

High Orange Seedling Shoots Of Siam (Citrus Nobilis L.) With The Diameter Of The Rootstock Japansche Citroen (Jc) In Andisol Soil Amendment

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Abstract: This research aims to know the influence of the diameter of the rootstock Japansche Citroen and the type of the amendment to the land ceded on top soil planting media andisol the best citrus seedling shoots of growth citrus siam. This research was conducted in Siboras Nagori, Simalungun Regency from March until June 2016 with height 1200 m above sea level, precipitation type C (Oldeman classification), and soil type Andisol. Soil analysis done in the laboratory of the Central Faculty of Agriculture University of North Sumatra. The design used in this study was a Randomized Design Group (RAK) Factorial. The first factor is the diameter of the rootstock (D) consists of 3 levels namely: D1 = 7-11 mm, D2 = D3 = 12-15 mm and 16-20 mm. The second factor is the planting medium consists of 9 level: M0 = control (0), M1 = Phosphor Fertilizer (2 g/kg soil), M2 = Rice Straw (20 g/kg soil), M3 = Leaves Reed (20 g/kg soil), M4 = Chicken Manure (20 g/kg soil), M5 = Rice Straw (20 g/kg soil) + Leaves Reed (20 g/kg soil), M6 = Manure (20 g/kg soil) + Rice Straw (20 g/kg soil), M7 = Manure (20 g/kg soil) + Leaves Reed (20 g/kg soil) and M8 = manure (20 g/kg of soil Straw + Rice Plant (20 g/kg soil) + Leaves Reed (20 g/kg soil). The results showed that there is an influence of the diameter of the rootstock JC high against of the shoots but in Planting Media has no effect against high shoots. The interaction of the diameter of the rootstock and planting Media has no effect against a real high shoots Orange siam.

Index Terms: the diameter of the rootstock, planting media, andisol soil, Japansche citroen and orange siam

1 INTRODUCTION

Orange Siam is the flagship national orange the most widely cultivated, namely of 60.60% of some type of local citrus such as Mandarin (36.70%) Pameloa citrus (1.70%), Orange (1%) and Grapefruit (0.14%). Nutrient components in citrus fruits namely C, B1, B2, calcium, phosphorus, iron, potassium, fiber and others. Content of folic acid and potassium compounds in citrus fruits real kill cancer cells. In some countries have produced oil from orange peel, sugar, molasses, alcohol and pectin from citrus fruit being wasted. Advantages of Orange Siam, among others, lies in its sweet, slightly acidic fruit skin rather thick and bright orange, has a resistance to pests and diseases, contains vitamin C, an image of delicacy and invigorating, skin colors vary, easily consumed, and can be cultivated with the vast good agro climate in the Highlands or lowlands [1]. The potential for the cultivation of oranges in the Highlands of North Sumatra very promising considering lands so wide. Almost all the Highlands of Northern Sumatra Andisol soil types are found scattered in several counties. Andisol soil good for citrus plant growth if it can overcome the retention of P and pH is generally low. The awarding of the compost, manure, tillage and soil is lime treatment to neutralize the acidity of the soil used in the andisol.

Andisol soil planting media are available at area nurseries and andisol already used by farmers as a medium for planting citrus seedlings breeding. Andisol soil is one with a low phosphorus availability because P absorbed by allofan and amorphous materials have a specific surface that is so vast, so absorbed P is higher, meanwhile the exceeds more absorbed oxide hydrate Al and Fe so the element phosphorus not available for plants [2]. Andisol soils is one of the ground with a high phosphate retention problems with phosphate retention > 85% (Soil Survey Staff in [3]). Nutrient needs in the form of organic matter largely determine the success of the green. According [4], the food is converted into energy needed by plants for the process of healing the wounds caused by the green. The land was given the manure (organic) with optimal comparison would produce a planting medium conducive and ease the water penetrates the soil, as well as the exchange of air (aeration) would be better so that the growth of shoots well, so the plant's capability in carrying out physiology activities runs with optimal including cleavage and cell enlargement. According to [5], organic ingredients help maintain soil structure processed. Organic materials that share the smooth cover particles of minerals and prevents it from attaching to each other.

2. Research Methods

This research was conducted in Siboras Nagori, Simalungun Regency from March until June 2016 with height 1200 m above sea level, precipitation type C (Oldeman classification), and soil type Andisol. Soil analysis done in the laboratory of the Central Faculty of Agriculture University of North Sumatra. The design used in this study was a randomized Design Group (RAK) Factorial. The first factor is the diameter of the rootstock (D) consists of 3 levels namely: D1 = 7-11 mm, D2 = D3 = 12-15 mm and 16-20 mm. The second factor is the planting medium consists of 9 level: M0 = control (0), M1 = Phosphor Fertilizer (2 g/kg soil), M2 = Rice Straw (20 g/kg soil), M3 = Leaves Reed (20 g/kg soil), M4 = Chicken Manure

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(20 g/kg soil, M5 = Rice Straw (20 g/kg soil) + Leaves Reed (20 g/kg soil), M6 = Manure (20 g/kg soil) + Rice Straw (20 g/kg soil), M7 = Manure (20 g/kg soil) + Leaves Reed (20 g/kg soil) and M8 = manure (20 g/kg of soil Straw + Rice Plant (20 g/kg soil) + Leaves Reed (20 g/kg soil). Data analysis was performed using ANOVA test and test distance of Duncan. The parameters are observed, namely: high of buds.

3. Results

High Buds

Table 1. High Orange Seedling Shoots of Siam with the Diameter of the Rootstock and Planting different Media at the age of 30, 60 and 90 Days after planting (cm).

Treatment	High Buds (cm)		
	Age (day)		
	30	60	90
D ₁	12.10a	18.19a	21.53a
D ₂	12.83a	20.17a	26.06b
D ₃	14.98b	25.29b	30.50c
M ₀	14.13	20.03	24.40
M ₁	12.96	22.97	25.26
M ₂	13.71	19.41	25.44
M ₃	14.59	23.54	27.29
M ₄	13.40	22.53	26.47
M ₅	14.10	20.40	27.77
M ₆	12.09	21.43	25.89
M ₇	10.90	20.44	28.22
M ₈	13.84	20.17	23.55

Description: a number that is followed by the same letter in the same column means the different unreal at the 5% level test Duncan.

Table 1 shows that at lower stem diameter treatment, bud seeds orange Siam found in D3 (16-20 mm) higher than the real D1 (7 – 11 mm) and D2 (12 – 15 mm). The relationship of the diameter of the rootstock with shoots of seedlings of citrus Siamese can be seen in Figure 1.

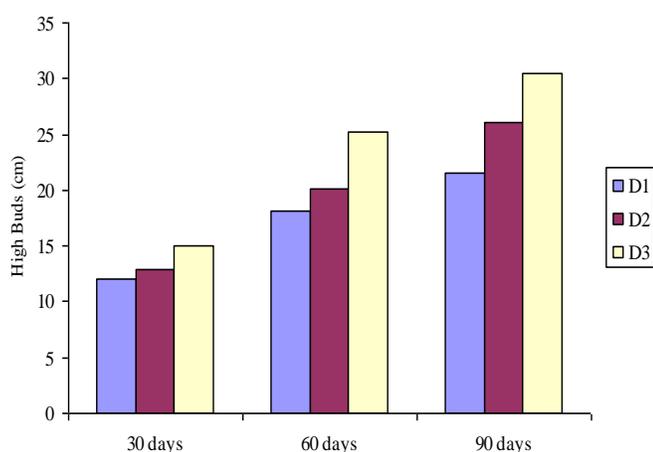


Figure 1. The Relationship of the Diameter of the Rootstock with shoots of Seedlings of citrus High Siam at the Age of 30, 60 and 90 Days After Planting (DAP).

Based on Figure 1 it can be noted that, at the bottom of the shaft diameter of the larger, high-growth shoots faster with increasing age of the plants than in the diameter of the rootstock.

4. Discussion

The Influence of The Diameter of the Rootstock Seedlings Growing Citrus Seedlings Siam

The size of the diameter of the stem bottom noticeable effect increases the higher the citrus seedling shoots. This is due to the size of the diameter of the stem indicates the existence of supplementary feeding. The smaller diameter the lower the material reserves of food. Potential food reserves belonging to each green will determine the growth and development of shoots. The larger the diameter of the trunk down, then more and more food reserves that were used in the formation of roots and shoots. Formation of the root will further improve the water supply which would result in better growth of the shoots. The results showed that use of the diameter of the rootstock D3 (16-20 mm) has a high of buds than D1 (7 – 11 mm) and D2 (12 – 15 mm). Increasing the size of the diameter of the rootstock will lead to the increase of the reserves of nutrients as well as the physiological capability in support of keberhasilan green. This is in line with the opinion stating that sufficient carbohydrate reserves on a rootstock and supportive environment, it is the cause of the high number of success percentage of buds growing in green rubber [6]. The function of the stem under one of these can act as absorbster of water and nutrient elements will affect the process of solving the green shoots so that it can support towards growth and the length of the period of maintenance of the seed [7]. This is in line with the results of other research that States that the success of the process of connecting on a citrus plant, one of which is determined by the condition of the rootstock used [8]. The optimal nutritional support towards the success of the green line with increasing diameter of the rootstock is visible on the results of the observation power grow seeds the better. The larger the diameter of the rootstock, the good growth rootstock. A condition like this can finally support towards the success of the Green so the growing power be increased. Fulfillment needs optimal rootstock, associated with environmental factors is required, the plant will produce jagur and ready for occulation. The rootstock jagur will produce shoots jagur [9]. Furthermore expressed that the green plant growth is very dependent on the ability of rootstock in providing nutrient and water. Then [10] suggests that the rod will be able to grow well when it gets nutrients of the rootstock in shape and the right comparison. Rootstock junky with less good rooting pattern will cause the Green be unsuccessful due to lack of nutrient substances gained support, while on the green which was already so would cause its growth be stunted. A good rootstock growth will support against the rate of photosynthesis becomes optimal so that it can support towards the success of the green. It is in line with the opinion that stated that the reserve carbohydrates found in the rootstock is very necessary to support the growth of the early results of the green plant [11]. The results of this research are supported by research conducted by [12] that the ornamental tree trunk diameter growth was greatly influenced by the size of the rootstock used.

The Influence of The Media Resource of Growing Seedlings Planting Citrus Seedlings Siam

The results showed that the real effect of cultivation medium against a number of shoots, the leaves, the total area of the leaves, buds, stems diameter weight of dried buds, shoots, the rate of Relative Grows (LTR), broad-leaf ratio, as well as the

amount of chlorophyll a and b, but not effect on high Net Assimilation Rate, shoots (LAB). The growing power of citrus seedlings siam best contained on the media for planting Rice Straw i.e. M5 (20 g/kg soil) + Leaves Reed (20 g/kg soil) which can be seen from the number of shoots and leaves a number of more, as well as the total area of the larger leaves, stem diameter shoots the larger, as well as wet and dry weight of shoots. The results showed that seedlings of citrus rootstock green results siam JC on the planting medium plus fertilizer 2 g/kg soil has the power to grow higher than the control treatment (andisol soils). This describes the role of the P element in the process of plant growth is very meaningful in determining the growth of roots. [10] States that in the formation of root of lateral roots in the root hairs formation increased with increasing absorption of phosphoric, nutrient and water. Research results [13] shows that giving fertilizer P on a stum rubber is one of the ways used to give stimulation to cells of the root that has been truncated when stum demolition stum. In this case the P fertilizer fertilizer is that have time its availability to plants are absorbed in a relatively long time. According to [14] concluded that the existence of the grant of fertilizer P on rubber plant seed growth (*Hevea brasiliensis*. Muell, Arg) stum eyes sleep clones PB 260 can affect an increase in dry weight root. From the description it can be noted that with the addition of fertilizer and different organic materials such as rice straw, Reed leaves, chicken manure as a media mix cropping it will raise pH above 5.5 planting media. An increase in pH will progressively increase the power of growing citrus seedlings.

The Influence of Interaction of the Diameter of the Rootstock and Planting Media The Growing of Citrus Seedlings Siam

The results showed that the interaction of the diameter of the rootstock and planting media has no effect against a real high shoots orange. The results of the study indicated that in general the interaction does not occur the diameter of the rootstock and planting media against the growing power of citrus seedlings. The absence of influence of the interaction of the diameter of the rootstock and planting media indicate that environmental factors under the soil surface, in this case media or fertilizer and planting, not completely necessary to support the growth of the early results of bud green. At this stage, the energy required to support the growth of buds are still obtained from the results of photosynthesis stored on Citrus rootstock so that the role of nutrient elements, media embed, and roots of the plant are still not completely required to support growth of shoots.

5. Conclusions and Suggestions

Conclusions

1. There is the influence of the diameter of the rootstock JC against high shoots but there is no influence of planting medium against high shoots
2. There is no influence of the interaction between the diameter of the rootstock with the planting medium against high citrus seedling shoots of siam

Suggestions

1. It is recommended to use the diameter of the bottom of the onion-size (16-20 mm) in order to grow orange seeds siam power the better.

2. It is recommended to use the growing media containing organic materials as soil mixture so that the growth of citrus seedlings andisol siam the better.

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