## Abstract

The study on climate change affecting on impacts of fruits production in highlands was collected the meteorological data in 5 locations under Royal Project Foundation areas as follows Ang Khang Royal Agricultural Station (AKG), Huai Nam Khun Royal Developmental Center (HNK), Mok Jam Royal Developmental Center (MJM), Nong Keaw Royal Developmental Center (NKW), Tung Rueng Royal Developmental Center (TRG). These meteorological data of year 2557-2558 BE were added into our climate database and analysed for climate model developing. This result revealed that the variable patterns of average temperature in monthly showed similarly followed in local season of northern. Temperature range between maximum and minimum values was found widely in difference since January to April and narrowly during rainy season. Weather had tend the maximum temperature decreasing but minimum temperature and total precipitation increased slightly, also. Weather in NKW area suited for mango and avocado production due to optimized climate and soil moisture in rainfed highlands, moreover there was colder weather than in MGM and TRG areas. The soil moisture was varied in seasonal changes at all depth levels. In each locations showed the different soil physical and chemical properties that affect on yield and fruit quality.

The study and plant models (persimmon) testing were determinated on the meteorological data and their yield of AKG and HNK in year 2557 and 2558 BE. Effectiveness of the models were compared on the yield with deviational values. Moreover, plant models of persimmon in AKG from meteorological data of January and February were developed into 4 models while the models (persimmon) in HNK by data of year 2557 BE were developed into 2 models. The plant models developing on forcasting mango and avocado yield in highlands were determinated on the meteorological data and their yield relationships. Mango 'Chiin Hwang' models of MJM and NKW consisted of 6 models by the relation of meteorological data from January to June. Avocado 'Buccania' models of NKW and TRG consisted of 12 models by the relation of meteorological data from December to June. These plant models gave coefficient of determination more over 90% which showing acceptable levels that they could be used as a tool to study the effects of climate change affected on fruit production in the highlands of Royal Project Foundation.

Keywords: Global warming, Weather model, Plant model, Fruits in highlands, Persimmon, Mango, Avocado