ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 11, Issue, 09, pp.6947-6949, September, 2019

DOI: https://doi.org/10.24941/ijcr.36559.09.2019

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

SELECTION OF SUITABLE SHORT DURATION GROUNDNUT VARIETY FOR UTTAR PRADESH

[1,*]Singh, R.A., [1]Shanker Singh, [1]Dharmendra Yadav, [3]Renu Singh, [2]Singh I.P. and [1]Rajesh Rai

[1]C.S. Azad University of Agriculture and Technology, Kanpur (U.P.), India
[2]K.V.K., Auraiya, (U.P.), India
[3]Education Department, Etawah (U.P.) India

ARTICLE INFO

Article History:
Received 20th June, 2019
Received in revised form
24th July, 2019
Accepted 16th August, 2019
Published online 30st September, 2019

Key Words:
BCR, Bunch Genotype,
Profitability, Rainy Season,
Short Duration.

ABSTRACT

The present study was under taken during two consecutive rainy seasons at Regional Research Station Mainpuri. The experimental soil was sandy loam with poor fertility status. The ten varieties of groundnut were tested. The main objective was to findout the suitable short and bunch type cultivars for cultivation during rainy season for increasing area, production and productivity. Cultivar Dh 86 and ICGV-93468 (Avtar) gave highest pod yield of groundnut by 24.95 q/ha and 24.27 q/ha, respectively. The other tested varieties produced poor yield in comparison to aforementioned genotypes. As regard to gross income, net return and BCR, the cultivars Dh 86 and ICGV 93468 gave highest values of gross return, net profit and BCR. The genotype Dh 86 gave gross return, net return and BCR by Rs. 137225/ha, Rs. 74955/ha & 1:2.20, respectively. Similarly, genotype ICGV 93468 gave gross return, net return and BCR by Rs. 133485/ha, Rs. 71225/ha & 1:2.14, respectively. The other tested cultivars did not perform considerable response for return and BCR in comparison to Dh 86 and ICGV 93468.

Citation: Singh, R.A., Shanker Singh, Dharmendra Yadav, Renu Singh, Singh I.P. and Rajesh Rai. **2019.** "Selection of suitable short duration groundnut variety for Uttar Pradesh", *International Journal of Current Research*, 11, (09), 6947-6949.

INTRODUCTION

Groundnut is a major oil seed crop, which is use in the production of oil on large scale throughout India as well as world. In the world, it is cultivated in 84 countries producing > 35 million tones with productivity about 1350 kg/ha. Groundnut is essentially a tropical crop, which require long and warm growing season. In general, requirement for this crop is dependent much in aerial (temperature, radiation, humidity etc.), edaphic (soil moisture and aeration etc.), pedological (soil depth, soil reaction etc.), technological (fertilizer, pesticides) and other factors. In early, 1980;s groundnut was grown in Uttar Pradesh on 0.30 million ha with production of 0.19 million tones. Since then both area and production have shown a steady decline due to edaphic, technological and varietal factors. During 2003-04 groundnut area declined from 0.30 million ha to 0.09 million ha and production from 0.19 million tones to 0.06 million tones. After 2003-04 the area was stagnated on 0.09 million hectare with total production of 0.06 million tone and average productivity 636 kg/ha (Anonymous, 2004).

Corresponding author: **Singh, R.A.,**
C.S. Azad University of Agriculture and Technology, Kanpur (U.P.), India.

Mostly long duration varieties having spreading nature, disease susceptible and moisture stress condition are the major factors for declining the area, production and productivity. The frogi rains are responsible for moisture stress condition, which directly influence to the poor productivity of groundnut in Uttar Pradesh. It has been observed that under moisture stress condition, the minimum downwards entry of pegs into soil and, therefore, they hanged upward with aerial part of groundnut. Effort to arrest decline in area and production did not succeed. A strong need was felt to develop a suitable technology with short duration varieties under moisture stress condition to revive groundnut production during rainy season. The short duration bunch varieties were tested for their suitability at RRS, Mainpuri for rainy season cultivation under moisture stress condition is the subject matter of this manuscript.

MATERIALS AND METHODS

The field study was under taken during rainy season of 2004 and 2005 at Regional Research Station, Mainpuri, C.S. Azad University of Agriculture & Technology, Kanpur. The experimental soil was sandy loam, having pH 8.5, organic carbon 0.45%, total nitrogen 0.04%, available phosphorus 9 kg/ha and available potassium 278 kg/ha, thus, the nutrients of experimental soil were analysed low in organic carbon, total

nitrogen, available phosphorus and high in available potassium. The pH was determined by Electrometric glass electrode method (Piper, 1950), while organic carbon was determined by Colorimetric method (Datta, *et al.,* 1962). Total nitrogen was analysed by Kjeldahl's method as discussed by Piper (1950). The available phosphorus and potassium were determined by Olsen's method (Olsen *et al.,* 1954) and Flame photometric method (Singh, 1971), respectively. Ten short duration and bunch varieties of groundnut were tested. The groundnut varieties were seeded in second fortnight of July and harvested after 95 days of seeding during both experimental years as suggested by Singh (1999), Singh (2000) and Singh (2001). The crop were fertilized with 20 kg N + 30 kg P_2O_5 + 45 kg K_2O + 200 kg gypsum/ha. The crop was harvested on the residue moisture of rainy season. The recommended agronomical practices were followed as suggested by Singh (1999), Singh (2000) and Singh (2001). The experimental data of both years were statistically analysed as suggested by Gomez and Gomez (1984)

RESULTS AND DISCUSSION

The pod yield of two years and their economics were reported in Table 1 and 2, respectively, and discussed here under appropriate heads.

Table 1. Pod yield of different cultivars of groundnut

S. N.	Variety	Yield (q/ha)		
		2004	2005	Pooled
1.	Dh 86	24.90	25.01	24.95
2.	Dh 40	12.22	12.40	12.31
3.	R-8808	14.45	14.54	14.49
4.	R-2000-1	13.36	14.00	13.68
5.	R-9251	19.34	19.67	19.50
6.	ICGS-1	16.00	16.34	16.17
7.	ICGS-44	16.67	17.00	16.83
8.	ICGV-86590	16.23	16.34	16.28
9.	ICGV-93468	24.00	24.54	24.27
10.	Local collection of M.P.	16.89	17.07	16.98
	SE (m±)	1.13	1.15	-
	C.D. 5%	3.35	3.41	---

Table 2. Cost of cultivation, gross return, net return and BCR under different varieties

S. N.	Variety	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BCR
1.	Dh 86	62270	137225	74955	1:2.20
2.	Dh 40	62270	67705	5435	1:1.08
3.	R-8808	62270	79695	17425	1:1.27
4.	R-2000-1	62270	75240	12970	1:1.20
5.	R-9251	62270	107250	44980	1:1.72
6.	ICGS-1	62270	88935	26665	1:1.42
7.	ICGS-44	62270	92265	30295	1:1.48
8.	ICGV-86590	62270	89540	27270	1:1.43
9.	ICGV-93468	62270	133485	71215	1:2.14
10.	Local collection of M.P.	62270	93390	31120	1:1.49

Pod yield of groundnut: Among the different genotypes tested cultivars Dh 86 and ICGV 93468 registered significantly higher pod yield by 24.95 q/ha and 24.27 q/ha, respectively, followed by R-9251 (19.50 q/ha). Cultivars Dh-40 gave lower pod yield by 12.31 q/ha. Other tested genotypes gave pod yield between these two limits (Table 1). The results displayed that the highest pod yield of genotype Dh-86, ICGV 93468 and R-9251 because of suitability of climatic conditions and resistant against moisture stress condition. Under this situation these varieties had maintained better source-sink relationship. It means amount of dry matter or photosynthates produced by source organs translocated towards sink organ (economic part) and produced higher pod yield. The seeding of aforementioned cultivars during rainy season had higher number of pods/plant means it possessed higher sink capacity to utilize the photoassimilates translocated from source. These results are commensurable to the findings of Panwar *et al.* (1986), Shrivastava and Bharadwaj (1986), Pachpor and Shete (2010), Singh *et al.* (2015) and Singh *et al.* (2016).

Profitability from different genotypes: Data given in Table 2 clearly indicate that varieties Dh 86 and ICGV 93468 gave highest gross income by Rs. 137225/ha and Rs. 133485/ha, respectively. Similarly, net return was also recorded highest under Dh 86 and ICGV 93468 by Rs. 74955/ha and 71215/ha, respectively. The highest values of BCR were also found under Dh 86 and ICGV 93468 by 1:2.20 and 1:2.14, respectively, which was at par. The highest pod yield of Dh 86 and ICGV 93468 was responsible for highest gross return, net return and BCR. The other cultivars gave lower gross return, net income and BCR as compared to Dh 86 and ICGV 93468. These findings support to the results of Singh *et al.* (2018).

Conclusion

The farm families residing in the groundnut growing tract of Uttar Pradesh and where cultivation of groundnut is in vigoue may be advocated for cultivation of Dh 86 and ICGV 93468 (AVTAR) for obtaining highest pod yield and net return during rainy season.

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