B-23: Frequency of sectoring of *Fusarium oxysporum* F.sp. *niveum*, the causal organism of vascular wilt disease in watermelon

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Vascular wilt of watermelon (Thumb.) Natsum. and Nakai) caused by *Fuscarium oxysporum* (Schlect.) F.sp. *niveum* (E. F. sm) Snyd. and Hans (FON) occurs world wide. It has been identified as one of the limiting factors in watermelon production.

Chlorate is a toxic analogue of nitrate that greatly restricts the growth of fungi. Strains of FON mutate spontaneously on medium containing chlorate, producing fast-growing, chlorate resistant sectors. The sector formation reflects its genetic instability.

Twenty one strains of FON isolated from heavily infected watermelon fields in Malaysia were used to examine frequency of sectoring on 3 media i.e. potato dextrose agar (PDA), potato sucrose agar (PSA) and minimal medium (MM). Each was amended with 1.5, 3.0 and 4.0 %, $KClO_3$, and was designated as PDAC, PSAC and MMC respectively.

Spontaneous chlorate resistant sectors were readily recovered from all strains of FON when cultured on PDAC, PSAC and MMC. Mean frequency of sectors per colony on PDAC and PSAC were significantly higher ($p < 0.05$) than their respective values on MMC at each concentration of chlorate. No significant differences were observed for mean frequency of sectors per colony between PDAC and PSAC across all concentrations of chlorate.

The genetic instability as reflected by high frequency of sectoring on media amended with chlorate appears to be a general characteristic of FON.

A moderate degree of genetic instability could have a selective advantage for survival of plant pathogens, allowing rapid adaptation to environmental stress such as fungicides or the introduction of host resistance. Reliance on mutation rather than sexual recombination is, particularly important for organisms, such as FON, that primarily depend on asexual reproduction.