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STUDIES ON DATE OF HARVEST ON THE YIELD AND QUALITY OF SEED IN SOYBEAN (GLYCINE MAX (L.) MERRILL)

D. KALAVATHI AND K. R. RAMASWAMY

A field trial was laid out to study the effect of harvesting the seed crop on 45th.

45th 50th 55th and 60th day after 50 per cent flowering on seed yield of soybean cv. CO 1.

The study indicated that pod moisture content decreased from 69.49 per cent on 40th day to 18.65 per cent on 60 th day. Likewise, the seed moisture content decreased from 68.18 per cent to 15.48 per cent for the same period. Number of pods and seeds per plant seed yield per plant and shelling percentage were significantly more from the harvest made on 55th day than the early or late harvests. The recovery of large Size seed increased with increase in the days of harvest upto 55 days and thereafter declined.

Seed production specialists have been employing several parameters to monitor the physical, physio. logical, biochemical and functional changes that occur during seed development and maturation and to fix the stage at which the seed attains the peak quality. Some of the simple but reliable parameters are the assessment of dry matter accumulation due to deposition of reserve nutrients such as protein, starch and oil (Agrawal, 1977) and variation in germinability and vigour (Bharathi, 1978; Dutta, 1979). Most of these researchers have not considered the influence of spread of anthesis period on seed quality. Anderson (1975) delineated the 50 per cent flowering stage as the mid point of anthesis to measure the crop maturity, coincident with maximum viability and vigour of seeds. So in soybean, 50 per cent flowering stage was studied in relation to seed yield and quality ao confirm its applicability as a simple measure of harvestable ind easy

maturity for adoption by the seed producers. Taking these into consideration, a study was made to study the effect of date of harvest on seed yield and quality.

MATERIALS AND METHODS

A field trial was laid out with soybean cv. CO 1 during June 1984. The details of the experiment are as follows.

- Design Randomised
 Block Design
- 2. Replications: Five
- Treatments :.
 - H₁ = Harvesting of pods at 40 days after 50 per cent flowering
 - He = Hervesting of pods at 45 days after 50 per cent flowering
 - H= Harvesting of pods at 50 days after 50 per cent flowering

Table 1: Influence of different harvest dates on moisture content of pod and seed (pit cent) and seed (pit

Parameters	Days after 50% flowering						
	H	H ₂	HJ	H ₄	H ₄	CD	
Moisture content of pod	69,49	62,79	56,17	37.54	18,65	0.376	
, č. 1. ří.	(56.48)	(52,20)	(48.55)	(37.76)	(25.58		
Moisture content of seed	68.18	60.98	52.85	34.54	15,58	0,34*	
-	(55.66)	(50.33)	(46.08)	(35.99)	(23,15)		
Pod length	3,24	3,31	3.38	3.44	3.22	0.07**	
Number of matured pods per plant	46.49	55,08	60.46	66.73	65,60	5 71**	
Seed yield per plant	5.77	9.09	11,07	13.22	10.46	1.05**	
Shelling percentage	44 64	51,64	59,78	62,42	57.36	3,18**	
	(41,92)	(45,95)	(50.64)	(52,18)	(49.23)		
Number of seeds per plant	115 99	124,64	134.04	151,40	104,54	16.67**	

(Figures in parentheses are arcsine value)

Table - 2: Mean seed recovery of different size grades (per cent) and 100 seed weight (g) as influenced by harvest treatments in soybean cv. CO 1.

Parameters		Days after 50% flowering				
	, H	Н.	Н,	H ₄	H ₅	Mean
Seed recovery	2.02	12.52	48.93	60.31	52,25	44.01
	(7.79)	(19,77)	(44.98)	(50 96)	(47,86)	(34.27)
G ₁	27.71	43 36	31,28	28,13	34.08	41,14
	(31.18)	(40.96)	(33,97)	(32.02)	(32,75)	(34.37)
G,	70.27	44.12	19.77	11,56	14.21	39,98
. 75,	(57,46)	(41.60)	(26,18)	(6.59)	(25.82)	(34.17)
100 seed weight	# 1					
G ₁	6,255	8 616	9.520	10.765	11,053	9 242
G ₂	5,484	6,560	7,510	7.759	7.734	7,089
G _#	4,266	5,232	5.479	5.791	5,601	5,274
Viean	5,335	r 936	7,503	8.105	8,129	, ,

(Figures in parentheses are arcsine values)

	Seep recovery			100 seed wegiht			
	.14.	G -	HG	H	G	HC	
CD.	NS	IvS ·	7,92**	0,19**	0.14**	0.32**	

- H. * Harvesting of pods at 55 days after 50 per cent flowering
- H_c = Harvesting of pods at 60 days after 50 per cent flowering

4. Variety : CO 1

5: Plot-size : 2 m X-2.4 m

6. Spacing : 30 cm x 10 cm

7. Fertilizer : N : P : K.

(kg/ha) 40:80:40

The following observations were recorded in respect to the produce from ten randomly selected plants in each replication of each treatment.

- 1. Moisture content of pod
- 2, 'Moisture content of seed
- 3. Mean pod length
- 4. Number of matured pods per
- 5. Seed yield per plant
- 6. Shelling outturn
- Mean number of seeds per plant

The pods from different treatments were harvested, dried and hand shelled and were precleaned and size graced using 15,64" R (G₁), 14,64' R (G₂) and 14/64" P (G₂) round perforated sieves. The percentage recovery of seeds in each size fract ion was recorded on weight basis. The weight of 100 seeds was also recorded.

RESULTS AND DISCUSSION

Seed yield and quality were affected by the pre and post maturation condition (Kozlowski, 1972). Costa (1979) in soybean found that seed yield and quality decreased with delay in harvesting.

The present study indicated that the seed yield increased up to 55 days after 50 per cent flowering and thereafter it declined. The trend was similar with respect to the number of matured podas per plant, number of seeds per plant and seed yield per plant. The effect of pods per plant on seed yield observed in the present instance was in confirmity with that reported by Pande, and Torrie (1973). The pcd and seed moisture content was high in early harvest upto 55 days after 50 per cent flowering and it decreased in subsequent harvest. The decrease in moisture content of seeds associated with the degree of maturation, were evident in the studies of Ramakrishnan et al. (1979). The variation could be ascribed to the differences in the maturity of seeds and amounts and compostion of reserve foods accumulating in them (Delouche, 1973).

The shattering losses were also observed due to the delay in the date of harvesting of pods. In the present study shattering of seeds occurred to an extent of 21.0 per cent that caused reduction in seed yield. This is supported by similar results recorded by Jacqueline and Ramaswamy (1984).

A progressive increase in shell; ing percentage was observed up to 55 days after 50 per cent flowering. Identical results were obtained by Garcia and Hanway (1976). The recovery of large seeds (G,) increased with date of harvest and was more in the harvest at 55th day after 50 per cent flowing then it decreased. In contrast, the recovery of small seed (Ga) decreased up to 55th day after 50 per cent flowering and thereafter it increased. Seed size is a reflection of seed maturity (Austin, 1972). The high proportion of small size seed recovered from the hervest made 40, 45 and 50 days after 50 per cent flowering may be mainly due to shrivelled and immature seeds resulting from improper development and poor accumulation of food reserves. The seed size improvement was observed in the later harvest. The increase in seed size observed with increasing dates of maturity could be witnessed in the study redgiam carried out with by Karivaratharaju (1974).and Vanagamudi et al (1985).

An increasing trend in 100 seed weight was noticed with the increasing dates of harvest. According to Harcher and Purvis (1945) the seed weight exhibited positive association with embryo weight Bremner et al. (1963) found a linar relationship between seed size with the amount of reserve material in the seed. From these evidences and also from the high values pertaining to

the 100-seed weight of seeds harvested at 55 days after 50 per cent flowering, it could be concluded that the seed-filling would be maximum and complete only beyound 55days after 50 per cent flowering.

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