

Thesis Title Growth and Yield of Potato from Various Propagation
Techniques

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Abstracts

Growth and yields of potatoes, both in- and off-season, were studied to determine differences in propagation methods. Cuttings, true seeds and seed tubers of Spunta, Kennebec, Russet Burbank and Hi-Alta#3 were tested in Chiang Mai at two locations for different periods of the year, i.e. from July to October 1988 at Tung Luang Royal Project, Amphur San Patong during the rainy season and from January to March 1989 at a private farm in Maejo, Amphur San Sai during the dry season. The results from both seasons indicated that leaf area increased to accumulate photosynthesis which later affected higher yields. Some of the photosynthates were found to be translocated to tubers within 15-30 days after leaf production. It was found that initially tuber development increased rapidly in direct proportion to leaf area expansion. Subsequently, tubers continued to develop even when the

growth rate of the leaf areas and other vegetative parts reduced and tuber development was found to continue until harvest. The results from the present study confirmed that tuber yields from seed tubers were the highest when compared with other potato planting materials. It was shown in the yield trial of four cultivars in the rainy season that Russet Burbank offered the highest yield, i.e. 260.80 g. per plant. On the other hand, Spunta was the best in the dry season trial, i.e. yielding 406.34 g. per plant. For Hi-Alta#3, the two methods of using cuttings and true seeds did not show any statistical difference when yields were compared for both seasons. In general, yields from the used of seed tubers were higher than yields from plants grown from cuttings and true seeds for the dry season. Spunta gave the best yield of 510.60 g. per plant whereas the yields of the other three cultivars were not statistically different. However, cuttings and true seeds may be alternative methods to start tuber seed production which can be used as planting materials for processing purposes. The mathematical model on potential crop production was applied to the data. A close and linear relationship between the predicted and the measured data was found. However, the correlation coefficient for the dry season was higher than that of the rainy season.