
Occurrence of Udbatta disease on Kodo millet (*Paspalum scrobiculatum* L.) : a new report from South India

A. NAGARAJA, B. ANJANEYA REDDY AND M.R. GOVINDAPPA

Project Coordination Unit (Small Millets), AICSMIP, GKVK Campus, Bangalore-500 065, Karnataka

During the rainy season of 2008, some of the test entries of Kodo millet revealed the presence of Udbatta like symptoms at heading stage. In the panicle, the grains of the panicle get infected and the entire panicle converted into hard dirty/silver coloured cylindrical spike. No grains formed on the affected panicle. The causal agent was isolated and established on potato dextrose agar medium. The colony appeared dull white with brown specks. The surface of the colony was thin, flat and waxy having edges with lobate margin. Among the affected entries, RBK 155 recorded highest disease incidence of 19.56 per cent followed by DPS 9 (6.63%), TNAU 72 (4.09%) and TNAU 80 (3.22%).

Key words: Kodo millet, disease, Udbatta, *Ephelis*

Udbatta disease earlier has been noticed as pandemic and of minor importance in certain areas by Butler and Bisby (1931). On paddy it is reported to occur in severe forms in many parts in South India. Leaves of tender seedlings show lustrous grayish white appearance. Panicle emerges from the leaf sheath as a straight, dirty colored, hard cylindrical spike, considerably reduced in size much resembling agarbatti or udbatta, hence the name (Rangaswami and Mahadevan, 2004). In paddy the disease is reported to be incited by *Ephelis oryzae* Syd. and its perfect stage *Balansia oryzae-sativae* Hashioka and disease is noticed on several host plants such as grasses namely, *Cynodon dactylon*, *Pennisetum* sp. and *Ergostis tenuifolia* (Govindu and Thirumalachar, 1961; Ranganathaiah, 1972).

During rainy season of 2008, the disease has been found to occur in sporadic way on Kodo millet in the All India Coordinated Research Project on Small Millets experimental plots at UAS, GKVK farm, Bangalore, Karnataka.

The disease symptoms appeared during panicle initiation stage. In the panicle, the grains of the panicle get infected and the entire panicle converted into hard dirty/silver coloured cylindrical spike resembling that of Udbatta disease in paddy (Fig. 1). White mycelium and conidia formed narrow stripes on the flag leaves along the veins before the panicle

emerged. No grains formed on the affected panicle. Similar descriptions of the symptoms of damage on paddy were made by Ranganathaiah (1972). Presence of lustrous greyish white films of fungal growth in young leaves of the infected seedlings might be the initial inoculum for the disease spread.



Fig. 1 : Affected ear showing Udbatta symptoms

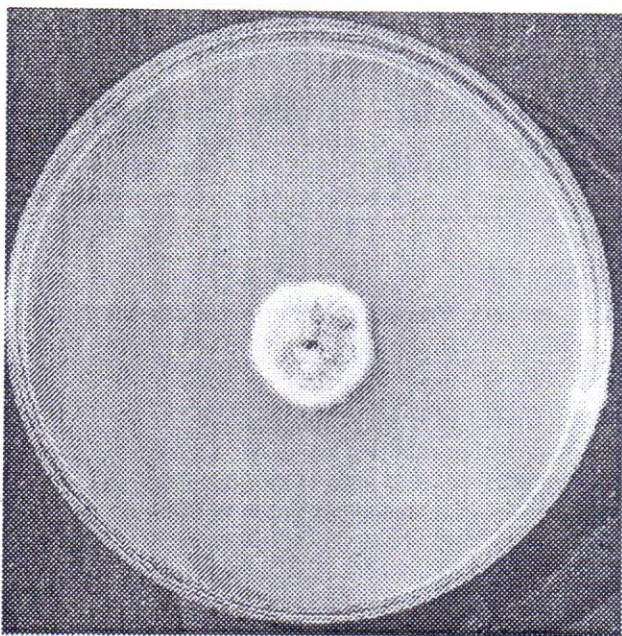


Fig. 2 : Colony morphology of fungus *Ephelis* sp. on PDA

Among the twenty one entries evaluated during *Kharif* 2008 in Kodo millet Advanced Variety Trials (KAVT), RBK 155 recorded highest disease incidence of 19.56 per cent followed by the entries DPS 9 (6.63%), TNAU 72 (4.09%) and TNAU 80 (3.22%). However, the least disease was observed on entries RK 77 (2.12 %), NPSA 1 (1.31 %), RK 323 (1.17 %), GPUK 3 (1.15 %), and RK 286 (0.67 %) (Table 1). These data confirmed the occurrence and possible importance of this new disease to kodo millet crop.

In-vitro studies were made on non synthetic media to isolate and establish pure culture (by single spore isolation) and for morphological studies of the colony. Initially, infected panicle was collected from experimental fields and isolation was carried on Potato Dextrose Agar (PDA) medium. Culture was further purified by single spore isolation technique to study the colony morphology.

Culture was established on potato dextrose agar medium within 15 days after inoculation. The colony appeared dull white with dull brown specks. The growth was slow and was 15 cm dia after 15 days of

Table 1 : Incidence of Udbatta on Kodo millet entries during *Kharif* 2008

Name of the Entry	* Mean PDI
RK 286	0.67
RK 82	0.00
RK 77	2.12
RK 313	1.67
TNAU 80	3.22
DPS 9	6.63
TNAU 72	4.09
RBK 155	19.56
GPUK 3	1.15
TNAU 84	0.00
TNAU 85	0.00
TNAU 81	0.00
BK 1	0.00
RK 37	0.00
RK 354	0.00
NPSA 1	1.31
DPS 9-1	0.00
DPS 10	0.00
DPS 15	0.00
DPS 19	0.00
DPS 27	0.65

*Values are the average of three replications PDI: Per cent Disease Incidence

inoculation. The surface of the colony was thin, flat and waxy having edges with lobate margin (Fig 2). Similar description of the colony characters from paddy were made by Ranganathaiah (1972).

REFERENCES

- Butler, E.J. and Bisby, G.R. 1931. *Fungi of India. Sci. Monogra, XVIII*, Calcutta.
- Govindu, H.C and Thirumalachar M.J. 1961. Studies on some species of *Ephelis* and *Balansia* occurring in India *Mycopathologia*, **14**(3): 180-197.
- Ranganathaiah, K.G, 1972. *Investigations on seed borne nature and cultural aspects of Ephelis oryzae Syd. incitant of udbatta disease of Rice (Oryzae sativa L.)*, Ph.D thesis submitted to the University of Mysore, Mysore, 138p.
- Rangaswami, G and Mahadevan, A. 2004. *Plant Diseases*, IBH, Publication, 421p.

(Accepted for publication January 28, 2010)