Calculate & Analyze of Growth in Vicia FabaL. Plant

Tayeb Saki Nejad

Assistant professor in Department of Agriculture, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran,
Corresponding Author: Tayebsaki1350@yahoo.com , saki1971@iauahvaz.ac.ir

Abstract— Tested using a modified split plot design in randomized complete block with the main treatments bean varieties and sub-levels of nitrogen fertilizer treatments were performed. The results show that the variance in total dry matter accumulation of bean varieties Treatment plant and the different levels of nitrogen fertilizer has been so significant at 1% of the total plant dry matter accumulation increased with increasing nitrogen. This is due to increase in line with the increased photosynthesis and leaf area index and dry matter accumulation in plants. Sigmoid curve diagram of a bean leaf area index figures showed that growth in primary school, which had up to 50 days after the Kennedy Planting of the LAI value is only 0.7 is taken to slow the spread of leaf area index for the legume family, the high levels of nitrogen fertilizer (80 kg/ ha) the first period to reduce the level of leaves, and secondly in the treatment of lower levels of nitrogen treatments were applied to the leaf area index was higher. Chart for RGR at different levels of nitrogen reduction process and that their maximum RGR in the early stages of development with 0.15 g per day is reached. NAR average value equal to 6.7 grams per square meter per day is 48 days after planting in the NAR to the 7.4 grams per square meter per day increased and then showed its decreasing trend.
[Tayeb Saki Nejad. **Calculate & analyze of growth in Vicia Faba plant**. Life Science Journal. 2012;9(1):850-852] (ISSN:1097-8135). http://www.lifesciencesite.com. 123

Keywords: Growth analysis, horse bean, fertilizer

1. INTRODUCTION

Analysis of plant growth parameters of bean

There are two types of plant growth analysis, attitude, attitude, classical and functional approach to separating these two approaches, for use in analyzing the growth took place in 1960.This title was first used by Keaston other words, the scientists used a functional approach to the dynamics with respect to the terms of the return that contains a view of the fitted curve and the other not. In the classical view, the events of the relatively small number of samples but with a large volume (high number of measurements) will follow the basic concepts in the books, Evans and Keaston and Venus, in view of the statistical function to fit curves of various samples, but low volume (less the number of measurements) will result in a lack of time and space, both views can be merged (the number of large samples and large size), but both of Perspective directions of growth parameters and determine the impact of the paths are different treatments(14, 11).

In this experiment, the growth paths of these parameters measured with the LAI, TDW and LDW-fit curve of growth factors is a function of attitude to the effects of treatments in different periods and different levels of nitrogen fertilization on components *RGR, CGR, NAR, LAR, SLA, LWR* will be analyzed by the graph.

2. MATERIAL AND METHOD

Research projects at the research farm, University of Ahwaz, with using a modified split plot design in randomized complete block with beans and treatment of minor figures, the main treatment was performed different levels of nitrogen fertilizer The main treatment plant, four varieties of beans (V) and secondary treatment, nitrogen levels (N) kg at Hectares (the source of urea) were used for analysis of shoot growth of plants harvested at the top (at the same level of 0.6 m) to the plant within 12 days and average five parameters and dry matter accumulation LAI and shoot dry matter accumulation was measured and growth components of LAR, CGR, RGR, NAR, LWR and SLA were calculated.

On all results, analysis of variance was performed followed by Duncan's test, the results were compared to the tables is presented charts with Harvard graph, Excel 2000 were analyzed with a computer program for agricultural growth SAS estimates were calculated.

3. RESULT

Relative growth rate (RGR)

Relative growth rate, the rate of overall growth rate of more sophisticated than a simple change of a variable rate of weight gain is when the plant is

based, in other words, the RGR in terms of growth rate in times of increasing size of the compared with the overall growth rate and the possibility of doing more to provide a fair, Blackman called the performance index. Contrasting the relative speed of decline in RGR in practical terms, the mean relative growth rate of the measurements performed at RGR is calculated and the trend is a declining function of the tissue due to loss of tissue dividing the amount of time.

Figure 1 with the following points of reflection can be investigated:

A. Chart for RGR at different levels of nitrogen reduction process and that their maximum RGR in the early stages of development with 0.15 g per day is reached.

B. The comparison shows that the levels of nitrogen treatments = 100 Kg N ha higher RGR values of the two treatments and is achieved. The steep decline in RGR Less steep decline in RGR and is. Treatments showed a similar decline over time.

C. The first treatment that can be seen in Figure 2 RGR, but the maximum time (60 days after planting) treatments The reason is probably the time of injection of nitrogen in treatments Of treatment Which is exacerbated by the growth of meristem tissue and thus decrease the slope of RGR has been less.

Net assimilation rate (NAR)

Assimilate net assimilation rate or the net amount represents net photosynthesis per unit leaf area is at the beginning of the growth of all leaves receive light and shadow is running low in the low NAR in the highest amount of breathing their But with the growth of leaves and ghosting and lack of light penetration into the plant goes up first, and secondly the breath of net photosynthesis in leaves under the shadow of the NAR decreased after the increase will begin to decline, NAR, this trend is visible in Figure 3 that the first 36 days after implantation, the NAR has been sampled on average, equal to 6.7 grams per square meter per day is 48 days after planting the NAR to the 7.4 grams per square meter per day increased and then showed its decreasing trend.

Injection of N = 100 Ha at the planting treatments NAR and the amount of leaf area expansion of the two treatments and But with time and the injection of 1/2 in the other fertilizer treatments 84 days after planting in steep decline in NAR and treatment of this treatment is less (Injection of fertilizer after flowering), but 108 days after planting, slope treatment Is less likely because of increased leaf growth, which leaves it up to shadow each other as well as differences in biological nitrogen fixation has caused this difference is not much different treatments.

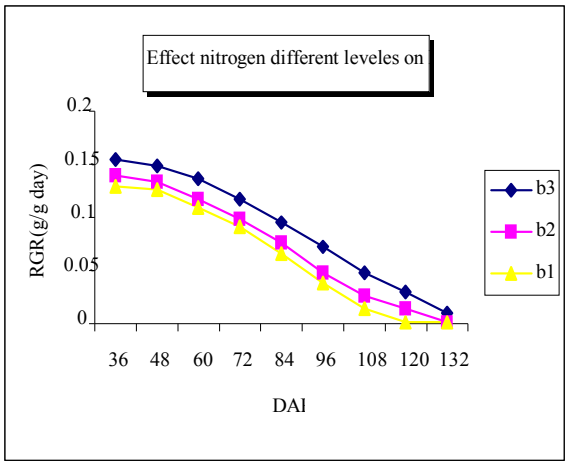

Fig. 1 Effect fertilizer on RGR

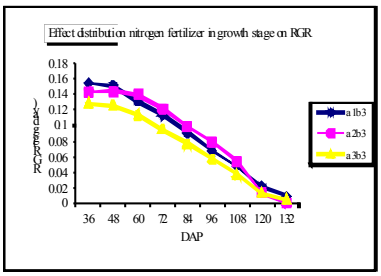

Fig. 2 Effect interaction fertilizer × varieties on RGR

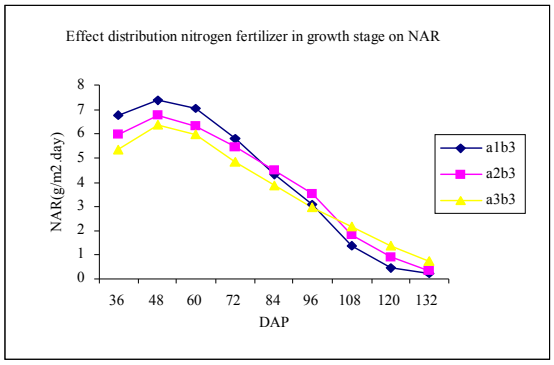

Fig. 3 Effect interaction fertilizer × varieties on NAR

ACKNOWLEDGMENT

Author acknowledges the support by Ahvaz Branch, Islamic Azad University. Ahvaz, IRAN.

REFERENCES

1. Awonaike K.O., Lea P. J. Day J. M, Rougley, R, j, and Miflin B. J. 1980, effects of Combined nitrogen on nodulation and growht of phaseolus Vulgaris, Expl. Agriculture 16.303-311.
2. Evans, G, C. 1972 the quantativa analysis of plant growth. Oxford: Black well Scientins publications.
3. Gupta & Bhandari 1988, inbiological Nitrogen Fixation, proccedings of the National Symposium held at Indian agriculture research Institute, new peui 544-51.
4. Haxly, p.j & Summerfield R.j, 1977, nitrogen nutrition of cow pea Cvigna unguiculota).
5. Effects of applied nitrogen and symbiosis nitrogrn fixation on growth and seed yield, Exll agriculture, 129-147.
6. Abrol, y.p. and pokhriyal. T. 1980, Nitrate assimilation in relation to total reduced N in bangal gram. Genotyps, Indial of plant physiology 21:228-234.
7. Das, p.c 1993. Principles and practices of crop production part of 10, pulse crops 330-384.
8. D- Lamb.g. F. Barnes. O.K., Russelle. M.P., ance. C.P., Vance. C.P., Heichel G.H, Hengum. K. I., 1995, Ineffectively and effectively Nodalated Alfalfar Demonste bioffectively nitvogen continus with high nitrogen fertiliuzation crop science Volum 35 no 1.PP: 153-157.
9. Fairey. N. A. and lef kovitch. L. P., 1995, Alteranating strips of grass and Legum and Nitrogen fertilizationstrategy for long term herbage production from a brome – alfalfa stand. Plant science july/juillet, 1995, Vilum 75, No3, pp649-654.
10. Chang. C, 1995, Variation in soil total organic matter content and total nitrogen associated with microrelif, soil science volum 75, No 4, pp 471-473.
11. Kelner. David. G and vessey. G. Kevin, 1995, Nitrogen fixation and grouth of on-year stands of non-dormant alfalfa in manitoba, plant science guly/gaillet 1995 volum 75 No3, pp 655-665.
12. Saki Nejad, T, 2010, Estimate Biological Nitrogen Fixation in Horse bean, The journal of American science, Vol 6 No. 6 http://www.americanscience.org.
13. S. RAWSTHORNE, hadley. P, riberts. E.H. andsummerfield 1985 effects of supplemental nit ate and thermal on the nitrogen Nutrition of chickpe3 (Cicer aritinum) I. Grount and development, Plant and soil 83, 265-277 (1985).
14. S. Rawsthorne, hadley. P, roberts. E. H. and sommperfield 1985, effects of Supplemental nitrate and thermal on the Mitrogen Nutrition of chikpea (cicer arietinum). Synbiotic dev el opmebt and thermal on the nitrogen Nutrition of chickpea (cicer arietinum) I. Grouht and development, Plant and soill 83, 265-277 (1985).
15. S. Rawsthorne, hadley. P, roberts. E. H. and sommperfirld 1985, effects of Supplemental nitrate and thermal on the Mitrogen Nurtition of chikpea (cicer arietium) synbiotic dev el opment and Nitrogen assimilation, plant and soil 83-279-293.
16. Nutman, P. S. (1976), in Nutman, P. S. (ed). 1978, Symbiotic Nitrogen Fixation in plant. Cambridge: Cambridge versity press – 211-237.
17. Summer field R.G. Dart P. J. Huxley P. A, Eaglesham A.R.J. minchin F.R and Day J.M. 1977, nitrogen nutrition of Cow pea (Vigna unguiculota). 2. Effects of applied nitrogen and Symbiotic itrogen fixation on growth and seed yild. Wxll agriculture.
18. Wong. P.P., 1980, Nitrate and carboydrate effects on nodulation and nitrogen fixation (acetylene reduction) activity of lentil (Lens esculenta) moench,. Plant Physiology 66, 78-81.
19. Single H. P, Rahman A and saxena M, C. 1981, Response of chikpea to Rhizobivm inoculation, Nitrogen and Phosphorus underdifferent orrigationregimes, Int1 chikpea Newsletter6.
20. N. S. Subba Rao, 1988, biofartilizers in agriculture, second Edition.

2/22/2012