Abstract

Coffee insect and disease surveillance for vigilance in Arabica plantation promotion area in highland was carried out at 4 areas under supervision of Royal Project Development Centers; Pa Miang, Teen Tok, Mon-ngo, and Huay Pong; and 4 Extension Areas of Royal Projects; Pa Pae, Long Khod, Wawee and Mae Salong. Totally 24 coffee fields (3 fields in each area) were observed at various times i.e. vegetative growth after harvesting, flowering stage, fruiting stage, ripening stage, and harvesting stage. Regarding to coffee cultivation in the mountainous areas, there are shade and no shade with scattered spacing system depending on the landscape. The study was done during December 2014 to June 2015. The important insect pests were: 1) coffee berry borer, *Hypothenemus hampei* which causes the most serious damage on coffee cherry .The greatest infestation from coffee berry borer was 10.98 percent by average in Mon Ngo area while the lowest infestation was 0 percent at Mae Salong. Coffee berry borer caught from modified trap was the highest (378.77 insects / trap) at Mon Ngo while the lowest was Mae Salong was 1.74 insects per trap. 2) coffee stem borers (SB), *Xylotrechus quadripes* and *Zeuzera coffeae* which showed the symptom similarly as yellow tree, wilt and eventually died. Field monitoring was done in June by walking through the areas of study. Regarding to the wilt and dead symptom of coffee plant were examined. Long Khod area showed the highest number of stem borers as 69 percent while Huay Pong Area was 14 percent. In addition green scale, *Coccus viridis,* was found occasionally in all areas but was not severe with the infestation less than 5 percent.

The important of coffee diseases were: 1) Coffee leaf rust caused by *Hemileia vastatrix* majorly infested on leaves was found in all areas. The overall productivity of coffee affects by rust. The most severity of rust occurred in Pa Miang area in December 2014 as 4.13 of the disease index (0=no infected, 1=10% infected and 9=90% infected) while 1 of disease index in Mon Ngo in May; 2) coffee berry disease (CBD) caused by *Colletotrichum kahawae* (*C. coffeanum* Noack.) and *C. gloeosporioides* (Penz.) and Sacc influenced coffee cherry during fruit bearing. The disease was found at the beginning ranged from 2.22 to 33.47 percent in February 2015. The most severity is at 33.47 percent at Teen Tok.

Factors affecting the pest incidences were hypothesized as elevation, growing conditions with shade and no shade and weather. For elevation, the results showed that number of coffee cherries infested by coffee berry borer and leaf rust was higher at the areas of lower than 1,000 meters over sea level (the lower). Numbers of insects trend to be higher in the lower than in the higher 1,000 meters over sea level (the higher). The numbers of insects caught in traps also found in vegetative growth after harvesting until flowing stage and

the beginning of fruiting stage. Coffee leaf rust also trends to be different higher in the lower areas than in the higher areas. The highest disease index at 2.61 at vegetative stage after harvesting was found comparing to the index of 2.22 in the higher areas.

For shade and no shade areas, the results were not clear for numbers of coffee berry borers and coffee leaf rust due to the trends have been fluctuated along with the growth stages of plant. The highest of disease index was in vegetative growth after harvesting while the highest of insects caught was in flowering stage.

For the weather, factors temperature in coffee plantation areas ranged from 17.13 °C to 27 °C and the relative humidity ranged from 48 to 87 percent. From regression analyses, the number of coffee berry borers increases with the increasing of temperature and relative humidity conversely happen in coffee leaf rust. The disease index deceases when the temperature was increased. But the relative humidity has less affected to rust index. Disease occurrence was found with the wide range of relative humidity (47-87%RH).