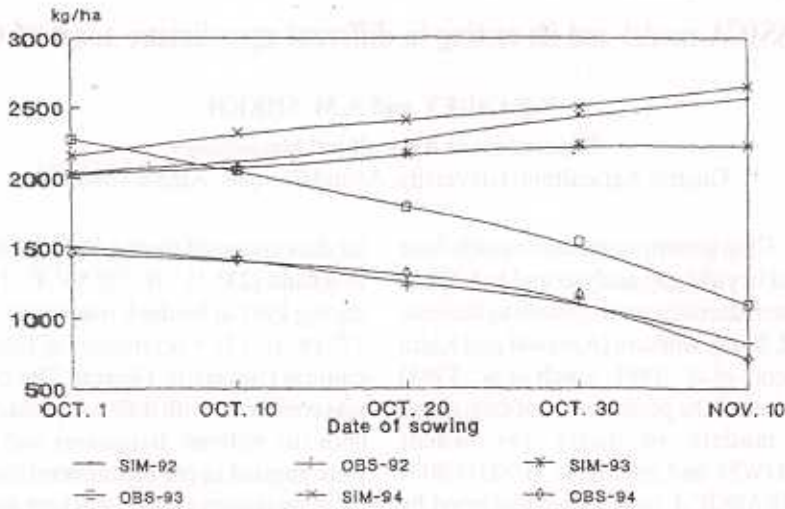


Fig 1 Observed and simulated seed yield of mustard at Anand

tained with the crop sown on October 23rd which is the optimum date of sowing whereas the model simulated higher yield with delayed sowing (Table 1). The observed biomass was maximum with the crop sown on 23rd October while the simulated biomass was maximum with the crop sown on 13th October. Moreover, the simulated biomass were slightly higher than the observed one indicating over-estimating nature of model simulation for this

location.

The observed and simulated seed yield of mustard at Anand from year 1992-93 to 1994-95 are presented in Fig.1. The observed seed yield was found to decrease with the delayed sowing while model simulated increasing trend. The study reveals that BRASSICA model simulated the phenology and seed yield reasonably well at the two locations.

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