

# JASMONIC ACID AND ITS INFLUENCE ON TUBERISATION OF POTATO PLANTS

Kyselina jasmonová (JA) a její vliv na tvorbu hlíz u bramboru

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## Souhrn, klíčová slova

Kyselina jasmonová (JA) při aplikaci do stolonů v době vegetace, ovlivňuje růst stolonů a další tvorbu hlíz. Při nádobových pokusech bylo zjištěno, že po aplikaci kyseliny jasmonové všechny aplikované rostliny měly větší počet hlíz. Průměrná hmotnost těchto hlíz byla výrazně větší než u kontrolní varianty.

Hlízy, aplikace, tvorba hlíz, hmotnost hlíz

## Summary, keywords

Jasmonic acid (JA) was treated on potato plants in hydroponics. After application of JA directly to the area of stolon growth all treated plants developed more tubers than control plants and average weight of those tubers was as well more significant as compare with control plants without any application.

Application of JA, area of stolon growth, tuber formation, number of tubers, weight of tubers

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## Introduction - Úvod

For SD-responsible potato plants, short day conditions are obligatory for start of tuberisation. JA seems to be accumulated on the leaflets under SD conditions and transformed into hydroxylated forms 11-OH-JA and 12-OH-JA. After this hydroxylation JA could be easily transported from foliage via phloem to the area of stolon formation, where it triggers the cell expansion in the medullar tissues of stolon-tips.

## Methods - Metody

Jasmonic acid (JA) was applied to the area of tuber formation on hydroponics. Plants of *Solanum tuberosum* L.cv. *Jukovskij* were derived from tissue cultures of healthy tuber buds and after 21 days planted into hydroponics. The plants were kept under three regimes with different temperature and light values, to mimic the ordinary climate conditions during the whole vegetation period. JA was treated in 2 different periods: 10 days before tuber formation and during the tuber formation. During the application methanol JA solution (1mg/ml) was diluted with water in two concentration 1 and 5  $\mu$ M and then added to each tray of hydroponics equipment to reach the root system of plants. All variants were 3 times repeated for evaluation and two control trays were kept without any treatment.

## Results - discussion – Výsledky - diskuse

JA, when applied directly to the area of tuber formation, has strong influence on growth of tubers due to

the induction of cell expansion in stolon medullar tissues. All JA treated potato plants after application had approximately twice more tubers than control plants. After JA treatment 10 days before tuber formation, application with 5  $\mu$ M had more strong effect on growth of tubers than concentration 1  $\mu$ M. On the contrary, when potato plants were treated during the tuber formation, it was not found significant differences between two types of concentration, although both JA treated variants had higher number of tubers, as compare with control plants.

In control plants kept without application, certain period is necessary for transport of internal JA after hydroxylation from leaves to the stolon area. Because of JA treatment, we have shortened this period so all JA treated plants developed more tubers and had more time for growth of those tubers. Thus, JA application can be used in production of virus-free potatoes in hydroponics.

## References - Použitá literatura

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