THE INFLUENCE OF IMBIBITION TEMPERATURE ON MEMBRANE PROTEINS OF WINTER FAT SEEDLINGS (CERATOIDES LANATA (PURSH) J.T. HOWELL)[1]

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Abstract: Winterfat is an indigenous half-shrub valuable as wildlife and livestock forage and for reclamation of disturbed areas. Imbibition temperatures have been reported to influence germination and seedling vigor. Caldwell and Whitman, also Vertucci and Leopold, and others report that the influence of imbibition temperature on germination and seedling establishment is likely a result of phase changes in membrane lipids. This, in turn, is thought to change the conformation or activity of membrane proteins. In mitochondria membranes, changes may interfere with components of the electron-transport chain and may change the respiration pattern. However, there are no reports of the direct effect of imbibition temperature on membrane protein. Therefore, we initiated a study of mitochondria and plasma membrane protein composition/change in winterfat in response to imbibition temperature (5 and 20°C.). The results will contribute to understanding if and when imbibition temperature alters membrane protein in the plasm membrane and mitochondria, and if this is related to germination rate and seedling vigor. Initial results of imbibition temperature tests with three different seed sources do not follow previous work. A possible reason for this is the age of the seed used. Preliminary isolation of plasma and mitochondria membrane proteins has been accomplished using density gradient centrifugation of dry seed extracts.

Additional Key Words: Membrane protein, seedling establishment,

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