Screening of Potato Cultivars for Infestation by Beet Armyworm (*Spodoptera exigua* Hübner) and Analysis on Infestation-related Factors

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Infestation levels of potato cultivars(cvs.) to the beet armyworm (*Spodoptera exigua* Hübner) were examined and infestation-related factors were analyzed. Fifty potato cvs. were field-grown at Daegwallyung and Gangneung areas, Korea, in 1995~1997, and investigated for infestation levels by the beet armyworm. To evaluate feeding preferences among potato cvs., the area of potato leaves fed on by larvae of *S. exigua*, were checked in the laboratory.

Aditionally, seven cvs. (Atlantic, Dejima, Jopoong, Irish Cobbler, Namsuh, Shepody, and Superior) recommended by Korean Government and three promising cvs. (Anco, Bintje, and Denali) were selected to analyze some of their physical and chemical characters: leaf trichome density within a circle 3㎜(ψ), and contents of glycoalkaloids, total-nitrogen, Ca, K, Mg and total amino acids. And finally correlation analysis was conducted to see whether there is a possible relationship between these characteristics and the damage level.

The number of leaves damaged by *S. exigua* larvae on cvs. Alamo, Allegany, Norland, Recent, Sandra, Shimabara, Snowchip and Spunta were under 0.6 on average, whereas that of cv. Nicola was much higher with 23.5. In indoor test, *S. exigua* larvae showed lower feeding leaf area ratios on cvs. of Irish Cobbler and Superior than other cvs. Tomatine at 1,000ppm showed greater antifeeding activity to larvae of *S. exigua* than other potato alkaloids.

Leaf trichome density was the highest on cv. Dejima of 183.0 for long and 43.5 for short, but the lowest on cv. Jopoong of 33.3 for long, which was 1/5 less than cv. Dejima. The contents of foliar glycoalkaloids of cvs. Denali and Namsuh were 15.67㎎% and 12.22㎎%, but cvs. Anco and Shepody had lower. The highest content of total nitrogen was found on cv. Jopoong. The Ca content of cv. Denali was 240.8ppm, which was the highest level. Leaves of cv. Superior contained 767.2ppm of K. For Mg content, higher contents were on cvs. Denali and Jopoong, but lower on cvs. Anco and Superior. The contents of total amino acids were higher in cv. Bintje, but lower in cv. Anco. Generally, the content of asp, glu and pro were higher, while cys, met and his lower.

From correlation analyses, leaf area ratio fed by *S. exigua* was correlated with the density of longer trichome on underside of leaf surface ($r=0.78604^{**}$), glycoalkaloids content ($r=0.95134^{*}$) and total nitrogen content ($r=0.99407^{**}$). Such information will become essential in developing integrated pest management programs against the major pest insects and also in breeding new potato cvs. resistant to these insects.