

**IMPORTANCE OF SILICA NUTRITION FOR ALLEVIATING GRAIN
DISCOLORATION OF UPLAND RICE GROWN ON THE ULTISOLS OF THE
HUMID TROPICS**

M. YAMAUCHI

Tropical Agricultural Research Center, Owashi 1-2,
Tsukuba 305, Japan.

and

M.D. WINSLOW

International Institute of Tropical Agriculture,
PMB 5320, Oyo Road, Ibadan, Nigeria.

Grain discoloration is a serious problem for upland rice production in high rainfall Ultisol areas in West Africa. It reduces not only the grain yield but also the quality. Although causal fungi had been identified, the nutritional factors responsible for the severity of the infection had not been determined hitherto.

Studies were carried to identify the nutrient(s) responsible for the aggravation of the disorder in Ultisols and Alfisols (control) differing in their fertility levels. Limited supply of silica from the soil was found to increase the grain discoloration severity.

Application of silica to the soil increased Si concentration of rice husks, and alleviated the discoloration severity. Yield components including the percentage of filled spikelets and 1000 grain weight were remarkably improved by the silica application, presumably due to the reduction in the grain discoloration severity. When magnesium was applied in addition to silica, the number of spikelets per hill was also increased, resulting in the increase of the grain yield in 3 rice varieties by an average of 34%.