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Jamruszka-Lewis

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- (54) **METHODS FOR STORING CONIFER SOMATIC EMBRYO GERMINANTS**
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- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

5,731,203	A	3/1998	Handley, III
5,731,204	A	3/1998	Rutter et al.
5,821,126	A	10/1998	Durzan et al.
5,840,581	A	11/1998	Carraway et al.
5,850,032	A	12/1998	Wann
5,856,191	A	1/1999	Handley, III
5,985,667	A	11/1999	Attree et al.
6,022,744	A	2/2000	Tetteroo et al.
6,117,678	A	9/2000	Carpenter et al.
6,134,830	A	* 10/2000	Welty 47/58.1 R
6,150,167	A	11/2000	Carpenter et al.
6,180,405	B1	1/2001	Aitken-Christie et al.
6,200,809	B1	3/2001	Klimaszewska et al.
6,340,594	B1	1/2002	Attree et al.
6,372,496	B1	4/2002	Attree et al.
6,417,001	B2	7/2002	Aitken-Christie et al.
6,444,467	B1	9/2002	Fan et al.
6,492,174	B1	12/2002	Pullman et al.
2002/0012994	A1	1/2002	Aitken-Christie et al.
2002/0092037	A1	7/2002	Connett-Porceddu et al.

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FOREIGN PATENT DOCUMENTS

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- (58) **Field of Classification Search** 47/58.1, 47/57.6; 435/420
See application file for complete search history.

EP 0 300 730 B1 1/1989

(Continued)

OTHER PUBLICATIONS

Attree, S.M. et al., "Somatic Embryo Maturation, Germination, and Soil Establishment of Plants of Black and White Spruce (*Picea mariana* and *Picea glauca*)," *Can. J. Bot.* 68:2583-2589, 1990.

(Continued)

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- (56) **References Cited**
U.S. PATENT DOCUMENTS

(57) **ABSTRACT**

4,217,730	A	8/1980	Abo El-Nil
4,801,545	A	1/1989	Stuart et al.
4,957,866	A	9/1990	Gupta et al.
5,034,326	A	7/1991	Pullman et al.
5,036,007	A	7/1991	Gupta et al.
5,041,382	A	8/1991	Gupta et al.
5,183,757	A	2/1993	Roberts
5,187,092	A	2/1993	Uddin
5,236,841	A	8/1993	Gupta et al.
5,238,835	A	8/1993	McKersie et al.
5,294,549	A	3/1994	Pullman et al.
5,413,930	A	5/1995	Becwar et al.
5,464,769	A	11/1995	Attree et al.
5,482,857	A	1/1996	Gupta et al.
5,491,090	A	2/1996	Handley, III et al.
5,501,972	A	3/1996	Westcott
5,506,136	A	4/1996	Becwar et al.
5,523,230	A	6/1996	Smith
5,534,433	A	7/1996	Coke
5,534,434	A	7/1996	Coke
5,563,061	A	10/1996	Gupta
5,564,224	A	10/1996	Carlson et al.
5,565,355	A	10/1996	Smith
5,587,312	A	12/1996	van Holst et al.
5,610,051	A	3/1997	Becwar et al.
5,677,185	A	10/1997	Handley, III
5,731,191	A	3/1998	Rutter et al.

In one aspect, the present invention provides methods of storing conifer somatic embryo germinants germinated on a sterile germination medium for delayed transplanting into a growth medium. The methods of the invention comprise the steps of: (a) placing the germinants while still on sterile germination medium into a cold environment in which the temperature is in the range of 0.5° C. to 10° C. for a time period up to six months, said germinants comprising a visible, well-defined epicotyl and radicle; and (b) placing the germinants in water for a time greater than about 1 hour at a temperature below about 24° C. prior to transplantation into growth medium.

7 Claims, No Drawings