B-45 Effect of physical conditions on *in vitro* microtuberization process of potato (*Solanum tuberosum* L.)

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The phenological change of an organ into a tuber is not an obligatory step in potato ontogany. But, by influencing the changes in physical factors such as temperature, photoperiod, and light intensity in the growing environment, it is possible to induce tuber. Although, it is not feasible to control the outer environment of a farm land, in order to maximize the tuber harvest, such environment factors can be easily controlled in *in vitro* culture conditions for maximizing the process.

The effect of physical conditions on *in vitro* tuberization was tested using stem segments with 2 internodes (cv.*Cardinal*) cultured in test tubes (25 x 150 mm) containing ~15 ml of tuberization medium (Murashige & Skoog basal medium enriched with 4.0 mg l^{-1} 6-benzylaminopurine and 80.0 gl^{-1} sucrose). Of the tested physical conditions (A:20°C 12 hof ~3000 lux, B:20°C 12h of ~1000 lux, C-20°C total darkness, D:23°C 12h of ~3000 lux, E:23°C 16h of

~1000 lux, F: 23°C 12h of ~1000 lux, G:23°C 16 h ~1000 lux, H:23°C total darkness, I:22-32°C ~12 h of tropical greenhouse conditions).

Of the *in vitro* microtuberization process, treatments D and I showed greater positive influences on tuber fresh weight and cross-sectional tuber area. Treatment G showed the highest positive effect on the stolen length.

Such manipulation of tuberization process would be helpful in selecting the suitable physical condition for the microtuber stimulus process, which may play a significant role in increasing the efficiency of cost-effective microtuber production protocols.