

V. CONCLUSION AND SUGGESTIONS

5.1 Conclusion

According to the result and discussion of this research about morpho-physiological response and *OsDREB2A* expression analysis of Malaysia rice varieties under extreme drought stress during early stages of coleoptile development, it can be concluded that:

1. NMR151 exhibited morpho-physiological resilience compared to MR219, as shown by reduced inhibition in its primary growth *e.g.*, the elongation of coleoptiles. Both varieties show a decrease in the number and length of secondary roots under PEG-induced extreme drought.
2. NMR151 and its parental line MR219 can tolerate PEG-induced extreme drought at concentrations up to 30%. The optimal concentration of PEG for both varieties to grow and maintain its morphological traits is 20%. This is because the seedling's growth at this concentration remains comparable to that of the control.
3. NMR151 and MR219 showed similar pattern of *OsDREB2A* expression. The expression of *OsDREB2A* in both varieties peaked at 4h after being subjected to PEG-induced extreme drought at a concentration of 30%.

5.2 Suggestions

Based on the research, it is suggested that NMR151 be used as a donor in breeding programs to introduce its advanced drought-tolerant traits, especially the coleoptile length, and the number and length of its secondary roots. For practical application, a 20% PEG concentration can be used as a standard screening test for drought tolerance in indica rice.