

Testimony in Support of HB 2813

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I am a retired Oregon State University Agricultural Extension Agent and Professor Emeritus. During my 25 years as an Extension Agent I worked in field crop production in several regions -- the Willamette Valley, Central Oregon, the Coast and Southern Oregon. My particular area of expertise is weed control, both with commercial crops and with invasive species in non-crop areas. I would like to address *Arundo donax* from the point of view of weed control.

If *Arundo donax* is planted in Oregon, it is absolutely inevitable that it will eventually escape from cultivation and become the same environmentally devastating pest here that it has already become in California and other states. The reason I am certain this will happen is that weed control is never 100%. Control of a weed species by an herbicide is considered to be excellent when 95 to 99% of the plants are killed. In most situations this is good enough, but in the case of a weed species as invasive as *Arundo donax*, it is not good enough. This creeping perennial plant reproduces readily from its rootstocks (rhizomes), and a single small piece is enough to start a fast-growing infestation outside of a production field. The more acres of *Arundo donax* that are planted, the more inevitable this escape becomes, and the faster the invasion of non-crop land will be. When a farmer takes a field out of production, the surviving rhizomes will regrow as a weed problem in the subsequent crop, possibly for years afterward, during which time they are capable of being moved on agricultural equipment or transported elsewhere by moving water, as well as growing on their own into a neighbor's field.

Pieces of rhizome are likely to be stuck in the mud on agricultural equipment, then dropped along roadsides or accidentally planted into other fields. The Oregon Department of Agriculture (ODA) rules for growing *Arundo donax* in the control area require that any equipment be cleaned free of soil and plant debris prior to leaving production fields, but equipment in a field cannot be cleaned perfectly. There is no provision for inspecting the equipment, even on a spot check basis, and there is no fine or other deterrent to keep this rule from being ignored. With many farmers and many pieces of equipment, it will be impossible to keep all the rhizomes contained.

Movement of rhizome pieces in floods is a primary method of dispersal. ODA's rules prohibit *Arundo donax* from being planted near water bodies or in a 100-year-flood area. However, floods do happen beyond 100-year-flood areas, and localized floods can occur when irrigation mainlines break. Rhizomes can be washed along with soil out of a field and into a ditch or other area where they can become established. Continuous soil moisture is not necessary for a patch of *Arundo donax* to stay alive. In addition, *Arundo donax* rhizomes are likely to grow beyond the field boundaries on their own. The vigorous, fast-growing rhizomes could easily grow out under a road and into a neighboring field before an above-ground stem appeared. Escapees growing at some distance from the field might not be noticed. It is inevitable that the plants will at some point reach riparian areas and eventually the Columbia River.

Eradication of an invasive plant is only possible when the size of the infestation is still small. Once it has passed a certain point (and this point occurs long before there is public outcry over the weed problem), eradication is no longer possible. Then the difficult balance of the steadily

increasing environmental damage from lack of control versus the steadily increasing expense of controlling the weed goes on forever. The future cost of control measures, enforcement measures and damage to the environment will largely fall on Oregon taxpayers.

Experience with controlling *Arundo donax* infestations in riparian areas in California has involved costs of up to \$25,000 per acre. Control measures typically start with spraying the herbicide glyphosate (one trade name is Round-up) on the mature canes. Since the canes can be 30 feet tall and are usually impossible to walk through, this is not a simple task. Later, the dead canes must be removed mechanically with a large flail mower or chain saw. Glyphosate, incidentally, will kill all the other plants in the treatment area as well. The surviving *Arundo donax* rhizomes which resprout must be treated again at least once, and the site must be monitored for several years. If the canes are cut before being treated with herbicide, all the material must be removed from the site or else burned or chopped to avoid re-rooting. Once cut, the canes need to be allowed to regrow before they can be treated with glyphosate, because otherwise there would not be enough leaf material to take in enough herbicide to kill the roots. Small patches of *Arundo donax* can be dug up manually with hand tools or a backhoe, but since rhizomes buried as deep as 3 to 10 feet under alluvial soils will readily resprout and since every single rhizome piece must be removed, this causes a lot of soil disturbance. In some locations these control measures would be extremely difficult, if not impossible, such as on steep slopes along river banks and in sensitive natural areas. Prescribed burning of the living or chemically treated canes will not work, because fire cannot kill underground rhizomes and because it would probably favor the regeneration of *Arundo donax* over native riparian species.

Japanese knotweed (*Polygonum cuspidatum*) is an example of an invasive plant (an escaped ornamental) that also reproduces exclusively from rhizomes but has nevertheless managed to spread extensively along rivers in Oregon and Washington and become a noxious weed. It crowds out all the native plants along river banks where it has become established, it makes the river inaccessible to humans and wildlife and it reduces fish populations. Like *Arundo donax*, Japanese knotweed is controlled by the herbicide glyphosate. However, since control does not mean a 100% kill, rhizomes resprout, and the knotweed rapidly recolonizes the site. Eradication has proven to be impossible except for newer small patches. Japanese knotweed grows very fast, but not as fast as *Arundo donax*, and it only grows 20 feet tall rather than 30 feet high. There is no doubt that *Arundo donax*, which grows even more vigorously, will only be a worse problem.

From an energy point of view, looking only for the largest possible amount of biomass for a biofuel-powered system, you would regard the fastest growing plant on the planet as the ideal choice. From an environmental point of view, you would be out of your mind to choose this plant and introduce it into Oregon on large scale, so that it will inevitably become an invasive pest, worse than any we already have. You might rationalize the energy choice by saying that no one knows for sure yet how well *Arundo donax* will grow in the Columbia Basin; possibly the climate is too cold for it to persist, so it will not become invasive. But Portland General Electric clearly believes (as I do) that it will grow well there. Otherwise they would not be spending their money contracting farmers to grow the plant and testing it the Boardman power plant. If *Arundo donax* does grow well enough to be viable as a biofuel, it will become invasive. We can't have it both ways. In my opinion, there is therefore no reason to grow it even on a small scale to test for biofuel production. I am fully in support of banning its commercial production in Oregon.