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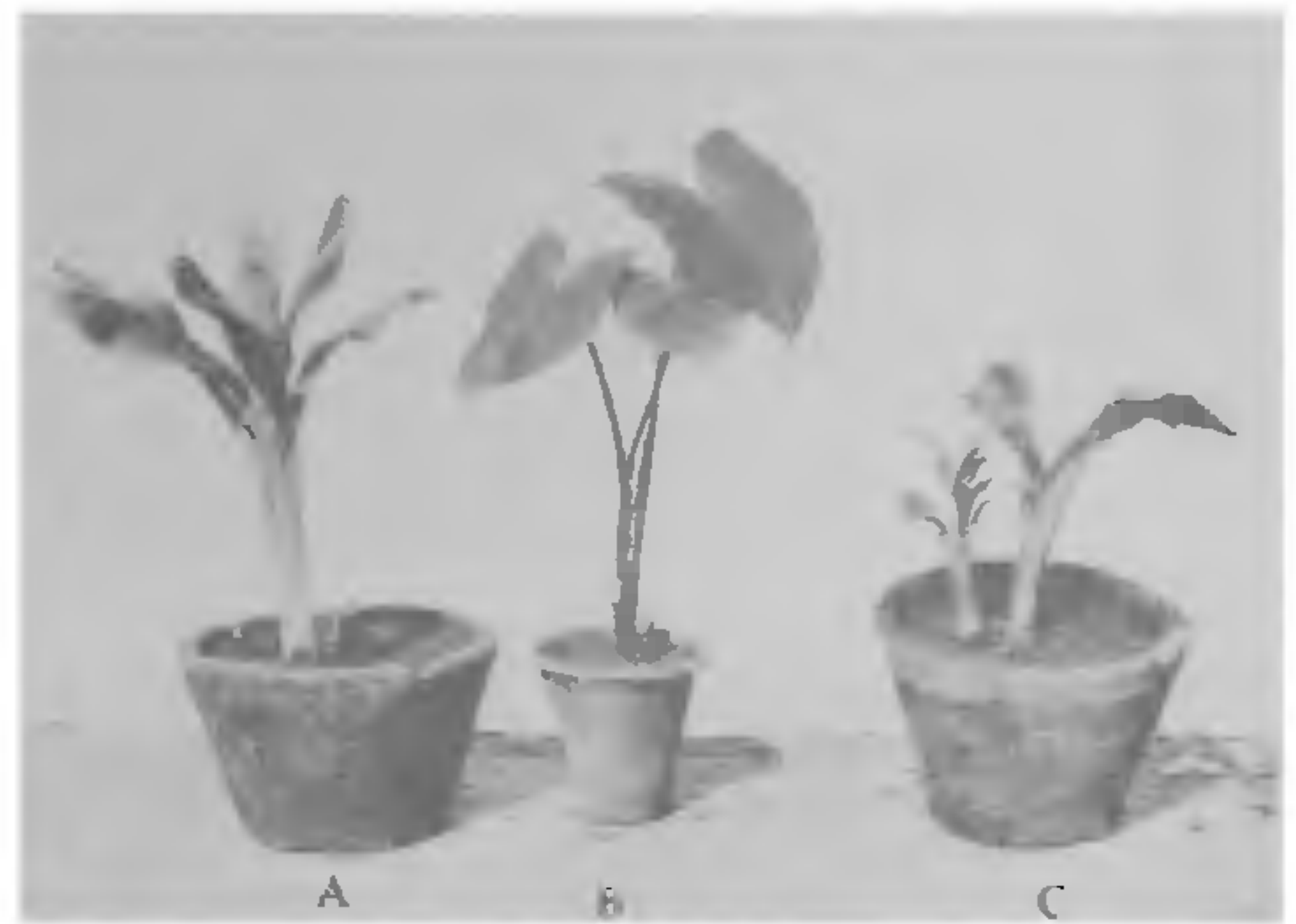
COLOCASIA ESCULENTA (L) SCHOTT. A RESERVOIR OF BUNCHY TOP DISEASE OF BANANA

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COLOCASIA sp is cultivated throughout the country as its tubers and leaves are used as edibles. In Deccan plateau of Maharashtra, it is taken up as a mixed crop with banana, as a source of additional income. *Colocasia* and *Alocasia* Spp. have earlier been reported¹⁻² as additional hosts of banana aphid *Pentalonia nigronervosa* Coq. Studies were therefore initiated under glasshouse conditions to ascertain whether *Colocasia* serves as a reservoir of the bunchy-top disease and if so what is its role.

The experiment set up is described below. Healthy colony of *P. nigronervosa* Coq. was maintained on banana plants in an insectory. The apterous forms of aphid both nymphs and adults were collected in a test tube. They were released on bunchy-top affected banana plants var. Basrai and were allowed to feed for 5 days. Before acquisition, they were starved for 2 hr to accelerate the feeding efficiency on the host. After 5 days of acquisition, they were collected into a group of 45 and released on *Colocasia* plants in insect-free wooden cage (covered with muslin cloth) at the base of leaf stalk. They do not prefer to feed on leaves probably because of their thick and hard nature. Caging was not necessary as the aphids were confined to leave sheath and midrib of the plants. The plants after test/inoculation feeding period of 3 to 5 days were sprayed with 0.1% rogor to kill the insects. The test plants were kept in the glasshouse for observation. *P. nigronervosa* collected from healthy banana plants and released directly on *Colocasia* host served as



Figures 1A–C. A. Bunchy-top of banana, B. *Colocasia* (diseased) symptomless, C. Bunchy-top of banana

control set. Even after 3 months the *Colocasia* plants did not show any disease symptoms (figure 1). However, when they were subjected to the diagnostic technique developed against 'bunchy-top' and 'infectious chlorosis' at this station,³ the test plants gave positive colour reaction typical to that as observed in the bunchy-top affected banana rhizomes/suckers. No colour reaction was observed with healthy *Colocasia* tubers, thereby indicating that *Colocasia* is acting as a reservoir.

Further confirmation was obtained by carrying out back inoculation transmission tests with the vector. Aphids were collected from healthy colony on banana plants, given pre-acquisition fasting period for 2 hr and acquisition feeding period of 5 days on the test plants *i.e.* *Colocasia* symptomless plants. Thereafter both nymphs and adults were liberated on banana healthy plant. After 3 days the banana plants were sprayed with 0.1% rogor to get the host free from insects. Typical bunchy-top symptoms appeared on test plants of banana (figure 1c) after 6 months further confirming that *Colocasia* acts as a reservoir for bunchy-top of banana in a symptomless manner.

Both the tests *i.e.* colour diagnostic detection test and the transmission tests, *i.e.* diseased banana to *Colocasia* and back to banana gave positive results. Based on these tests, it has been amply proved that *Colocasia* sp acts as a reservoir for bunchy-top of banana in symptomless manner. Further studies on virus-vector relationship are in progress.

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ANOMALOUS SYMPTOMS OF LOOSE SMUT DISEASE OF WHEAT

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LOOSE smut caused by *Ustilago nuda* (Jens) Rostr. var. *tritici* is a serious disease of wheat in India^{1,2}. The disease, as a rule, is characterised by the production of black powdery mass of chlamydospores in place of grains². The present communication reports some anomalous symptoms of the disease. These symptoms appeared as silvery grey elongated and irregularly distributed sori on flag leaf (figure 1d), leaf sheath (figures 1a, c, d), peduncle of the spike (figures 1a-d) and the glumes of the lowermost spikelet (figure 1b). Some of the sori on the peduncle ruptured lengthwise (figures 1c, d) to release the brownish black powdery spores. Their microscopic examination confirmed their identity to those of *U. nuda* var. *tritici* in shape, colour and size². The flag leaf became split and shredded when the sori on its both sides ruptured and the spores released. The smaller sori on the exterior of glumes of the lowermost spikelets (figure 1b), however, did not rupture.

The abnormal symptoms similar to those described in the above paragraph have not been earlier reported in India. The sporulation of *U. avenae* (Pers.) Rostr. in Oat leaves^{3,4} and flower stalk⁴ has, however, been reported in other regions of the world. The occurrence of sporulation on vegetative parts has been attributed to the environmental factors^{1,4,5} and/or genetic constitution of the fungus⁶. Since the pathogen has been described as 'keeping pace with the growing point'⁷, it is probable that the plant growth may be faster than that of the systemic mycelium of the pathogen. As a result, the inflorescence remains either partially or completely free of infection and the fungus lagged behind in lower vegetative parts may either sporulate (figure 1) or bring about certain morphological changes⁷⁻⁹. The sporulation in vegetative parts may help



Figure 1. Anomalous symptoms of loose smut disease of wheat. (a) Irregularly distributed sori on flag leaf, leaf-sheath and peduncle of the spike, (b) elongated, unruptured sori on peduncle and exterior of lowermost spikelets. Encircled figure is the close-up of the latter (c-d). Lengthwise rupturing of sori on flag leaf, leaf-sheath and peduncle.

rapid and effective dissemination of the wind-borne spores to healthy flowers. Furthermore, the smuttiness of the flag leaf may enhance its transpiration and adversely affect the photosynthesis by diminishing the light penetration.

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