

Conidiophores and Basidiocarps of *Fomes annosus* on Pines in East Central Alabama

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ABSTRACT

Field examinations of *Fomes annosus*-infected pine trees revealed very few conidiophores; large basidiocarps were generally found only under duff at ground line. Numerous small basidiocarps observed in bark crevices 15-60 cm above ground line may be most important in spread of *F. annosus* by air-borne spores.

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Root and butt rot caused by *Fomes annosus* (Fr.) Karst. is a serious disease of coniferous trees. In the southern United States this disease is most damaging in pine plantations that occupy former croplands (4). The large number of plantations established since the advent of the soilbank program provides the potential for development of a multitude of *F. annosus* infection centers.

It is generally believed that air-borne spores are of primary importance as initial inoculum sources (2, 3, 5). Both conidia and basidiospores have been used successfully to inoculate stump surfaces experimentally, but basidiospores have been shown to be the most effective (3). Although many studies have been done using conidia as inoculum, few reports on the occurrence of conidia in nature are available (1, 5).

This study was conducted to determine: (i) the extent of

conidiophore production and basidiocarp formation on naturally infected pines in east-central Alabama, (ii) the locations of these on the trees, and (iii) seasons of the year when basidiocarps are most prevalent.

Fifty-seven *F. annosus* infection centers in loblolly (*Pinus taeda* L.) pine stands were examined over a 3-year period. Nine of 17 centers located in the Auburn University Forestry Plots were examined repeatedly over a 2-year period. Most of the examinations were made specifically to determine whether conidiophores of *F. annosus* were present; basidiocarp locations also were noted. Exposed wood of wounds, and stumps and roots of wind-thrown trees were examined with a hand lens ($\times 10$) or a stereoscopic microscope ($\times 25$). Examinations were made at all times of the year, but were made more frequently during periods following rainfall.

Only three *F. annosus* conidiophores were found during the study, and these were all found on exposed wood of one root on a wind-thrown tree. These results indicate that asexual spores may not be significant in the spread of *F. annosus* in east-central Alabama. Earlier reports on the rarity of conidiophores in nature (1, 5) are corroborated by our observations.

Basidiocarps were observed throughout the year, with greatest numbers found in the spring (April and May) and late fall (October and November). Basidiocarps typically occurred at ground line under duff at the base of diseased trees. Such position would not seem conducive to efficient spore dispersal by air currents. Size of the basidiocarps ranged from small "button" initials to 25-cm in width.

Most significant in our observations was the discovery of numerous small basidiocarps in the bark crevices 15-60 cm above the ground line; a few were found above 90 cm. These basidiocarps were inconspicuous, ranging in size from 2 to 8 mm in width and containing only 3 to 37 hymenial pores each (Fig. 1). One 36-cm (14-in.) dbh loblolly pine had 242 small basidiocarps in bark crevices and on the inner surface of bark plates. Similar fruiting bodies were observed on three other large loblolly pines. Viable basidiospores were produced from these small basidiocarps for several days after being placed in a moist chamber.

Locations of the small basidiocarps seemingly would accommodate more efficient spore dispersal by air currents. Our observations indicate that this type fruiting body only occurs on larger trees with deep bark crevices. Since the number of large trees in this study was limited, the extent to which these small basidiocarps occur remains unknown. However, their potential importance in the spread of *F. annosus* should not be overlooked.

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Fig. 1. Two small *Fomes annosus* basidiocarps (arrows) compared in size to a U.S. penny. Basidiocarps were exposed by removing bark plates from a 36-cm (diam at breast height) loblolly pine.