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Evaluation of growth parameters (AGR, RGR and NAR) in relation to seed yield of soybean

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ABSTRACT

The field experiment entitled "Evaluation of growth parameters (AGR, RGR andNAR) in relation to seed yield of soybean.was conducted at the Farm of Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri with a view to study evaluate the effect of various growth functions on the seed yield of soybean cultivars. The experiment was laid out in randomized block design (RBD) with 3 replications including eight soybean varieties namely V1) JS- 335 ,V2) MACS-58, V3) MACS-124, V4) DS-186, V5) PK-472, V6) PK-1029, V7) Arati and V8) Pooja. The observations were recorded during two years (2000 and 2003). The mean pooled data of AGR showed that, high yielding varieties had high AGR. The pooled data of AGR (30-60 DAS) showed that, the significantly highest AGR was observed in variety Pooja (0.713 g/day) . There was sudden increase in AGR of all varieties at 60-90 DAS. It is to note that at 90 DAS to harvest of crop pooled mean AGR had shown decrease in AGR values. Pooled data of both the years showed that there was positive correlation between AGR of period 30-60 DAS, 60-90 DAS and 90 DAS to harvest of crop with seed yield (q/ha). The pooled data showed that the highest RGR was noted at 30-60 DAS and it was decline from 60-90 DAS to harvest of crop. The pooled data revealed that, at 30-60 DAS the high yielded varieties had significantly highest NAR Pooja (0.051), MACS-58 (0.049) and MACS-124 (0.048 g dm^{-2} day^{-1}) respectively than other varieties. At 60-90 DAS the short durational variety DS-186 had significantly lowest (-0.252 g dm^{-2}.day) NAR than other varieties. It is observed from pooled data that, the variety Pooja had significantly highest seed yield of 24.045 q/ha over rest of all varieties studied. It might be due to better performance in respect of following plant characters. 1) Pooja had highest AGR 0.713 g/day at 30 DAS 2) Pooja had highest RGR at 30 DAS (0.090 g. $g^{-1}$$day^{-1}$) 3) Pooja had highest NAR at 30 DAS 0.051 g m^{-2}.day^{-1}. There was significant positive correlation between AGR at 30-60 DAS and 90 DAS to harvest of crop with seed yield of soybean. The RGR at 30-60 DAS showed significant positive correlation with seed yield. There was significantly positive correlation of NAR at 30-60 DAS with seed yield and negative correlation at 60-90 DAS.

Key words : Soyabean, AGR, RGR, NAR.

INTRODUCTION

Soybean (*Glycine max* (L.) Merrill) is an important pulse as well as oilseed crop. It has become wonder crop of the twentieth century and is often designated as 'Golden bean'. It is legume crop belonging to family leguminasae and sub family papillionaceae.

Soybean [Glycin max. (L.) Merill.] often called the "Miracle crop" is an excellent source of protein and has potential to adequate and nutritious food and feed for ever increasing world population. The importance was felt in the early sixties to the twentith century in India, when problem of malnutrition especially for protein was felt acutely among masses.

Soybean is rich in Vit 'A', 'B' and 'D' the sprouted seeds contain Vit 'C'. It is also source of phosphores and sulphur. Soybean is the cheapest source of protein and hence it is called "poor man's meat" (Mahajan, 1994). Kankal (1996) reported on strudy of growth functions that, the AGR of dry matter was slow up to 45th day. AGR values showed sharp increasing trend during the period 45 to 60 DAS being grand growth period of soybean crop. Buttery and Buzzel (1972) found some differences between soybean cultivars in growth analysis data revealed that, varietal differences in mean relative growth rate (RGR) was detected within a group of 21 cultivars grown over three years. The varietal differences in RGR were showed to be highly significant. The cultivar x test interaction was not significant for RGR. The environmental correlations indicated that, those plots with high NAR tended to have high RGR. Kankal (1996) studied soybean in irrigated condition, and the data revealed that, the cultivar MACS-124 showed higher RGR values (0.550 g/g/week) during 45-60 DAS. Thereafter RGR values were decreased with increase in the age of the soybean crop. Pushpa Kumari *et al.* (1993) worked on soybean at Trissure, Kerala and revealed that the comparison of NAR between 40-60 DAS and 60-90 DAS the entries showed increase in NAR under field trial, while rest showed decreasing trend. Jain *et al.* (1996) worked on soybean at Powerkheda, M. P. and observed that NAR of soybean decreased with an increase in crop age. Kankal *et al.* (1996) observed that the mean maximum NAR was 0.501 g/dm^2/week during the initial period of 30 to 45 DAS and thereafter it was decreased.

In soybean production low productivity was observed in India than other countries, there may be any physiological resaon for low productivity of soybean seed yield. Hence to find out relationship of growth parameters (AGR, RGR, NAR) with the seed yield, the present study was undertaken.

MATERIALS AND METHODS

The present investigations were carried out during *kharif* seasons of the year 2000 and 2003. The details of material used and methods followed are presented in this chapter.

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