Maitree Munyanont 2011: The Correlation between Annual Climatic Variation and Cut *Dendrobium* Production and Quality. Master of Science (Agriculture), Major Filed: Horticulture, Department of Horticulture. Thesis Advisor: Mr. Parson Saradhuldhat, Ph.D. 76 pages.

Hybrid *Dendrobium* performs fluctuate flowerings during a year possibly due to seasonal changes. To understand the influences of environmental factors on the flower production, the correlations of the microclimate under the saran-house that orchid *Dendrobium* Sonia 'Ear Sakul' grown and the spike production including the quality and quantity as well as the spike total non-structural carbohydrate (TNC) was monthly investigated for 20 months at orchid farms located in Nakhon Pathom (14°02´N, 99°58´E), Karnchana Buri (14°03´N, 99°42´E) and Nakhon Ratchasima (14°38´N, 101°40´E). The data revealed that the highest light intensity and temperature but lowest relative humidity were observed during warm season. The highest relative humidity and rainfall but lowest light intensity were recorded during rainy season. The lowest temperature and no rainfall were monitored in cool season. The orchid spike quantity and quality plus the TNC fluctuated all year round associated with weather conditions under the saran-house during 5 months before harvest. Spike yield (y) correlated with temperature 4 months before harvest (r = 0.421) and day-temperature 5 months before harvest (r = 0.478) with multiple regression model as y = 7.323Tday5 – 173.35 (R^2 = 0.478) (Tday5 = day-temperature 5 months before harvest). Spike quality also correlated with air temperature, spike length and flower number per spike correlated with night-temperature and TNC correlated with relative humidity of harvest month (r = 0.265) and night-temperature 5 months before harvest (r = 0.337). In addition, light intensity also was the one of important factors. These results suggested that air temperature was a key factor playing a role in the quantity and quality of the *Dendrobium* spike production.

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