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Outbreak, pathogenicity and biological control of *Phytophthora capsici* in tomatoIbrahim E Elshahawy, Hesham M Abouelnasr and Sirag M Lashin
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Statement of the Problem: Tomato transplants (30 days old) were grown in fields at Fayoum and Beni Suef governorates in Egypt. Developed symptoms of wilting with brown-to-black cankers on the lower stems and root rot were observed. However, this problem has not been previously studied in Egypt. The purpose of this research is to study the outbreak of this disease, pathogenicity tests of the isolated fungi, identification of the causal agent and the possibility of different biocontrol agents to control the disease under *in vitro* and greenhouse conditions.

Methodology: A survey was conducted in August of 2016 on the outbreak of these symptoms at Fayoum and Beni Suef governorates in Northern Upper Egypt. Pathogens were isolated from infected parts of the transplants by culturing the affected tissues on V8 medium. Pathogenicity tests were conducted on healthy tomato seedlings which were grown under greenhouse conditions. Monitor potential of biocontrol agents against the pathogen were conducted *in vitro* and under greenhouse conditions.

Findings: The diseased plants having the above symptoms were prevalent and severe losses in established plants were found (near 50%) in both governorates. Sixteen fungal isolates belonging to five genera were isolated from affected tissues. *Phytophthora capsici* recorded the highest frequency of occurrence and was found to be prevalent in most cases. Pathogenicity tests were performed and the fungus was successfully re-isolated from symptomatic plants, fulfilling Koch's postulates. Identification of *Phytophthora capsici* (Leonian) was based on cultural, morphological and molecular approaches. The latter usage of the primer DC 6 soil drench with the selected strains belonging to the genus *Bacillus*, *Pseudomonas* and *Trichoderma*, significantly reduced disease severity and increased the growth of tomato plants compared to untreated controls in greenhouse experiments.

Conclusion & Significance: To the best of our knowledge, this is the first report of phytophthora blight by *P. capsici* from Egypt. The results indicate that certain *Bacillus*, *Pseudomonas* and *Trichoderma* strains are effective against *P. capsici* on tomato, and improved plant growth.

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Nutritional and antioxidant properties of young aromatic shoots of Bungkang, [*Syzygium polyanthum*] (Wight) WalpMaclin Dayod and Margaret Abat
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Bungkang (*Syzygium polyanthum*) is a medium to tall plant which produces edible and aromatic leaves. The leaves, though commonly used by some communities in various countries to flavour many local dishes, have various medicinal properties. Nonetheless, the nutritional and antioxidant properties of the leaves are influenced by various local biophysical conditions. Hence, this study was conducted to verify those properties in locally grown *S. polyanthum* in Sarawak, Malaysia. We found that *S. polyanthum* leaves contain about 68.0% carbohydrates, 67.0% moisture, 17.0% crude fibre, 10.0% crude protein 4.0% ash and 1.0% fat. A 100-gram leaf powder may also provide about 196% iron, 89% copper, 63% magnesium, 48% calcium, 48% manganese, 25% potassium, 21% zinc and 20% phosphorus of the recommended daily allowances. The leaves also contain about 1.9 mg/mL of vitamin C, 3.2 mg GAE/g of total phenolic, 1.6 mg GAE/g of total flavonoid and 0.1 mg/g of total anthocyanin. The scavenging activities of 20 mg/mL leaf extract were about 79% using 2,2 -diphenyl-1-picrylhydrazyl and 75% using 2,2-azino-bis-(3-ethylbenzothiazoline-6-sulphonic acid). We also observed about 10% increase in vitamin C content between 0800 and 1400 h with increasing temperature and decreasing humidity, suggesting its protective function to free radicals in the leaves. Our results indicate that the locally grown *S. polyanthum* leaves are nutritious and have high antioxidant properties.

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