

Physiological and chromosomal changes of delayed harvest soybean (*Glycine max* L. Merr.) seeds

ABSTRACT

Delayed harvests may favour the deterioration process in soybean seeds due to their exposure to adverse environmental conditions. This study was undertaken to investigate physiological and chromosomal changes of aged soybean seeds due to delayed harvest. Seeds of 'AGS-190' and 'Cikurai' were harvested at harvest maturity (HM), one week after HM (H1) and three weeks after HM (H3). Seed viability and vigour (speed of germination, mean germination, seedling vigour index, seedling length and dry weight) decreased in H3 seeds in both cultivars. Prolonged ageing conditions in the field considerably reduced the activities of catalase (CAT) and superoxide dismutase (SOD) showing the lowest level in H3 seeds regardless of cultivar. Malondialdehyde (MDA) increased with delay in harvest and the highest content was recorded in H3 seeds. There was a negative correlation between seed viability and genetic damage expressed by lower percentage of chromosomal aberrations in HM seeds of 'AGS-190' and H1 seeds of 'Cikurai'. The percentage of chromosomal aberration was significantly higher in H3 seeds. This study indicates that field deterioration process of soybean seeds also involves the production of reactive oxygen species (ROS) through lipid peroxidation which interfere with cell mitotic activity.