

Oregon Invasive Species Council

Arundo donax Update

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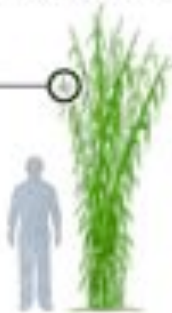
Turning plants into power



Giant cane

① Farming

Farmers would grow giant cane, *arundo donax*, on irrigated farmland near the Boardman coal plant, producing two crops a year. PGE estimates Boardman would consume 90,000 acres worth of cane.



Cane would be cut when it's about 10 feet tall

Sources: PGE; OSU Extension Service

② Processing

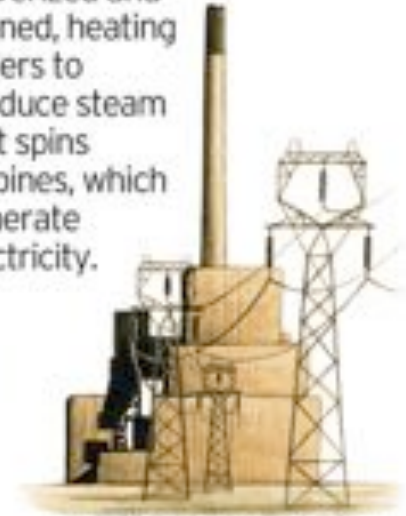
Torrefaction superheats the harvested cane in an oxygen-free environment, much like coffee beans are roasted, turning it into black, charcoallike pellets.



Cane pellets

③ Burning

The finished material would be hauled to Boardman to be pulverized and burned, heating boilers to produce steam that spins turbines, which generate electricity.



ERIC BAKER/THE OREGONIAN

PGE Boardman coal-burning power plant future?
Oregonian article: January 31, 2010



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Arundo donax A Complex Issue

May 21, 2012 Oregon
Senate Committee On
Environment and Natural
Resources.

*“If Arundo reaches the
Columbia River, it will be a
disaster of unimaginable
proportions.” (NPSO)*



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***Arundo donax* OAR**

Giant reed, *Arundo donax*, is a promising bioenergy crop because of its high biomass yield. It is also grown as an ornamental and as a source of reeds for woodwind instruments. Giant reed grass is highly invasive in riparian areas in parts of the US such as California, Texas and Florida. It is the intent and purpose to balance goals to develop new agricultural products while protecting natural resources and preventing the establishment of giant reed in riparian areas where it could cause major negative impacts to natural resources in Oregon.

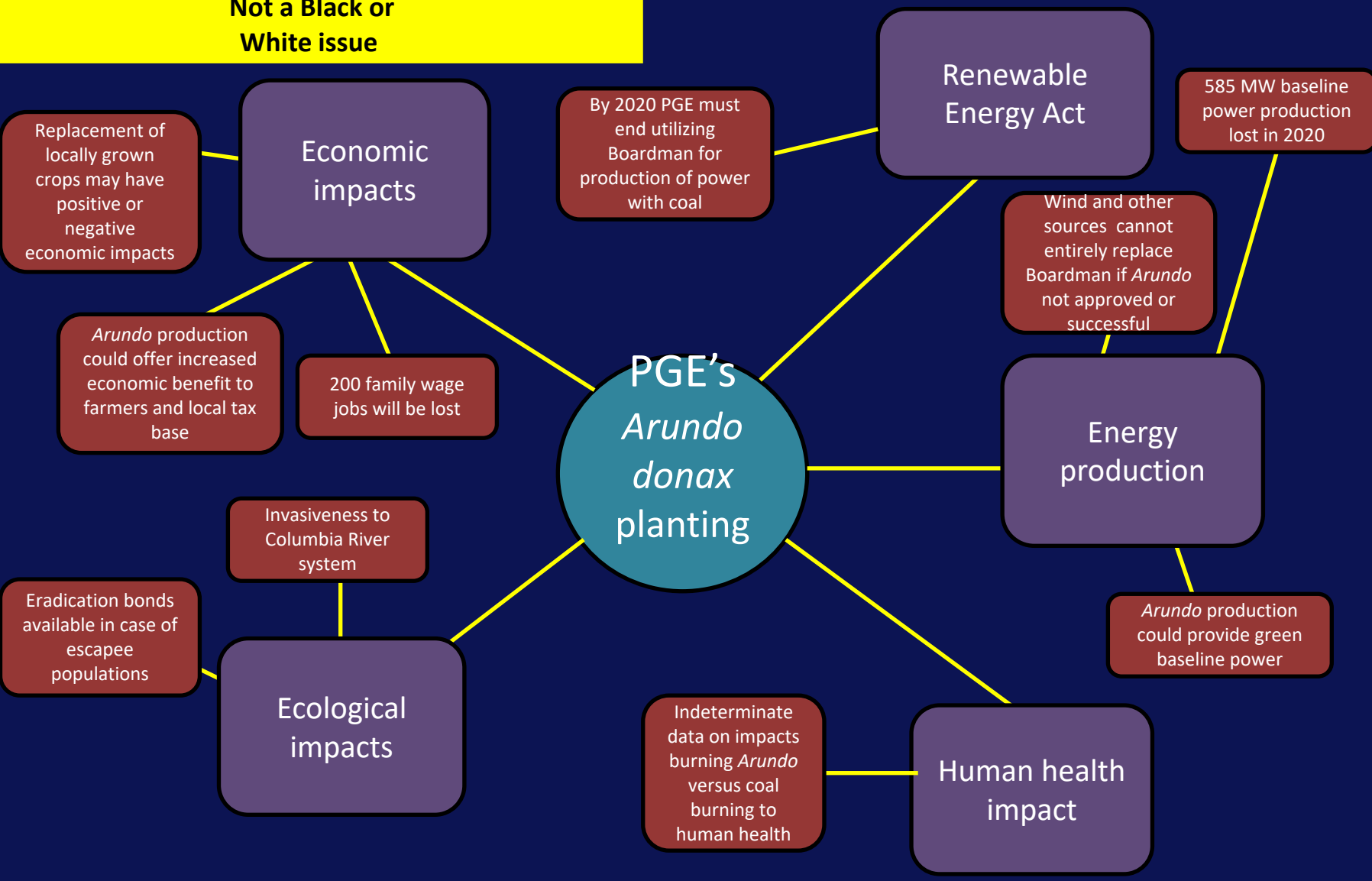


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Extensive issues involved in listing of *Arundo donax*:

Not a Black or White issue

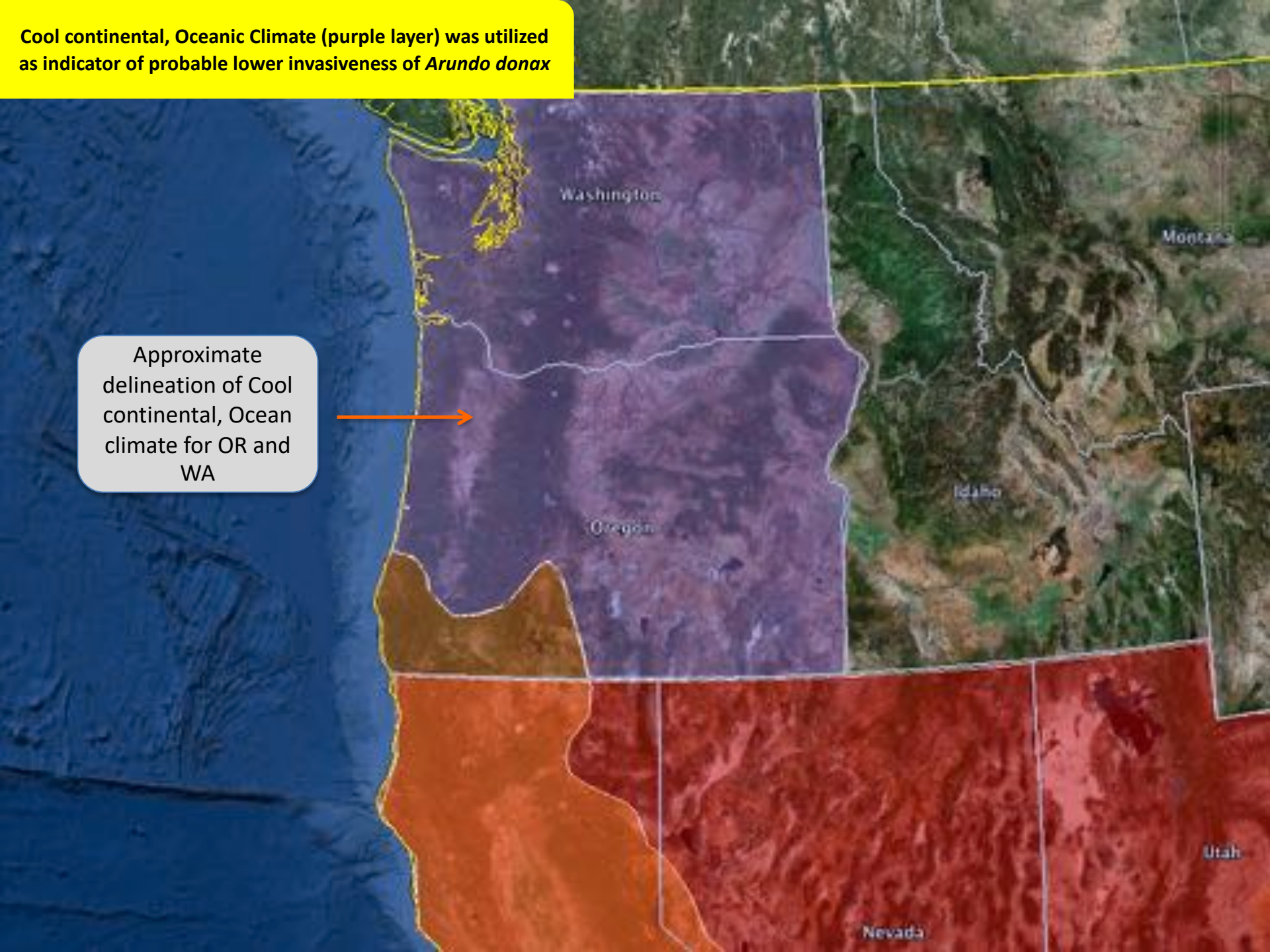


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Cool continental, Oceanic Climate (purple layer) was utilized as indicator of probable lower invasiveness of *Arundo donax*

Approximate delineation of Cool continental, Ocean climate for OR and WA



Climactic conditions differ substantially from areas known to support invasive populations of *Arundo donax*





Rio Grande River Valley, Texas Photo: Center for Invasive Plant Research @ UC Riverside



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2011 Risk Assessment

**Oregon Department of Agriculture
Plant Pest Risk Assessment for Giant Reed
Arundo donax L.
February 2011**

Name: Giant reed (*Arundo donax*); a.k.a. giant cane, Spanish reed

Family: Grass (Poaceae)

Purpose: *Arundo donax* was evaluated in 2007 and placed on the Oregon Department of Agriculture (ODA) Watch List. ODA and the Oregon State Weed Board (OSWB) are reevaluating *Arundo* due to the current interest in using *Arundo* as a biomass energy crop and potential for production in Oregon.

Findings of this Assessment and Recommendations: Using a rating system adapted from United States Department of Agriculture, Animal and Plant Health Inspection Services, Plant Protection and Quarantine Weed Risk Assessment Guidelines, *Arundo donax* scored **41** out of a potential score of 90 (moderate B-listing). Using the ODA Noxious Weed Rating System, it scored **16** out of 25 (low A-listing).



- Scores as a Noxious Weed
- At present there is minimal evidence that *Arundo* will be invasive in PNW
- OSWB recommendation to keep on watch list



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2011 Risk Assessment

They provided a recommendation that ODA consider more carefully how widely and extensively it is cultivated in Oregon, and evaluate the opportunities it has and has not had for escaping. The USDA-APHIS-PPQ evaluation used a process that includes a very basic climate matching tool to evaluate the geographic potential of a species in the United States. The analysis suggests that 55.9% of the U.S. is suitable for the growth of this species (Figure 1), including most of Oregon. However, just because it can grow in most of Oregon, doesn't mean that it would be invasive here. (USDA-APHIS-PPQ 2011).



Figure 1. Climatically suitable areas for the growth of *A. donax* in the United States, USDA-PPQ 2011.

In Oregon, the feasibility of large-scale production and using *Arundo* as an alternative energy source is being reviewed by Portland General Electric (PGE) to fuel the Boardman coal-fired power plant in Morrow County. The issue has renewed the urgency in evaluating its invasiveness in Oregon and whether it qualifies to be included as a State Listed Noxious Weed.

USDA Map Shows that *Arundo* can grow in 55.9% of U.S.

“However, just because it will grow in most of Oregon does not mean it will be invasive there”.

(USDA-APHIS-PPQ 2011)



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Providing Effective Mitigation

Physical limitations

- Limited to 300 acres through end of 2013 in Morrow County
- Not allowed in 100 year floodplain
- Not allowed within ¼ mile of wetlands
- Not allowed within ¼ mile of irrigation ditches
- Transportation control requirements
- Equipment use and sanitation requirements

Early detection & rapid response

- Morrow County & ODA Weed Control staff monitors for feral plants
- PGE covers monitoring cost and feral plant removal

Administrative controls and assurances

- Field eradication
- Three years of monitoring past eradication
- Surety bond \$1 million



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Growth stages

6/16/2011



8/04/2011



9/12/2011



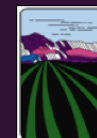
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Harvest



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Oregon
Department
of Agriculture

Bailing operation

- 1,200 lb. Bales
- Currently have about 450 dry tons



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Production Fields

Lloyd

- Final Harvest : March 2015
- Status: 2019 – no plants
 - 2016: 1 plant, 2017: 4 plants, 2018-9: 0 Plants

Greenwood

- Field
 - Final Harvest: March 2014 Rototilled
 - Status: 2019 Potatoes – no plants visible
- Corner
 - Final Harvest: March 2014
 - Sprayed 2x, Mowed , scattered plants (~<5% of 2017 #'s), 2019 – dug plants

Frederickson

- Final Harvest: Feb 2016
- Status: Dug Roots Piled Burned,
- 2019 scattered plants in field (Corn) and at edge



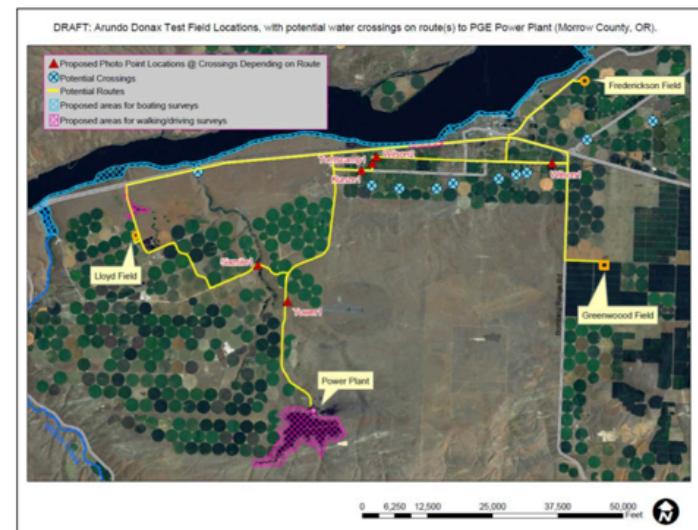
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Ongoing Monitoring

- Road and Waterways
 - Portland General Electric
- Fields - Collaborative
 - Morrow County Weed Control
 - PGE
 - Landowners
 - ODA

Spring 2017 surveys for *Arundo donax* on the Columbia River and potential water crossings along route(s) from Arundo fields to PGE Power Plant, Morrow County, OR.



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Frederickson field 7/22/2019 new plants sprouted next to corn circle. Dave Pranger, Morrow County and Robert Mahamie, PGE

Lessons Learned and Observations

- The mitigation measures put into place has worked
- Fees were too low to cover monitoring costs
- Arundo can continue to grow in areas without irrigation
- Arundo was not viable as a green energy crop
- Concerns about climate change and potential for future impacts
- ODA is in process of updating Risk Assessment for Arundo
- Recent request to grow Arundo in western Oregon
- Proposed listing as a noxious weed to OSWB in February



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