

RESEARCH NOTE

Effect of harvesting stages on protein, oil and carbohydrate content of groundnut (*Arachis hypogaea* L.) seeds

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ARTICLE INFO

Received : 22.10.2013
Accepted : 23.03.2014

Key Words :

Groundnut, Protein, Oil, Carbohydrate

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ABSTRACT

The studies revealed that in groundnut seed protein content (%), oil content (%) increased after physiological maturity and carbohydrate content (%) remained unchanged.

How to view point the article : Gaikwad, Ashvini Pandit (2014). Effect of harvesting stages on protein, oil and carbohydrate content of groundnut (*Arachis hypogaea* L.) seeds. *Internat. J. Plant Protec.*, 7(1) : 250-252.

Groundnut (*Arachis hypogaea* L.) is a valuable food and oilseed crop. Groundnut is the thirteenth most important food crop of the world. It is the world fourth most important source of edible oil and third most important source of vegetable protein. Groundnut seeds contain high quality edible oil (50%), easily digestible protein (25%) and carbohydrates (20%) (Weiss, 1983). Groundnut cotyledons contains 20 per cent carbohydrates and is an excellent source of thiamine and vitamin E and small quantities of vitamin A, A₁, B₁, B₂, K, C and D (Weiss, 1983 and Woodroof, 1966). Groundnut oil is used in medicine as it is highly nutritive and laxative too. Different products are prepared from groundnut like ice-cream, candy, butter, milk, cheese, vinegar, soup, shampoo, colours, manure, paper, plastic and groundnut cake which is best source of animal and poultry feed.

The present investigation was conducted during summer, 2012 at All India Co-ordinated Research Project on summer groundnut, on the effect of harvesting stages on protein, oil and carbohydrate content of groundnut (*Arachis hypogaea* L.) seeds. The experiment was conducted at, Mahatma Phule Krishi Vidyapeeth, Rahuri. 24 treatments consisted of four harvesting stages, viz., (M₁) Physiological Maturity, (M₂) 10 DAPM, (M₃) 20 DAPM, (M₄) 30 DAPM and six varieties (V₁) RHRG-6021, (V₂) RHRG-6083, (V₃) JL-501, (V₄) TAG-24, (V₅) SB-XI and (V₆) TPG-41. The laboratory analysis

was carried out by using Factorial Completely Randomized Design with three replications. The laboratory observations recorded were protein, oil and carbohydrate content of groundnut seeds for each treatment and after every harvesting stages. The data on laboratory observations were analysed as per method suggested by Snedecor and Cochran (1967).

Protein :

The genotype V₆ (TPG-41) (23.28 %) recorded highest protein content. The highest protein content (24.20 %) was recorded at M₄ (30 DAPM). The lowest protein content was observed in treatment M₁ (PM) (21.92 %) (Table 1).

Oil content:

The genotype V₅ (SB-XI) (48.84 %) recorded highest oil content. The higher oil content (49.35 %) was recorded at M₄ (30 DAPM). The lowest oil content was observed in treatment M₁ (PM) (47.54 %) (Table 2).

Carbohydrate content :

The genotype V₆ (TPG-41) (16.65) recorded highest carbohydrate content. The highest carbohydrate content (16.75) was recorded at M₁ (PM). The lowest carbohydrate content was observed in treatment M₂ (10 DAPM) (16.16) (Table 3).

Table 1 : Effect of genotypes and harvesting stages on protein content (%) of groundnut cultivars								
Sr. No.	Harvesting stages	Genotypes						Mean
		V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	
1.	M ₁ (PM)	21.93	18.08	22.31	23.42	23.38	22.43	21.92
2.	M ₂ (10 DAPM)	22.83	23.42	23.32	22.86	22.42	23.10	22.99
3.	M ₃ (20 DAPM)	23.27	21.73	22.71	22.16	22.93	22.96	22.63
4.	M ₄ (30 DAPM)	23.68	23.95	24.50	24.22	24.21	24.64	24.20
	Mean	22.93	21.79	23.21	23.17	23.23	23.28	22.94
			S.E. ±				C.D. (P=0.05)	
	M		0.30				0.84	
	V		0.37				1.02	
	M x V		0.74				2.05	

Table 2 : Effect of genotypes and harvesting stages on oil content (%) of groundnut cultivars								
Sr. No.	Harvesting stages	Genotypes						Mean
		V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	
1.	M ₁ (PM)	47.21	48.10	47.28	48.43	48.19	46.00	47.54
2.	M ₂ (10 DAPM)	48.13	48.24	47.27	47.79	48.69	46.14	47.71
3.	M ₃ (20 DAPM)	48.85	48.41	48.64	48.82	49.18	47.24	48.52
4.	M ₄ (30 DAPM)	49.22	49.15	49.88	49.48	49.29	49.05	49.35
	Mean	48.36	48.48	48.27	48.63	48.84	47.11	48.28
			S.E. ±				C.D. (P=0.05)	
	M		0.20				0.56	
	V		0.25				0.68	
	M x V		0.49				N.S.	

Table 3 : Effect of genotypes and harvesting stages on carbohydrates content (%) of groundnut cultivars								
Sr. No.	Harvesting stages	Genotypes						Mean
		V ₁	V ₂	V ₃	V ₄	V ₅	V ₆	
1.	M ₁ (PM)	17.08	16.48	16.35	17.24	16.71	16.66	16.75
2.	M ₂ (10 DAPM)	16.04	15.95	16.53	16.28	15.49	16.65	16.16
3.	M ₃ (20 DAPM)	16.38	16.82	16.54	16.40	15.90	15.92	16.33
4.	M ₄ (30 DAPM)	16.24	17.01	16.73	16.35	15.42	17.36	16.52
	Mean	16.44	16.56	16.54	16.57	15.88	16.65	16.44
			S.E. ±				C.D. (P=0.05)	
	M		0.12				0.33	
	V		0.15				0.40	
	M x V		0.29				0.81	

PM-Physiological maturity

DAPM-Days after physiological maturity

Harvesting stages/maturity did not show any effect on carbohydrate content of groundnut seeds. The protein and oil content of groundnut seeds increased after physiological maturity because reduction in moisture content of seeds after physiological maturity.

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