

Dedication

This work associated
with my greatest thanks
dedicated to my; Family,
friends,
Everybody whom know
during
the period of this study,

And for every one learn
this study
which I hope
to get their own losses
information.

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ts

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Abstract

This study was conducted to evaluate the effect of sowing date and plant population on growth, yield and quality of snap bean (*Phaseolus vulgaris* L.) cv. Star 2052. The experiment was executed at the vegetable farm, Department of Horticultural Science, College of Agricultural Studies, Sudan University of Science and Technology (Shambat), in the winter season of 2011/2012. The effects of two sowing dates (7th and 26th of November) and six plant populations (10, 15, and 20cm plant spacing x 2 and 3 plants/hole), to give 120000, 180000, 90000, 135000, 60000 and 90000 plants/fed, respectively, were studied. Randomized complete block design (RCBD) with four replications were used. The results showed that the early sowing date had positive effect on some growth parameters. Increasing plant spacing had positive effect on all growth parameters (Plant height, number of branches/plant, main root

length, number of secondary roots, leaves number and leaf area, shoot and root fresh and dry weights and days to 10% and 50% flowering), with the highest value being obtained at the 15cm spacing. The same was reflected on pod yield components except yield/fed and on pod quality spatially on pod length and pod fresh weight. Decreasing number of plants/hole had positive effect on all growth parameters except plant height and leaf area. It had also positive effects on all yield components, whereas it had no effect on pod quality. Generally, it can be concluded that early sowing date (7th November), narrow plant spacing (10cm) and higher planting density (3plants/hole) i.e. a plant population of 180000 plants/fed gave the highest pod yield and quality of beans. For optimum yield of beans early sowing in November at 10cm plant spacing and 3plants/hole could be recommended at Shambat and areas of similar condition. However, these results should be confirmed by further trial.

الخلاصة

أجريت هذه الدراسة لتقييم تأثير تاريخ الزراعة و الكثافة النباتية على نمو وإنجاح وجودة الفاصوليا الخضراء الصنف ستار 2052. أجريت التجربة في مزرعة الخضر، قسم البساتين، كلية الدراسات الزراعية، جامعة السودان للعلوم والتكنولوجيا (شمبات) في الموسم الشتوي للعام 2012/2011. تمت دراسة تأثير تاريخي للزراعة (26 و 7 نوفمبر) وست كثافات نباتية (20,15,10 سم مسافة بين النباتات و 3 و 2 نبات بالجورة)، لتعطى 120000، 18000، 90000، 13500 و 60000.

90000 نبات/فدان على التوالي. صممت التجربة بنظام القطاعات العشوائية الكاملة باربعة مكررات. أوضحت النتائج أن الزراعة المبكرة ذات تأثير إيجابي في بعض قياسات النمو. زيادة المسافة بين النباتات كانت ذات تأثير إيجابي في كل قياسات النمو (طول النبات، عدد الفروع، طول الجذر الرئيسي، عدد الجذور الثانية، عدد الأوراق، مساحة الورقة، الوزن الرطب والجاف للمجموع الخضري و الجذور، وعدد الأيام اللازمة 50% و 10% إزهار). المسافة 15 سم أعطت أعلى متوسط لكل هذه القياسات. زيادة المسافة بين النباتات أدت إلى زيادة عدد القرون بالنبات، إنتاج النبات، بينما قلل الإنتاج في وحدة المساحة، كما أدت إلى زيادة طول القرن و الوزن الرطب للقرن. تقليل عدد النباتات بالجورة زاد التأثير الإيجابي في كل قياسات النمو عدا طول النبات ومساحة الورقة، وكان لها أيضا نفس التأثير على كل مكونات الإنتاج، في حين لم يكن لها تأثير على جودة القرون. عموما يمكن تلخيص ذلك بـإن تاريخ الزراعة المبكر (7 نوفمبر) والمسافة بين النباتات (10 سم) والكثافة الزراعية العالية (3 نباتات/الجورة)، لتعطى كثافة نباتية 180000 نبات/فدان أعلى إنتاج وجودة لقرون الفاصوليا. للإنتاج المثالى من الفاصوليا الزراعة المبكرة (7 نوفمبر) على مسافة 10 سم بين النباتات و 3 نباتات للجورة قد تكون موصي بها في منطقة شمبات والمناطق المشابهة لها.. ويطلب تأكيد ذلك إجراء تجارب أخرى.