

SOIL PROFILE OBSERVATIONS RELATING TO DROUTH DAMAGE  
IN BLACK WILLOW STANDS

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During drouth, black willow (*Salix nigra* Marsh.) is quite sensitive to subsoil differences. Surface inspection alone rarely gives an adequate clue to the quality of the variously stratified alluvial soils on which willow may occur.

In the summer of 1954, drouth damage was noted in a 300-acre willow stand along the Mississippi River. The stand, owned by the U. S. Gypsum Company, was 27 years old, and the trees averaged 100 feet in height. A sharp line of demarcation was observed between healthy and drouth-stricken portions. A single 16-acre area was a complete loss.

Soil pits dug in the 16-acre area revealed that a deposit of 32 inches of heavy clay overlay deep fine sand. Tree roots were found to extend only about 3 inches into the normally saturated but now desiccated sand. Pits in an adjacent healthy stand revealed a much deeper layer of heavy clay, with tree roots penetrating it to 6 feet.

What had been an excellent site under normal weather conditions became incapable of supporting tree growth during protracted drouth. Neighboring sites with different subsurface conditions did not suffer nearly as much mortality.

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