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Growth and Production of Amorphophallus paeoniifolius Dennst. Nicolson from Different Corm Weights

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ABSTRACT

The effect of different seed corm weight on the growth and production of elephant foot yams (Amorphophallus paeonifolius Dennst. Nicolson) were studied. Two forms of corm with same weight were prepared, i.e., whole corm and vertically sectioned by 1/2. The fresh mass of each whole corm and corm section was the same. Six different corm weights were compared, i.e., 50, 100, 200, 500, 1000 and 2000 g. Growth and development of elephant foot yam were determined by corm weigth, large seed corm produced larger leaf and fresh mass of daughter corms. On the contrary, number of leaf decreased with increasing seed corm weight. Plants from whole seed corms emerged earlier and they were larger than those from the sectioned corms, irrespective of weight. Plants from small sized whole corm emerged earlier than the larger ones. Dissecting the main bud caused the development of lateral buds, resulted in a delay of leaf emergence. The lower yield obtained by the use of sections might be related to the late emergence leading to shorter vegetative period in the field. In the cultivation, it is recommended to use whole seed corms of 100 or 200 g.

Key words : Elephant foot yams, tuber crop, Araceae, corm weight, tuberization rate

INTRODUCTION

Elephant foot yams (Amorphophallus paeoniifolius Dennstedt-Nicolson, synonym of A. campanulatus Decaisne) is locally used as staple food in many Asian countries (Jansen et al., 1996). In Indonesia, elephant foot yam is commonly grown in homegardens, upland and edge of lowland paddy fields (Santosa et al., 2002). Rural people in Sumatra, Java, Madura, Bali, Lombok and Sulawesi consume the corms and young leaves as vegetable occasionally. In urban areas, the plants usually grow wild and can be found in damped areas, cemeteries or on abandoned lands at elevation of 0-900 m above sea level.

Elephant foot yams is a potential new cash crop because the tuber contain high starch (O'hair and Asokan, 1986). Regarding food security program in Indonesia, the elephant foot yam is prospective as an alternative food source particularly in drought prone areas with frequent lack of cereal production. Furthermore, Ermiani and Laksmanaharja (1996) stated that elephant foot yam is potential as raw material for industries. Sen et al. (1996) and Santosa et al. (2006) stated that the plant is adaptive to low light intensity therefore it is suitable to be grown under intercropping or multiple cropping system. Santosa et al. (2003) noted that increasing productivity is essential since the average productivity is still low compared with its potential.

In the cultivation, farmers prefer large corms as planting materials because such corms can produce large daughter corms (Sen et al., 1996; Das et al., 1997). Nutrient reserved in the seed corms determines growth and development in many tuberous plants such as A. konjac (Miura and Watanabe, 1985; Yokoi et al., 1991, Inaba, 1992), Dioscorea sp. (Onwueme, 1973) and Colocasia sp. (El-Habbasa et al., 1976; Wilson and Siemonsma, 1996). In Amorphophallus, using small corm or cormels, the daughter corms reach harvestable size (about 1 kg or heavier) at 3–4 years after planting (Jansen et al., 1996). Soemono et al. (1986) evaluated seed corms of 25 to 150 g, and she pointed out that vegetative growth of elephant foot yam was affected by seed corm weight; larger seed corms produced larger plants. However, Sen et al. (1996) found out that it was not easy to provide a large number of large sized seed corms as planting material. Therefore, pieces of large corm are often used as planting materials instead of whole corms. The aim of the present study was to evaluate the effect of different corm weight on the growth and production of A. paeoniifolius.

MATERIALS AND METHODS

The experiment was carried out in the field of the Cikabayan Experimental Farm, University Farm, Bogor Agricultural University, Indonesia (6°36'S; 106°48'E;

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