

SUMMARY

Yuana Pristy Kusumaning Ayu. 115040201111229. Study of Polyembryony in Japansche Citroen (JC) Rootstock Seed. Supervised by Ir. Lilik Setyobudi, MS. Ph.D. as the main supervisor, Dr. Ir. Mudji Santoso, MS. as the secondary supervisor and Ir. Arry Supriyanto, MS. as the third supervisor.

Citrus (*Citrus* sp.) is kind of plants which have many demand by Indonesian people, because of its advantage in abundance. Most citrus propagated by budding which requires scions and rootstocks. Rootstock used from the Japansche Citroen (JC) seeds varieties with many advantages, it is high adaptability (Andrini *et al.*, 2013). Problems often occur in citrus seeds are number of seeds planted has uncomparable result with the number of seedlings were obtained. According to the Direktorat Jenderal Perbenihan (2002), to get 10.000 citrus seeds from budding result, needs 40.000 rootstock seeds. The decrease was due to the aberrant seedlings (*off type*) of seeds that are polyembryony JC. Polyembryony is a state in the seed there is more than one embryo there are zygotic embryo and nucelar embryo. Zygotic embryo can become *off type* seedlings, and nucelar embryo used is because it identic with the parent. JC polyembryony characterize beneficial when the *off type* seedling decreases. Factors affecting polyembryony are fruit weight, number of seeds per fruit, and seeds diameter. The larger of fruit weight, the number of seed per fruit increased (Nerson, 2005), thus increasing the number of embryos per seed. The number of embryos increase linearly with increasing the seed size. The purpose of this research is to study the polyembryony that capable of forming *multiple seedling* of Japansche Citroen rootstock seeds based on fruit weight, number of seeds per fruit, and seeds diameter. This hypothesis taken is a large fruit weight, number of seeds per fruit of many seeds, and large diameter of seeds are capable affect and increase the percentage of polyembryony and *multiple seedling* of Japansche Citroen (JC) rootstock seeds.

This research was conducted at Punten Experimental Garden and Shoot Tip Grafting (STG) Laboratory of Indonesian Citrus and Subtropical Fruits Research Institute (ICSFRI) Batu located 950 meters high above sea level, the average daily temperature 22-26°C, and on average 74,3% humid. This research was conducted from April to July 2015. The research method is a survey method followed by the observation, that of laboratory observation and field observation. Data from field observation is used as a comparison of laboratory observation. The observations based on preliminary research that has been done previously and obtained the category of fruit weight, number of seeds per fruit and seeds diameter. Fruit weight category have 3 criterias are large ($\geq 158,09$ g), medium (107,68-158,08 g), and small ($\leq 107,67$ g). The number of seeds per fruit with two criterias are many (≥ 15 seeds) and less (≤ 14 seeds) while category of seeds diameter have two criteria are large ($\geq 0,41$ cm) and small ($\leq 0,4$ cm). These categories as basic of sampling fruit of 60 fruits taken from 10 plants randomly, so that each plant has 6 samples of fruits. Fruit seeds obtained on overall sample observations. The observations made are microscopic observation includes observations of the average number of embryos per seed and polyembryony percentage (%) and the results of seedling observation include observations of seedlings grow, *multiple seedling* percentage (%), total living seedlings, *off type* seedlings percentage (%), and total *true to type* seedlings (%). Data were analyzed using of confidence interval level of 95%.

The results showed that JC rootstock seed have 1-6 embryos per seed and only 1-4 seedling per seed that grew. Polyembryony percentage of 44% while the *multiple seedling* percentage of 21,34%. Planted the seed has only grew is 93,50%, but the existence of *multiple seedling* caused percentage of total living seedlings increased to 116.67%. The existence of *off type* seedlings by 20,73% causing total *true to type* seedling or nucelar seedlings only amounted to 95,94%. Categories of fruit weight and number of seeds per fruit did not affect the percentage of monoembryony, polyembryony, single and *multiple seedling*, but only the diameter (size) of seeds that can affect of single and *multiple seedling*. Diameter (size) of seeds large significantly affected the percentage of *multiple seedling*, so can increase the percentage of total living seedlings and total *true to type* seedlings.

