

Occurrence of *Ustilago coicis* on *Coix lachryma-jobi* in Thailand

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ABSTRACT

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A smut on Job's tears (*Coix lachryma-jobi*) was encountered for the first time in Thailand. This smut was found in the vicinity of Mae Na Rua village of the Muang District in Phayao Province in October 1981. The pathogen was identified as *Ustilago coicis*.

Job's tears (*Coix lachryma-jobi* L.) is an important millet-type cereal in Phayao and Chiang Rai provinces in North Thailand and in Chaiyaphum, Nakhon Ratchasima, and Loei provinces in northeastern Thailand. It is normally grown as a field crop and the grain is exported to Japan, Taiwan, Hong Kong, Malaysia, and Singapore.

In 1926, Small (5) found smut of Job's tears caused by *Ustilago coicis* Bref. in Ceylon. In 1941, Mundkur (4) reported a second smooth-spored smut from Girnar Hills in India on Job's tears that he named *U. lachryma-jobi* Mundkur. In 1946, Chowdhury (1) reported that this disease was widespread in Assam, usually causing losses of 12–25%. He stated,

however, that the pathogen was properly identified as *U. coicis* and not as the new species set up by Mundkur (4). In 1980, Kakishima (3) reported smut of Job's tears caused by *U. coicis* in Japan.

RESULTS

In October 1981, we found Job's tears infected with a smut in eight fields near Mae Na Rua village of Muang District in Phayao Province, Thailand. The disease was widespread and caused considerable damage; estimated infected plant yield losses ranged from 15 to 98%.

Symptoms occurred on both the inflorescence (Fig. 1A) and the leaves (Fig. 1C). The individual staminate and pistillate flowers (Fig. 1B) were replaced by smut sori. The sori were conical, 4–9 mm long and 3–7 mm wide in the staminate flower and 9–15 mm long and 5–12 mm wide in the pistillate flower. The sori were brownish black and contained a mass of teliospores. Irregular smut sori were observed on leaves of some plants.

A sample of 200 teliospores of the fungus collected from many sori was

examined. The teliospores were dark brown, subglobose to ellipsoidal with minute but clear echinulations, which gave the margin a serrate appearance; rather prominent circular pits were also present on the epispore. The teliospores were 7–14 μm (mean 9.25 μm) in diameter.

When mature, the teliospores germinate freely in water or on water agar. On germination, the teliospores give rise to a promycelium (metabasidium) that is always four-celled. Sporidia or basidiospores are formed terminally and laterally near the septa and these may bud off secondary sporidia. The primary sporidia often elongate into a septate filament, which may be longer than the promycelium. Secondary sporidia also bud off from the ends and from near the septa of the filament. The teliospore morphology and germination characteristics of this fungus fit the description of *U. coicis* (1,2).

DISCUSSION

This represents the first report of smut of Job's tears in Thailand. Because of the yield losses observed in the field, the disease is considered economically important. According to Chowdhury (1), seedborne teliospores are the principal source of infection for this disease. Thus, seed treatment studies should lead to a possible means of control.

LITERATURE CITED

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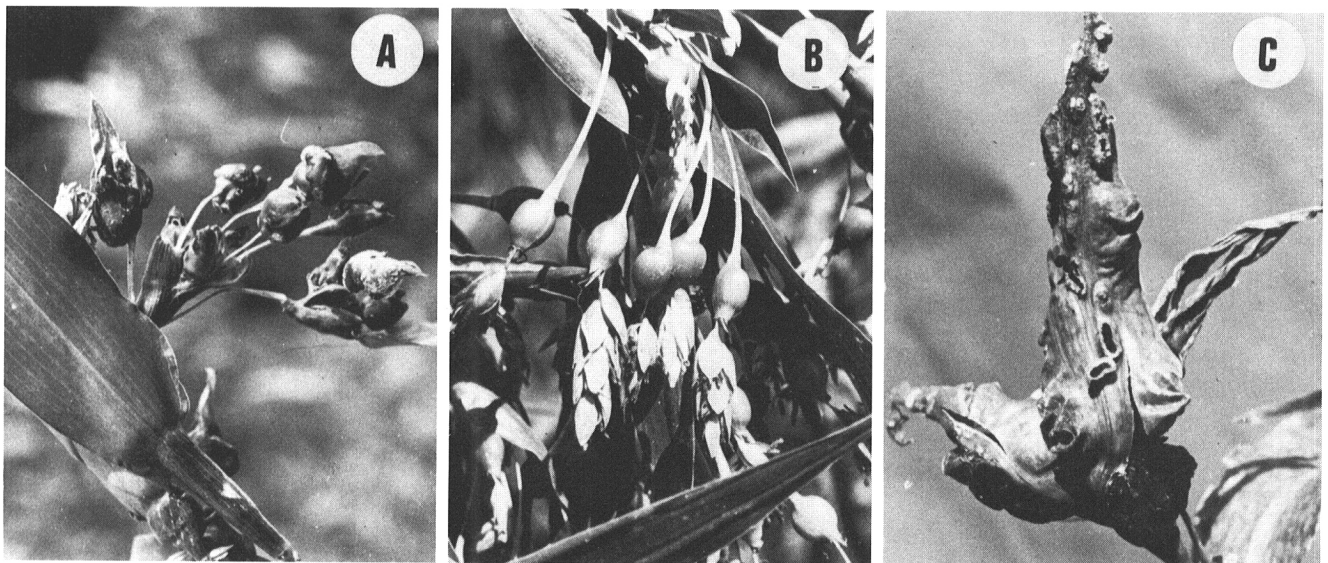


Fig. 1. Symptoms of (A) smut-infected inflorescence compared with (B) healthy inflorescence and (C) smut-infected leaf symptom.

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