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Note

Nimbya scirpicola Causing Brown Spot of Bayonet-Grass (*Scirpus maritimus*)

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매자기에 갈색무늬병(가칭)을 일으키는 *Nimbya scirpicola*

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ABSTRACT : A brown leaf and stem spot disease of bayonet-grass (*Scirpus maritimus*) was epidemic in reclaimed paddy fields of Chunbuk province, Korea. A fungal pathogen was repeatedly isolated from the necrotic lesions of the bayonet-grass and identified as *Nimbya scirpicola*. The pathogen induced disease symptoms only in bayonet-grass but not in 8 other plants tested; *Brassica campestris* subsp. *napus* var. *pekinensis*, *Cucumis sativus*, *Glycine max*, *Hordeum vulgare*, *Lycopersicon esculentum*, *Oryza sativa*, *Sesamum indicum* and *Triticum aestivum*. The fungus has potential to be developed as a mycoherbicide.

***Key words* : *Nimbya scirpicola*, *Scirpus maritimus*, mycoherbicide.**

Bayonet-grass (*Scirpus maritimus* L.) is one of the most troublesome perennial in reclaimed paddy fields in Korea. The weed is a fast growing sedge and its rapid growth during the early stage makes this weed very competitive against rice. Fungal plant pathogens applied as sprays that uniformly kill or suppress weed growth are logically termed mycoherbicides (6). Exotic and indigenous fungi have potential for use as mycoherbicides, but up to now mostly indigenous fungi have been researched. If a pathogen for *Scirpus maritimus* is found, there will be a chance to be developed as a mycoherbicide for control of the weed.

During our survey of diseased weeds in 1990, we found severe brown leaf and stem spots of *S. maritimus* in reclaimed fields in Chunbuk province, Korea. A fungus was repeatedly isolated from necrotic lesions. It fitted the description of *Nimbya scirpicola*. The fungus was identified as *Alternaria* state of *Pleospora scirpicola* and reported elsewhere (7, 8).

On the surface of necrotic lesions, pale yellowish brown conidia were observed on pale brown conidiophores under the stereomicroscope. A single spore was isolated and aseptically transferred to potato dextrose agar(PDA) media. It grows readily on PDA attaining a dark brown colony of 60 mm in diameter in 10 days incubation at 25℃.

The conidiophores of the fungus are short, swollen, sometimes contorted, with 1~3 dark pore scars in each conidiogenous cell and measuring up to 90 μm long. Conidia are usually borne on conidiophores singly on the host plant. They are long narrow-obclavate or cylindrical, initially with a tapered apical region that becomes very long, filiform, and septate, with a single large guttule in each cell, extremely rare in longitudinal septa, and measuring 50~470×12~20 μm (Fig. 1).

Conidia produced in culture are shorter and narrower than those from host, measuring 40~300×10~15 μm; primary conidia frequently germinate apically producing a slightly enlarged functional conidiophore and short chains of 2~3 secondary conidia.

For determining the pathogenicity of the fungus, aqueous spore suspension (ca. 10^6 spores/ml) prepared from ten-day old monosporic culture maintained on V-8 juice agar was sprayed on two month-old symptom-free plants of bayonet-grass. Ten spra-

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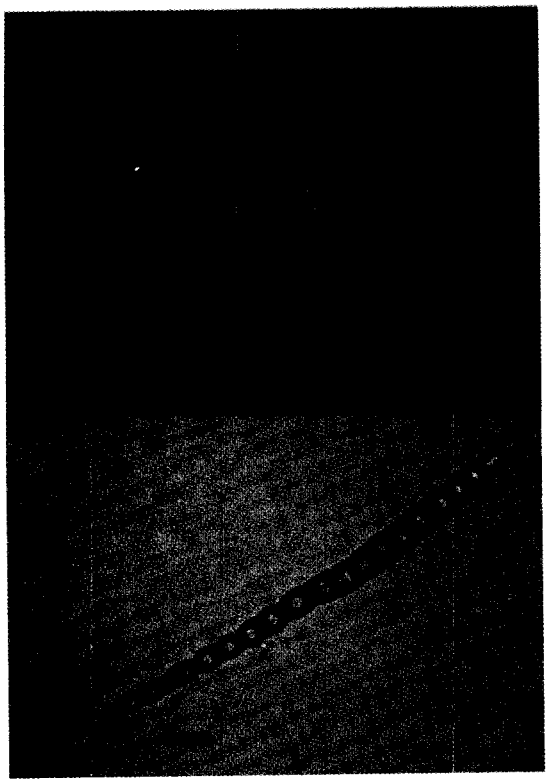

Fig. 1. Conidia of *Nimbya scirpicola* from diseased leaves of bayonet-grass. Bar represents 30 μm.

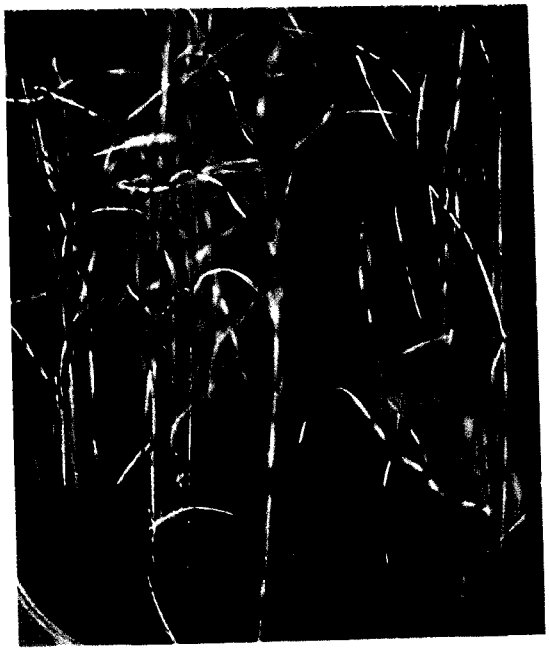

Fig. 2. Symptoms on leaves and stems of bayonet-grass caused by artificial inoculation of *Nymbya scirpicola*.

yed plants were' kept in a moist chamber for 24 hr and then placed in a greenhouse at 25± 2℃. First symptoms were observed on all inoculated plants 2 to 3 days after inoculation on leaves and stems in the form of small light brown spots. The spots gradually increased in size and coalesced to form bigger spots. Severely infected plants became brown and blighted (Fig. 2). From the infected lesions, spores were reisolated and those reisolated spores were identical to the original spores. Control plants remained healthy.

To investigate host range of the fungus, spore suspension was sprayed on to the following 8 plants in the same way as described above: *Brassica campestris* subsp. *napus* var. *pekinensis* (Chinese cabbage), *Cucumis sativus* (cucumber), *Glycine max* (soybean), *Hordeum vulgare* (barley), *Lycopersicon esculentum* (tomato), *Oryzae sativa* (rice), *Sesamum indicum* (sesame) and *Triticum aestivum* (wheat). The fungus was found to be pathogenic only to *S. maritimus*, but not pathogenic to any other plants tested. It appears to have potential to be developed as a mycoherbicide.

From the morphology and host range, the fungus is identified as *Nimbya scirpicola*. The fungus was described by Lucas and Webster as *Alternaria* state of *Pleospora scipicola* (3). It was also listed as *Alternaria scirpicola* (Fuckel) Sivanesan (5). Recently, Simmmons erected a new anamorphic genus *Nimbya*, with *N. scirpicola* (Fuckel) Simmons as type (4). His descriptions and figures of *N. scirpicola* are in general agreement with those of the present fungus. The fungus is reported to be isolated from many plants such as *Cyperus longus, Eleocharis palustris, E. kuroguwai* and *Scirpus lacustis* in Europe (3), Japan (2) and India (1).

요 약

우리나라 전북지방의 간척지 논에서 잡초 매자기에 갈색무늬병이 발생하고 있음이 발견되었다. 병반 부위에서 한 진균이 계속 분리되었으며 이 균은 *Nimbya scirpicola*로 동정되었다. 이 균은 매자기에만 병을 일으켰고 실험에 사용한 다른 8종류의 식물인 배추, 오이, 콩, 보리, 토마토, 벼, 참깨, 밀에는 병원성이 없었다. 이 균은 균제초제로서 개발될 가능성이 있는 것으로 보인다.

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