Abstract

A survey on vegetables cultivation and postharvest management of 8 Highland Development Projects using Royal Project System, including Mae Salong, Khun Sathan, Tum Wiang Kae, Pa Kluay, Pang Hin Fon, Pa Pae, Pha Take and Huay Pao where the farmers grow and delivered produce to the Royal Project Foundation, found that each the Highland Development Project using Royal Project System had different cultivation and postharvest management. The postharvest quality and losses of vegetables on farm areas in the Highland Development Projects were also varied as well.

The postharvest loss survey on vegetables as they were moved along the supply chain, starting from farm areas to Chiang Mai Royal Project Produce Center as well as the survey on the shelf life of the produce stored at 5 degrees celsius, found that baby Pak-Choi from Mae Salong Highland Development Center had the rate of postharvest loss of 55.02 percent, most of which was caused by trimmed outer leaves, physiological loss (yellow-colored leaves and yellow rim leaves), and mechanical loss. The shelf life was 8.38 days. Baby cos lettuce's rate of postharvest loss incurred at 58.75 percent as a result of trimmed outer leaves, leaves infected by anthracnose disease, mechanical loss, and insect pests. Its shelf life was 8.53 days.

The first-time survey on yellow bell pepper from Khun Sathan Highland Development Center showed that the rate of postharvest loss was at 38.25 percent, due to the substandard quality of unusual shaped crop, sunburned crop, and mechanical loss. The shelf life was 19.43 days. From the second survey's results, yellow bell pepper's postharvest loss incurred at 32.16 percent which was mostly caused by the substandard quality of unusual shaped crop, produce eaten by birds, and mechanical loss. The shelf life period lasted 24.35 days. Meanwhile, cherry tomato had the rate of postharvest loss of 3.64 percent because the produce quality was substandard as its size was deformed and smaller than usual. Its shelf life was 11.70 days. Muskmelon's postharvest loss incurred at 34.05 percent as the produce quality was substandard, had no stem, abnormal skin color, and flawed skin. Plus, soluble solids were at 12 percent which did not meet the minimum standard

requirements. It was also caused by physiological loss (fruit splitting and cracking from plantation) and mechanical loss. The shelf life was 3.18 days.

Yellow bell pepper from Tum Wiang Kae Highland Development Center had the rate of postharvest loss of 25.94 percent, most of which was the substandard quality due to its unusual shape. It was also caused by streaked skin, black stem, and improper maturity. The shelf life was 24.50 days. Meanwhile, cherry tomato had the rate of postharvest loss of 1.86 percent which was affected by its small size, streaked skin, unusual shape, and physiological loss. The shelf life period lasted 20.45 days.

Yellow bell pepper and red bell pepper from Pa Kluay Highland Development Center had the rate of postharvest loss of 35.14 and 42.79 percent, respectively. The significant causes were its substandard quality, abnormal shape, uneven skin color, blemished skin, and physiological loss (fruit splitting and cracking from plantation). Their shelf lives were 24.18 and 27.40 days, respectively.

The postharvest loss of Japanese bunching onion from Pang Hin Fon Highland Development Center was at 77.59 percent, mainly caused by trimmed outer layers and leaf tips, spongy neck of bulb, onion bolting, and mechanical loss. The shelf life period lasted 6.32 days. Following the postharvest and quality inspection at farmers' houses, cherry tomato's quality did not pass the Royal Project's minimum requirements and could not be classified. Therefore, it could not be distributed to the Royal Project and was instead sold to middlemen in the market.

Japanese pumpkin from Pa Pae Highland Development Center had the rate of postharvest loss of 5.95 percent as the quality was substandard due to its disqualified weight, abnormal shape, rough skin and discolor skin. The shelf life was 46.58 days. Meanwhile, Chinese kale's postharvest loss was at 72.80 percent, mainly caused by trimmed outer leaves, stems and stems' base. This was also affected by day-old produce. The shelf life period lasted 3.45 days.

Japanese cucumber from Pha Take Highland Development Center had the rate of postharvest loss of 5.49 percent as the quality was substandard due to its abnormal shape, discolor skin, and mechanical loss. The shelf life was at 12.68 days. Meanwhile, Japanese pumpkin's postharvest loss was at 9.88 percent which came from the disqualified produce as its size was small and underweight. They found that

the crop skin was blemished with abnormal shape and disorder skin color. The shelf life was 30.30 days.

Cherry tomato from Huay Pao Highland Development Center had the rate of postharvest loss of 18.73 percent. It came in a variety of sizes in one container which did not meet the quality criteria for vegetables and the produce was over-ripe. The shelf life was 14.05 days. Regarding Japanese pumpkin, its postharvest loss was at 13.00 percent as the quality was substandard due to its disqualified weight, blemished skin, abnormal shape, and discolor skin color. The shelf life was 37.75 days. Meanwhile, muskmelon's postharvest loss was at 1.38 percent. Mostly, it was caused by physiological loss (fruit splitting and cracking from plantation). The shelf life was 6.63 days.