

Two Species of Myxomycetes Causing Slime Mold of Sweet Potato

Wan Gyu Kim*, Sang Yeob Lee and Weon Dae Cho¹

Plant Pathology Division, National Institute of Agricultural Science and Technology (NIAST), Rural Development Administration (RDA), Suwon 441-707, Korea

¹Applied Microbiology Division, NIAST, RDA, Suwon 441-707, Korea

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Specimens collected from sweet potato plants with slime mold symptoms in fields in Daejeon, Korea were examined. Two species of Myxomycetes, *Fuligo septica* and *Stemonitis herbatica* were identified based on their morphological characteristics. This is the first report that the two species of Myxomycetes cause slime mold of sweet potato in Korea.

KEYWORDS: *Fuligo septica*, Slime mold, *Stemonitis herbatica*, Sweet potato

Sweet potato [*Ipomoea batatas* (L.) Lam.] is a food crop which is distributed in the world. Storage roots of the plant are commonly used as a source of fermentation products including wine, ethanol, etc. as well as food. The plant has been grown in many locations in Korea. In 1996, severe outbreaks of slime mold symptoms on stems, leaves, and petioles of the plant were observed in four fields in Daejeon, Korea. Incidence of the slime mold symptoms on sweet potato plants in the fields were as high as 20% at the maximum. Slime molds appeared as white to yellow jellylike plasmodium masses on soil and plant surfaces at the early stage and formed grayish or dark brown fruiting bodies on large areas of the plants later. They grew superficially on the plants but did not directly damage the plants.

Myxomycetes are a small, relatively homogeneous group of eukaryotic organisms (Stephenson and Stempin, 1994). They occur on a variety of habitats such as living plants as well as decaying logs, dead leaves, and other organic matter (Alexopoulos *et al.*, 1996). It has been reported that three species of Myxomycetes, *Fuligo septica* (L.) Wigg., *Fuligo violacea* Pers. and *Physarum cinereum* (Batsch) Pers. cause slime mold on sweet potato plants (Clark and Moyer, 1988; Farr *et al.*, 1989). In addition, another species of Myxomycetes, *Physarum gyrosum* Rostaf. was recorded as a slime mold pathogen of sweet potato in Japan (The Phytopathological Society of Japan, 2000), which is a synonym of *Fuligo gyrosa* (Rostaf.) Jahn (Yamamoto, 1998). In Korea, *F. violacea* was recorded as a slime mold pathogen (Cho and Shin, 2004), which is a synonym of *Fuligo leviderma* Neubert (Yamamoto, 1998). However, there is no description on the slime mold organism in the record. In the present study, two species of Myxomycetes newly found in sweet potato

fields in Korea are described.

Two specimens of Myxomycetes deposited in the HCCN (Herbarium Conservation Center of NIAST, RDA, Suwon, Korea) were examined for their morphological characteristics by stereo and compound microscopes. The specimens were collected from sweet potato plants with slime mold symptoms in fields in Daejeon, Korea in June, 1996. Species of Myxomycetes were identified based on the morphological characteristics described by previous workers (Feest and Burggraaf, 1991; Martin and Alexopoulos, 1969; Yamamoto, 1998).

Description of Species

1. *Fuligo septica* (L.) Wiggers, Prim. Fl. Holsat. 112. 1780. (Fig. 1-A, B and E)

Aethalia pulvinate, 2~20 cm in diameter, 0.5~3.0 cm thick, white, greenish yellow to grayish brown, rough and fragile. Capillitium hyaline, branched with fusiform nodes. Spores in mass dark brown, spherical, minutely spinulose, 7~9 μ m in diameter. Plasmodium white to yellow.

Specimen examined : PF96014, Hakhadong, Daejeon, Korea, June 14, 1996.

Note : This species is known as a cosmopolitan and occurs on rotten wood and litter, living plants and soil (Martin and Alexopoulos, 1969; Yamamoto, 1998). In the present study, it was revealed that the species produces fruiting bodies on stems, leaves and petioles of sweet potato. The slime mold symptoms appeared as grayish brown dust on the plants. Slime mold of sweet potato caused by this species was previously recorded by Farr *et al.* (1989).

2. *Stemonitis herbatica* Peck, Ann. Rep. N. Y. State Mus. 26:75. 1874. (Fig. 1-C, D and F)

Sporangia in clusters, stalked, cylindrical, obtuse at the

*Corresponding author <E-mail: wgkim@rda.go.kr>

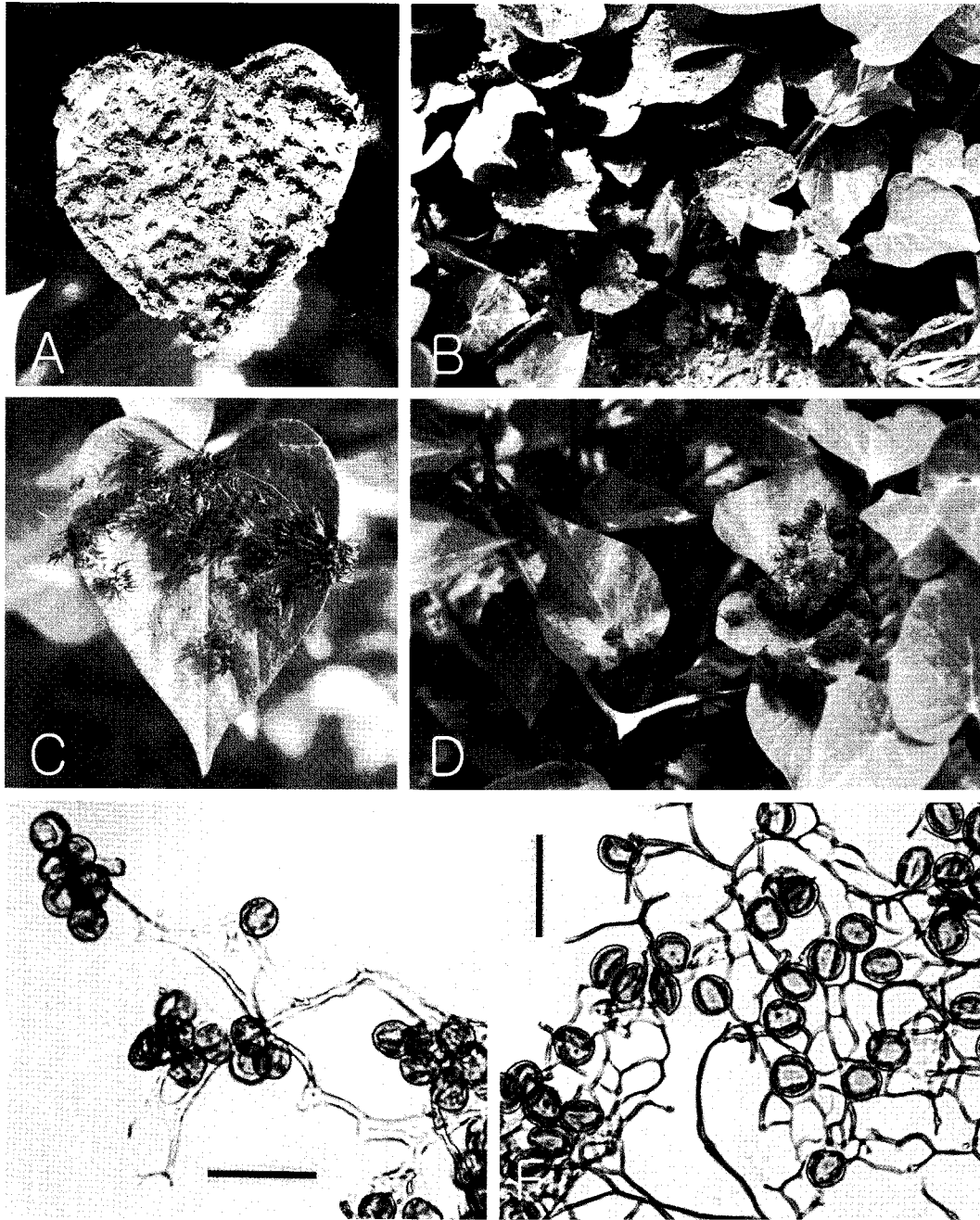


Fig. 1. Slime mold symptoms of sweet potato caused by two species of Myxomycetes in the field and morphological features of the species. A and B, fruiting bodies of *Fuligo septica* on sweet potato plants; C and D, fruiting bodies of *Stemonitis herbatica* on sweet potato plants; E, capillitium and spores of *Fuligo septica* (scale bar = 20 μm); F, surface net and spores of *Stemonitis herbatica* (scale bar = 20 μm).

base and tapering towards the apex, 3~7 mm tall, dark brown to black. Hypothallus membranous, rather inconspicuous. Stalk short, 1/5~1/4 of the total height, hollow, red brown to black. Peridium fugacious. Columella attenuate upward. Capillitium brown, the inner network with meshes 3~20 μm in diameter. Spores purplish brown to dark brown, minutely warted, 7~9 μm in diameter. Plasmodium white to pale yellow.

Specimen examined : PF96013, Hakhadong, Daejeon,

Korea, June 14, 1996.

Note : This species is reported to be distributed in North America, Europe, Africa and Fiji and occurs on living herbaceous plants, dead wood and forest debris (Martin and Alexopoulos, 1969; Yamamoto, 1998). In the present study, it was first revealed that the species produces fruiting bodies on stems, leaves and petioles of sweet potato. The slime mold symptoms appeared as dark brown dust on the plants.

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