UNIVERSITI PUTRA MALAYSIA

SOYBEAN GROWTH AND YIELD PLANTED AT DIFFERENT PLANTING DENSITIES

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FP 2015 71

Soybean Growth and Yield Planted at Different Planting Densities

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Serdang, Selangor

2014/2015

CERTIFICATION

This project report attached here entitled:

Soybean Growth and Yield Planted at Different Planting Densities

And submitted by **Mohd Nabil Bin Jaffri**

In partial fulfillment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of

Bachelor of Agricultural Science

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ACKNOWLEDGEMENTS

In the name of Allah S.W.T, for His most graciousness and most mercifulness;

I would like to express my deepest gratitude to everybody who is involved in this research project, regardless whether directly or indirectly.

First of all, special thanks go to my supervisor, Dr Adam Puteh for his great supervision and guidance along the project progress. His countless patience, generosity and helps are much indeed appreciated.

A very special gratitude to all staff of Department of Crop Science and members of the Seed Technology Lab, especially En Harris for his guidance during the lab analysis and in the field. This thesis would not have been possible without their deeds and encouragements.

I am heartily thankful to my entire family for their support and blessing during my entire period of study. Thanks to my mother that encouraging me when I was doubting with myself and enlightening me when I down.

Last but not least, I would like to thanks my friends, Hasif Rozali, Husaini Jalil, Nizam Unonis, Farhan Zakaria and lastly my co-partner Arif Rajab who have always been helping me until the very end.

Thank you so much.

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ABSTRACT

Soybean (*Glycine max)* planted at different planting density may affect growth and grain yield. Thus, a study was held to evaluate planting density on crop grain yield and to determine the best planting density which contributes the highest grain yield. In this study, Willis soybean variety was planted at 3 planting densities which were at 15, 30 and 50 plant m^{-1} in RCBD experimental design. Sampling of fresh weight, dry weight and height of plants were done 2 week after the day of planting and repeated weekly from R1 (flowering stage) to R7 stage (physiological maturity stage). Plants were harvested to determine yield components at R8 (maturity growth stage). The results showed that planting density 15 plants m^{-1} give out the highest growth performance (fresh weight, dry weight, and height) but planting 30 plants m^{-1} give out highest grains yield. Although planting 30 plants m^{-1} showed the highest grains yield, the data showed no significant difference compared with other planting densities. Thus, planting soy bean crops at planting densities of 15, 30 and 50 plant m^{-1} will have no effect on grain yield and yield components.

ABSTRAK

Kacang soya (*Glycine max*) yang ditanam dengan jumlah kepadatan pokok yang berbeza akan memberi kesan kepada tumbesaran pokok dan hasil tanaman. Jadi, sebuah kajian dilakukan bagi mengkaji kesan perbezaan kepadatan pokok terhadap hasil tanaman soya dan bagi memilih jumlah kepadatan yang paling sesuai untuk tanaman soya. Varieti Willis dipilih dan ditanam mengikut kepadatan 15, 30 dan 50 pokok semeter secara rekaan eksperimen RCBD. Kutipan data berat basah, berat kering dan tinggi pokok dilaksanakan secara mingguan bermula dari R1 (peringkat berbunga) hingga R7 (peringkat fizikal matang). Tanaman dituai pada peringkat R8 (hasil matang). Keputusan kajian menunjukan jumlah 15 pokok semeter memberikan kesan tumbesaran pokok yang terbaik (berat basah, berat kering dan tinggi pokok). Namun begitu, keputusan kajian juga menunjukkan penanaman 30 pokok semeter memberikan hasil kacang yang tertinggi. Walaupun hasil tanaman 30 pokok semeter ialah tertinggi, perbezaan berat hasil dengan jumlah kepadatan pokok yang lain ialah tidak signifikan. Jesteru itu, penanaman soya dengan kepadatan 15, 30 dan 50 pokok semeter tidak mempunyai hasil kekacang yang berbeza.

CHAPTER 1

INTRODUCTION

1.1 Background

Soybean (*Glycine max*) is a species of legume native to East Asia, and widely used for human consumption and as animal feeds.

The genus Glycine is divided into two subgenera, Glycine and Soja. The subgenus Soja includes the cultivated soybean, (Glycine max) and the wild soybean, Glycine soja. Both species are annuals. Glycine soja is the wild ancestor of Glycine max, and grows wild in China. The subgenus Glycine consists of 16 wild perennial species: for example, glycine canescens and Glycine tomentella, both found in Australia (Ainsworth et al., 2012)

The protein content in soybean (*Glycine max)* seed is approximately 40% and the oil content is approximately 20%. This crops has the highest protein content and the highest gross output of vegetable oil among the cultivated crops in the world. In the 2007, the total cultivated area of soybean in the world was 90.19 million hectare and the total production was 220.5 million t (Singh et al., 2010)

The five major soybean-producing country of the world are USA, Brazil, Argentina, China and India. The highest soybean productivity is 2890 kg ha-1 in the USA and the world average is 2430 kg ha-1. The total production of oil seeds in the world during 2007 / 2008 was about 393 million t, with the share of soybean at around 57% compared to other major oil seeds sources (Singh et al., 2010)

Soybean has many uses. It is mainly pressed to extract soybean oil, after which a soybean meal remains, which is rich with source of protein. Soybean oil can be used for the production of edible oils such as kitchen oil, salad oil and others through refining and deep processing. Soybean oil is also being used for the production of printing ink and biodiesel. Soybean meal is mainly used for the production of compound feed. It is the main protein source in feed for livestock farming.

1.2 Problem Statement and Justification

Planting distance must be appropriately adjusted for each planting system. Planting at different planting density will cause plant to compensate for seed yield and for its growth performance.

1.3 Hypothesis & Objectives

H_o: There are no significant differences in total seed yield when planted at different planting densities.

H_a: There are significant differences in total seed yield when planted at different planting densities

Objectives of the study are:

To evaluate effects of planting density on soybean growth and grain yield.

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