

Screening of *Buddleja* Cultivars Applying for Exemption Under Amended Version of OAR 603-052-1200

Cooperation between Oregon Department of Agriculture and Oregon State University

August 15, 2011

All requests for evaluation and all reports will be submitted to ODA, OSU, and the breeder/introducer. However, researchers conducting evaluation reserve the right to publish findings in peer reviewed scientific journals.

OPTION 1. Sterility evaluation (grow-out) already completed. Under this option, the candidate butterfly bush cultivar is evaluated based on a review of the results of sterility studies already conducted.

- The submitter should provide the results of independent research that addresses the following:
 - Field studies confirming that the candidate cultivar produces less than 2% viable seeds compared to fertile cultivars that were evaluated under the same conditions and location.
 - Parentage of the candidate cultivar, if applicable.
 - Ploidy level of the candidate cultivar, if applicable.
- OSU specialist will conduct the review of the submitted data.
 - OSU will provide a written report to the applicant and to the ODA documenting their findings based on the review of the submitted literature.
 - ODA will maintain a list of approved cultivars at:
<http://oregon.gov/oda/programs/NurseryChristmasTree/Pages/ButterflyBush>
 - The cost will be \$150 per hour.
 - ODA will provide oversight for allocation and spending of funds
 - Additional supporting information at time of review
- Example of sterility evaluation report will be attached soon.

OPTION 2. Sterility evaluation needed. Under this option sterility is determined via grow out evaluations conducted by Oregon State University. This evaluation process will take approximately 18 months and cost \$10,000 per cultivar. *Evaluation duration approximately 18 months; dependent upon flowering time and timing of receipt of plant material*

- The breeder/introducing entity will provide 12 plants (the extra two plants will offset any losses occurring during evaluation)
 - Plants should be well established in #1 gallon containers
 - Experiments will be conducted in #3 or #5 containers
 - Must be certified pest and disease free
- 5 plants will be container-grown at Oregon State University, Corvallis, Oregon under the supervision of Ryan Contreras
 - Plants will be grown under standard container nursery conditions
 - No supplemental hand pollination will be provided
 - In addition to the cultivar being investigated for sterility/reduced fertility, multiple fertile cultivars will be included as pollenizers at a rate of 1 fertile cultivar for every 3 plants under investigation
 - 3 inflorescences from each plant will be removed and seeds will be germinated under ideal conditions to determine seedling number per inflorescence; these data will then be used to calculate fertility relative to standard fertile cultivar
 - Total number of inflorescences will be counted to allow calculation of seedlings per plant (seedlings per inflorescence)

- Seedlings that germinate in the field will be controlled with herbicide to prevent escape
 - At the termination of the experiment all plants will be destroyed
- 5 plants will be grown in containers in a glasshouse at Oregon State University, Corvallis, research greenhouses under the supervision of Ryan Contreras and Mara Friddle
 - Three inflorescences on each plant will be pollinated (10 flowers each) by a mixture of its own pollen and pollen collected from several fertile cultivars... $3 \times 10 \times 5 = 150$ flowers
 - Three inflorescences on a fertile cultivar will be pollinated by a mixture of pollen from fertile cultivars to prevent self-incompatibility (10 flowers each) to determine the baseline of fertility... $3 \times 10 \times 5 = 150$ flowers
 - Pollen will be collected and subjected to in vitro germination to determine pollen fertility
 - Plants will be subjected to flow cytometry to determine ploidy
 - Pollinated inflorescences will be harvested and seeds germinated to determine seedling number and seedlings produced per pollinated flower to determine relative fertility
 - At the termination of the experiment all plants will be destroyed
- Costs per cultivar
 - Container evaluation: \$2,000
 - Greenhouse and laboratory evaluation at OSU Corvallis Campus: \$8,000
 - An approximate 3% increase in costs will occur annually
 - Fees will be submitted in the form of an unrestricted gift in an Agriculture Research Foundation (ARF) account which Ryan Contreras will access to conduct evaluations
 - ODA will provide oversight for allocation and spending of funds
- OSU will provide a written report to the applicant and to the ODA documenting their findings based on the results of the grow-out studies.
 - ODA will maintain a list of approved cultivars at:
<http://oregon.gov/oda/programs/NurseryChristmasTree/Pages/ButterflyBush>

OPTION 3. Confirmation of Interspecific hybrids* Interspecific hybrids of *Buddleja* are not regulated under Oregon's Noxious Weed Quarantine (OAR 603-052-1200). However, those transporting, propagating, or selling *Buddleja* interspecific hybrids, need to provide the ODA with proof of parentage. There are a couple of ways to do this.

- The submitter provides data that shows the hybrid has morphological intermediate features between the two parent species. This could include a comparison of measurements of the corolla, leaf, or calyx.
- The submitter provides results of molecular (DNA) tests that confirm the hybrid is an interspecific cross.

OSU specialists will conduct the review of the submitted data.

- OSU will provide a written report to the applicant and to the ODA documenting their findings based on the review of the submitted literature.
- The cost will be \$150 per hour.
- ODA will provide oversight for allocation and spending of funds
- ODA will maintain a list of approved interspecific crosses at:
<http://oregon.gov/oda/programs/NurseryChristmasTree/Pages/ButterflyBush>

Example of sterility evaluation report will be attached soon.

* An interspecific hybrid is the mating of two separate species such as a cross between *Buddleja davidii* x *Buddleja lindleyana*.