

Indices for proper stage of seed harvest in relation to seed quality in soybean

■ C.B. GARUD, S.B. BORGAONKAR AND B.N. CHINCHANE

SUMMARY

Studies on seed moisture, biochemical components in relation to stage of harvest were undertaken in five varieties viz., JS-335, JS-93-05, MAUS-71, MAUS-81 and MAUS-158. Seed moisture differed significantly due to genotypes while test weight and processing recovery were remain unchanged. Moisture content in soybean decreased with advancement of stage of harvest. Protein content was increased while oil content was decreased at subsequent harvesting stages.

Key Words : Moisture, Harvest, Biochemical components

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Soybean [*Glycine max* (L.) Merrill] has emerged as one of the major oilseed crop in India. It has brought revolutionary change in agriculture sector in the world. Expansion of soybean cultivation depend upon the availability of quality seed. To undertake good quality seed production and to avoid losses at the time of harvest, harvesting at physiological maturity is important. The study of processing recovery is important to ascertain the proper stage of harvest. The stage of physiological maturity could lead to a stage where seed can be harvested and stored for long period.

The experimental material comprised of five genotypes viz. JS-335, JS-93-05, MAUS-71, MAUS-81 and MAUS-158 was obtained from Soybean Research Station, Marathwada Agricultural University, Parbhani. The seed was sown at Soybean Research Station during *Kharif* 2008 in three replications in Factorial Randomized Block Design. The seed

was treated with thirum @ 3 g per kg before sowing. The seeds were sown on 5th July 2008. All the recommended cultural practices and plant protection measures were followed during the crop growth period. The harvest stage and sampling was initiated at physiological maturity (90-95% leaves drop) and continued at 7 days interval up to 21 days. The data obtained was analyzed following Factorial Randomized Block Design (Panse and Sukhatme, 1967).

The analysis of variance revealed that significantly higher moisture content was noted in genotype JS-93-05 (20.71%) followed by MAUS-71 (19.69%) and MAUS-81 (19.23%), respectively. Effect of genotypes for seed index and processing recovery was non significant. Highest moisture content was recorded at Physiological maturity (30.37%) while lower seed moisture in soybean seed (12.42 %) was observed at 21 days after physiological maturity. Differences in processing recovery due to stage of harvest were non significant seed crop harvested between physiological maturity and 14 days after physiological maturity recorded similar processing recovery and reduced when the crop harvested after 21 days after physiological maturity.

Genotypes x stage of harvest interaction revealed maximum seed moisture content (32.96%) in JS-335 when harvested at physiological maturity. In all the genotypes the

MEMBERS OF THE RESEARCH FORUM

Author to be contacted :

S.B. BORGAONKAR, Department of Agricultural Botany, College of Agriculture, Badnapur, JALNA (M.S.) INDIA
Email: bargaonkars@rediffmail.com

Address of the Co-authors:

C.B. GARUD AND B.N. CHINCHANE, Department of Agricultural Botany, College of Agriculture, Badnapur, JALNA (M.S.) INDIA

Table 1 : Seed characters as influenced by genotypes stage of harvest

Genotypes	Seed moisture (%)	Seed index (g)	Protein content (%)	Oil content (%)	Processing recovery
JS-335	19.07	12.62	40.97	19.64	96.30
JS-93-05	20.71	12.58	40.46	19.57	96.41
MAUS-71	19.69	12.50	39.37	19.41	96.48
MAUS-81	19.23	12.58	40.17	19.21	96.33
MAUS-158	18.64	12.75	41.63	19.74	96.61
S.E. \pm	0.18	0.10	0.15	0.03	0.22
CD (P=0.05)	0.52	NS	0.44	0.10	NS
Stage of harvest					
Physiological maturity	30.37	12.72	39.43	19.86	96.75
7 days after	21.72	12.63	40.13	19.49	96.61
14 days after	13.36	12.58	40.83	19.39	96.55
21 days after	12.42	12.49	41.70	19.31	95.78
Interaction (G x H)					
S.E. \pm	0.37	0.20	0.31	0.07	0.44
CD (P=0.05)	1.03	NS	NS	0.21	NS

NS=Non-significant

Table 2 : Moisture content (%) and oil content (%) as influenced by genotype x stage of harvest

Genotypes	Stage of harvest							
	Physiological maturity		7 days after physiological maturity		14 days after P.M.		21 days after physiological maturity	
JS-335	29.61	19.90	21.38	19.62	13.16	19.56	12.16	19.49
JS-93-05	32.96	19.70	22.95	19.64	14.01	19.48	12.95	19.46
MAUS-71	30.49	20.18	22.25	19.29	13.35	19.14	12.68	19.05
MAUS-81	29.46	19.56	21.79	19.20	13.41	19.13	12.27	18.98
MAUS-158	29.36	19.98	20.25	19.72	12.90	19.68	12.05	19.59
S.E. \pm							0.372	0.074
C.D. (P=0.005)							1.031	0.206

seed moisture content decreased significantly at subsequent stages of harvest. Similar results were obtained by Dighe *et al.* (1995) and Rao *et al.* (2000).

Significant variation on oil and protein content of soybean seed were observed in the studied genotypes. Higher protein content was found in genotype MAUS-158 (41.63%) while genotypes MAUS-71 contained 39.37% which was low as compared to other genotypes (Table 1).

The high oil percentage was found in genotype MAUS-158 (19.74%) and JS-335 (19.64%). The variation in oil content in different genotypes was found due to genetic constitution of the genotypes. The protein and oil content changes in the seed when harvested at different stage after physiological maturity. The oil content decreased when seed crop was delayed for harvesting where as protein content was increased. Oil content was found maximum at physiological maturity. The seed crop harvested at physiological maturity

recorded highest oil content (19.86%). The genotypes MAUS-71 recorded maximum oil content at physiological maturity while MAUS-81 recorded minimum oil content when harvested at 21 days after physiological maturity.

The results were in agreement with Lal *et al.* (1973), Singh and Gupta (1982) and Zhang *et al.* (1993).

Hence it is advisable to harvest soybean crop at physiological maturity for better seed quality.

REFERENCES

- Dighe, R.S., Zade, V.P., Zode, N.G. and Asalmol, M.N. (1995). Indices for proper stage of seed harvest in relation to seed quality in soybean. *Ann. Plant Physiol.*, **9**(2):142-145.
- Lal, H.S., Mehtre, S.K., Beodhar, D.A. and Sharma, Y.K. (1973). Protein and oil content their correlation and phenotypic stability in soybean. *Indian J. Agric. Sci.*, **3**(1):14-17.

- Panse, V.G. and Sukhatme, P.V. (1967). Statistical methods for agricultural workers. ICAR, New Delhi Publication.
- Rao, S., Lakhani, J.P., Khare, D. and Rao, S. (2000). Deterioration of soybean genotypes during heaping. *Legume Res.*, **23**(1):55-57.
- Signh, B.B. and Gupta, D.P. (1982). Seed quality in relation to harvesting at physiological maturity in soybean (*Glycine max*). *Seed Sci. & Technol.*, **10**(3):469-474.
- Zhang, H.S., Fu, Y.H.; Sun, T.S., Wu, T.G., Liang, Z.F., Zhad, A.L. and Penf, B. (1993). A study of the rule of accumulation of oil and protein in soybean seed. *Soybean Sci.*, **12**(4):296-301.

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