

Sereewat Moonthongsang 2012: Effect of Drought Stress to Antioxidant Percentage in Sugarcane.  
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Antioxidant percentages were evaluated in 3-month seedlings under nursery condition of 17 sugarcane varieties treated with 4 watering patterns namely: 1.control 2.reducing half of amount of water for 9 days 3.no watering for 9 days and 4.no watering for 12 days. Split plot design having watering pattern as main plot and sugarcane varieties as sub plot was conducted. Two replications of 1 pot of 1 seedling were used. Antioxidant percentages were measured after watering treatment periods and after recovery periods. Significant differences in antioxidant percentages of sugarcane varieties were observed in sugarcane receiving water stress treatments both after watering treatments periods and after recovery periods, while non-significant differences were observed in sugarcane receiving control treatment after both watering treatment periods and recovery periods. Moreover, the significant differences of increase in antioxidant percentages were observed in watering patterns after both water stress periods which had different levels of water potential in soil and recovery periods which had almost the same levels of water potential in soil. The increase of antioxidant percentages after water stress periods were 67.02, 91.52 and 130.76 percent at the -25, -78 and -94 kPa of water potential in soil, respectively. Moreover, antioxidant percentages after recovery periods which had high water potential in soils (-3, -6 and -6 kPa) were almost the same levels of those after water stress periods. Higher variation in antioxidant percentages of 17 sugarcane varieties were observed in water stress treatments than in control. In water stress treatments, variation of antioxidant percentages tended to increase in lower levels of water potential in soil which had higher levels of antioxidant percentages in sugarcane. The higher variation was observed in comparative percentages of antioxidant percentages. The higher variation in comparative percentages between antioxidant percentages of water stress treatments and control were observed in water stress treatments having lower levels of water potential in soil. The highest variation of 29.44 percentages was observed in no watering for 12 days having -94 kPa of water potential in soil, in which 17 sugarcane varieties could be divided by the levels of significance into 8 groups of varieties. Therefore, the comparative percentages between antioxidant percentages of no watering for 12 days treatment and control treatment after water stress period was suitable for dividing sugarcane varieties by their antioxidant percentages. Moreover, levels of antioxidant percentages after no watering for 12 days had high potential in evaluation of drought tolerance of sugarcane in field condition, considered cane yield.

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