

April 8, 2015

Additional information relating to *Arundo donax* and HB 2183
House Committee on Agricultural and Natural Resources

Chair Witt and members of the committee,

I would like to call your attention to a small sample of research and patents related to the breeding or genetic modification of *Arundo donax*.

As I indicated in previous testimony, recent research on *Arundo* in Oregon demonstrates that this plant is already capable of growing and thriving in our region. The following documents demonstrate that research to enhance the performance of *Arundo* is active and underway. While the escape of standard *Arundo* would have terrible consequences for Oregon's ecosystems, that damage would only be enhanced if the escaped plants were bred or modified to be even more vigorous and hardy.

In addition, some work on *Arundo* is attempting to modify the plant to be more useful for applications beyond biofuel, including its use for ethanol production and as a feed for livestock.

In the future it may not be only PGE that has an interest in planting *Arundo* in Oregon, and the *Arundo* that is planted may be even more dangerous to Oregon's ecosystems than current varieties.

I again ask the committee to do everything it can to discourage the planting of *Arundo donax* in Oregon and ask you to support HB 2183.

Sincerely,

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Enhance vigor/hardiness

Cold Tolerance

Patent Application 20100115670 (Christensen 2010)

Patent Application 20140245474 (Christensen et al. 2014);

Dan, Y. and A. Kekkonen. 2014. Development of Regeneration and Mutagenesis Systems for *Arundo donax*. *In Vitro Cellular and Developmental Biology – Animal* 50: S55

Antal, G., E. Kurucz, M. G. Fári, and J. Popp. 2014. Tissue culture and agamic propagation of winter-frost tolerant 'Longicaulis' *Arundo donax* L. *Environmental Engineering and Management Journal*. 13(11): 2709-2715.

Low Light tolerance

Low light tolerance allows plants to grow even more densely together.

Patent 8,344,210 (Kwok et al., 2013)

Patent Application 20130191941 (Kwok et al., 2013)

Low-nitrogen tolerance

Tolerance to low nitrogen levels allows plants to grow in poor soils.

Patent Application 20140289884 (Nadzan et al. 2014)

Drought and heat tolerance

Patent Application 20110023193 (Christensen et al., 2011)

Oxidative stress tolerance

Oxidative stress can be related to several other environmental stressors such as heat, drought, and freezing.

Patent Application 20110265199 (Zhou 2011)

Broad applications

Both patents 8,344,211 (Alexandrov et al., 2013) and 8,362,325 (Troukham et al. 2013) include *Arundo donax* and several traits including photosynthetic capacity, shade avoidance, cold tolerance, drought tolerance, water use efficiency, stress tolerance, and vigor.

Enhance use for other applications

Staygreen phenotype – feed for livestock

Leaves retain chlorophyll and protein after senescence (dying), this enhances protein content for ruminant digestion.

Patent 8,779,235 (Zhao et al., 2014)

Reduced lignin content – feed for livestock, biofuel, ethanol production

Reduces lignin (main component in wood, indigestible), increases carbohydrates.

Patent 8,901,371 (Shen et al., 2014); 8,796,509 (Zhao et al., 2014)