Saranjit Chanasuwan 2014: Breeding Medium Seed Size Peanut by Utilizing Germplasm from Large Seed Size Peanut. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Chalermpol Phumichai, Ph.D. 141 pages.

The objective of this study was to improve the yield of medium seed size peanut by utilizing large seed size peanut germplasm. Two medium seed size varieties i.e Tainan 9 and Khon Kaen 5 were crossed to Khon Kean 6, a large seed size variety. Fifty three lines that derived from the crosses were selected through bulk selection and modified pedigree method. The experimental yield trial was conducted in rainy season by using alpha lattice design with three replications having Tainan 9, Khon Kean 5 and Khon Kean 60-1 as checked varieties at Khaohinchon Reseach Station, Chachoengsao Province and at Research and Farmer's Occupational Development Center, Lopburi Province. The analysis of variance showed that pod yield and shelling percentage were significantly difference while seed yield and 100 seed weight were highly significant. By average, the KUP11115 had the highest pod and seed yields of 425.2 and 275.2 kg/rai. The result of yield trial revealed that KUP11115 and KUP11297 gave higher yields than those of the 3 checked varieties. At Lopburi Province, the analysis of variance showed that pod yield, seed yield, 100 seed weight and shelling percentage of the derived lines and checked varieties were highly significant different. The KUP11263 showed the highest average pod yield and seed yield of 705.3 and 519.8 kg/rai. It was also found that interaction among lines and locations were observed on pod yield, seed yield, 100 seed weight and shelling percentage. For the experiment in the farmer field in Sakon Nakhon Province the KUP11077 gave the highest pod yield of 335.6 kg/rai. The comparison between average yield and yield components in 3 locations and 2 seasons showed that KUP11263 produced the highest yield in both research stations in rainy season and in the farmer's field in dry season followed by KUP11115. Therefore, the KUP11263 and KUP11115 were suitable to plant in the larger field size and in more diversified areas and growing seasons in order to assess the stability of the lines and selection as the new promising varieties for further introducing to the farmers.

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