

# THE EFFECT OF MATURITY, TIME OF HARVEST, WEATHER AND STORAGE CONDITIONS ON THE QUALITY AND DETERIORATION OF SOYBEAN SEED BY FUNGI IN FLORIDA

BY

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Some researchers consider soybeans to be a difficult grain crop to store without deterioration and loss of viability. However, Christensen and associates (4, 5, 6, 9), who have done the most work on soybean seed storage, did not support such a thesis. Their work showed that soybeans which were properly harvested and dried did not deteriorate and lose viability under Minnesota conditions.

Perhaps the reason that soybeans are considered difficult to store is because several of the disease producing organisms are seed-borne (1, 2, 8, 11, 13, 14, 15, 16, 18, 19, 20, 21, 26, 27, 28, 31, 32). Lehman and Wolf started their work on leaf, stem, and seed diseases of soybeans in the United States about 50 years ago in North Carolina (18, 19, 20, 21, 31, 32). Since the initial work of Lehman and Wolf there has been a long series of papers on soybean diseases. Only those papers referring to diseases incited by fungi, which are seed-borne or which affect germination, are referred to in this bulletin.

The time and method of infection of soybean seeds has not been elucidated entirely for some of the more common and serious seed-borne fungus diseases. This is especially true for *Diaporthe phaseolorum*, incitant of pod and stem blight. Some workers (13, 14, 16) suspected, from cultural studies of immature pod and beans, that the fungus is systemic and invades the pod through the peduncle. From the data presented by these workers it appeared that systemic development accounts for only a small percentage of seed infections. This low incidence of infection is in contrast to the high incidence of seed infection that occurred following delayed harvest (1, 2, 10, 18, 27, 30). Most severe seed infection by fungi undoubtedly occurred from pod invasion.

The time of infection of plant parts by several organisms is uncertain. Lehman (18) found evidence to support the view that *Diaporthe* spp. of soybeans produced what he termed incipient lesions which appeared to be dormant. Kmetz et al. (16) reported that they consistently isolated *Phomopsis* spp., the imperfect stage of *Diaporthe* spp., from immature stems of 31 cultivars and blends of field-grown soybeans. Pathogens such as *Colletotrichum* infect hosts previous to maturity, then remain dormant until the host approaches maturity. This has been clearly shown for the pathogen *Colletotrichum phomoides*, the incitant of anthracnose of tomato fruit. Such a situation can become serious because healthy appearing fruits may be shipped to a fresh market or a processing plant and be diseased a day or two later. Tiffany