



*Grindelia integrifolia* (Willamette Valley gumweed) and pollinator

# *Willamette Valley Native Plant Materials Partnership*

*Strategic Plan 2013-2017*

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## I. Introduction



**Mission** – *Provide native plant materials to partners to protect and restore the native ecosystems of the Willamette Valley Ecoregion.*

**Vision** – *To increase the availability and affordability of genetically diverse and ecologically appropriate native plant materials for use in the Willamette Valley, help stabilize and support the local native seed marketplace, and provide a foundation for successful restoration and healthy, thriving native ecosystems.*

The Willamette Valley Native Plant Materials Partnership (WVNPMP) was formed in 2012 with the goals of pooling resources and coordinating production efforts to improve native plant material availability and lower costs for the Willamette Valley Ecoregion. The Willamette Valley (Figure 1) has a variety of habitats that comprise a unique community of native plant species and ecosystem functions, and a high percentage of these habitats have been converted to agricultural, industrial, and residential uses (ODFW 2006, USFWS 2010). A highly diverse group of public and private organizations are striving to use native plant materials of local origin in their restoration, revegetation, and mitigation projects in order to protect remaining native ecosystems and restore converted and degraded sites to a more natural and functional state.

The Willamette Valley Ecoregion is a Level III ecoregion designated by the Environmental Protection Agency, and includes the Willamette Valley of western Oregon and adjacent foothills, along with a small portion across the Columbia River in the Vancouver area of southern Washington (EPA 1996, ODFW 2006). It is one of the smallest ecoregions in the United States with an area of approximately 5,800 square miles; the Oregon portion encompasses 5,308 square miles of land between the Coast Range and the Cascades Mountains (ODFW 2006). Twenty to 40 miles wide and 120 miles long, elevations range from 780 feet at the southern end south of Eugene to near sea-level at Portland (ODFW 2006, USGS 2012).

Willamette Valley prairies are among the most endangered ecosystems in North America - over ninety percent of upland prairie and oak savanna/woodlands and over 99% of historic wet prairies in the valley have been converted to other uses, primarily urban and agricultural (USFWS 2010, TNC 2008). Fertile soil and abundant rainfall make the valley the most important agricultural region in the state (ODFW 2006, EPA 1996). Seventy percent of the population of Oregon resides in the Willamette Valley, which includes eight of the top ten urban centers in the state (US Census 2010). Due to continued population growth, pressure on valley ecosystems from urban expansion, land-use conversion, and pollution is likely to increase further





Figure 1. Locations of WVNPM members in the Willamette Valley.



(ODFW 2006).

Native seed and plant production in the Willamette Valley has consisted of multiple, relatively uncoordinated entities working with local growers to meet small-scale restoration needs. Several of these growers also produce native seed for commercial sale. Despite the fact that Willamette Valley plant material development has benefited from the cumulative efforts of these groups, major gaps in plant material availability and inefficiencies in production still exist due to a lack of coordination. There has been no practical forum for these entities to share information about successful and unsuccessful production techniques for plants in our area. Restoration groups are often unfamiliar with each other's objectives, financial and institutional limitations or resources, methods for acquiring native seed, and views on genetic issues. A lack of coordination can be harmful to natural populations of native species, including listed species, due to potential over-collection from wild populations and the potential introduction of inappropriate genetic material into existing populations. Also, coordination is even more imperative as land managers work to recover listed species. While the WVNPMMP will not likely be directly involved in the production of any listed species, we can provide a forum for better coordination and prioritization of introduction sites and growout efforts.

Although an active native seed and plant materials industry serves the Willamette Valley, habitat restoration in the valley continues to be limited by the cost and availability of native seed and other plant materials for restoration sites. Current production does not supply the quantity or diversity of species needed to fully restore these systems, especially in prairie habitats where native species richness is high. Demand for many species, particularly native forbs, often exceeds availability. Frequently the native plant materials that are available commercially are not the most appropriate genetically, and some are even brought in from outside of the ecoregion.

Despite a common concern for the genetic provenance<sup>1</sup> of native plant materials for restoration, there has been lack of agreement among restoration groups regarding appropriate seed transfer zones<sup>2</sup>. Each organization or partnership currently designates its own seed zone criteria, and while one may consider "local" to be limited to an individual site, another may consider multiple ecoregions to be an appropriate seed transfer zone. We can provide an opportunity to work toward more agreement on seed transfer zones for individual species, beginning with those that are put into WVNPMMP growout.

Producers are most interested in growing the seed/plant materials that people will buy, and they seek coordinated guidance from the restoration community. One of the main impediments that growers have identified concerning the production of native plant materials is the lack of information about which species will be in greatest demand. Starting new production fields of a species can be very expensive when best cultivation techniques have not been determined. This uncertainty is a disincentive for local farmers to produce native seed, particularly those species with no production history and those that don't produce seed for several years. Many growers

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<sup>1</sup> The original geographic source of seed or propagules (Rogers & Montalvo 2004).

<sup>2</sup> Geographic area within which plant materials can be transferred freely with little disruption of genetic patterns or loss of local adaptation (Miller et al. 2011).

have found themselves with drastically devalued seed after over-production of a “common” species or having produced a species for which there was no demand.

A regional approach to the coordination of native plant materials development, production, and restoration may contribute to a more cohesive valley-wide effort to conserve and restore increasingly rare habitats such as wetlands, oak savanna, and upland prairies (ODFW 2006, USFWS 2010, Benton County 2010). For over a decade, partners have been setting the stage for a cooperative effort toward producing native plant materials for restoration and revegetation projects in the Willamette Valley. At least one formal restoration partnership, The West Eugene Wetlands Program (now the Rivers to Ridges Partnership), has been in existence in the valley since the mid-1990s, demonstrating that sharing plant materials production among separate organizations is possible. Several meetings and workshops have been held during this time addressing plant materials needs, genetics, and seed transfer zones. The Native Seed Network, a national program based in Oregon, was created in 2002 as a resource for both the restoration community and the native seed industry to increase the availability of affordable native plant materials. In 2005, the Institute for Applied Ecology (IAE) initiated the Willamette Valley Seed Increase Program, developing accessions with valley-wide germplasm in the largest seed increase program ever undertaken in the valley to that point. Outside the valley, there have been a variety of native plant materials partnerships created in recent years that focus on research and/or production of native plant materials in such areas as the Deschutes Basin and the north coast of Oregon, the South Puget Sound and King County in Washington, the Great Basin, the Colorado Plateau, and northern Arizona in the interior west, and a multi-state cooperative in the southeastern United States. However, funds have not been available to support a coordinator to bring partners together and centralize collection and production of plant materials in the Willamette Valley.

In 2011, IAE, the Nature Conservancy (TNC), and the City of Eugene (CE) submitted a proposal to the Oregon Watershed Enhancement Board (OWEB) requesting funds to support a half-time coordinator for one year to develop the WVNPM. The project launched in January 2012. A series of interviews, three general meetings, and several subcommittee meetings solidified the process and rules of the WVNPM, roles and responsibilities of members, WVNPM infrastructure, species selection, funding, and a five-year strategy. Both restoration practitioners and producers participate in the partnership. Current partners include Benton County Natural Areas and Parks (BC); Bureau of Land Management - Eugene District (BLM); City of Corvallis (CC); CE; Confederated Tribes of the Grand Ronde (CTGR); Friends of Buford Park (FBP); Greenbelt Land Trust (GLT); Heritage Seedlings, Inc. (Heritage); IAE; Long Tom Watershed Council (LTWC); Marys River Watershed Council (MRWC); McKenzie River Trust (MRT); Natural Resources Conservation Service (NRCS); Oregon Department of Transportation (ODOT); Oregon Metro (Metro); Oregon Parks and Recreation Department (OPRD); Pacific Northwest Natives (PNN); Polk County Soil and Water Conservation District (PCSWCD); TNC – Oregon Chapter; Triangle Farms; Trillium Gardens Nursery (Trillium); United States Army Corps of Engineers (USACE) – Portland District, Willamette Valley Project; and the United States Fish and Wildlife Service (USFWS). See Appendix A for the specific roles of each organization.

WVNPMP membership is open to any organization with a stake in restoration, revegetation, or mitigation with native plant species in the Willamette Valley. Plant materials users, plant materials producers, and any other interested organization or individual may become a formal member of the partnership. Those members that will pay for plant materials production, either directly or indirectly, are voting members while those who contribute knowledge and expertise (such as local producers, regulators, etc.) but do not buy native plant materials produced through the WVNPMP are non-voting members. Voting members make final decisions about issues such as which species to grow, how to support the organization, and how to allocate plant materials to partners, while all members participate in discussions leading up to those decisions. Initially, we will operate using partner contributions and grants, and then transition into a business model that emphasizes funding through plant materials distribution (i.e. distribution of plant materials such as seeds will correspond directly to partner financial contribution). In 2013, we will collect wild seed and put at least five species into production, and will endeavor to add five to ten new species each year afterward.

A half-time coordinator will facilitate the development and operations of the WVNPMP. The coordinator will be employed, supervised, and given workspace by IAE in Corvallis, Oregon. Facilities for drying, cleaning, processing, and storing collected seed will be provided by IAE, with other partners contributing as needed and as appropriate.

## II. Program Goals and Objectives



The partnership has identified a set of goals and objectives to aid in the development and expansion of the WVNPMP:

1. Establish the Willamette Valley Native Plant Materials Partnership and build organizational infrastructure to support WVNPMP activities.
2. Increase availability of native plant materials, increase marketplace stability by aligning projected needs with grower capacity, and reduce the risk of growing plant materials on speculation.
3. Centralize coordination of collecting, producing, and distributing native plant materials to improve efficiency and lower costs.
4. Improve quality and genetic appropriateness of native plant materials used in restoration, mitigation, and revegetation projects in the Willamette Valley.
5. Provide an online forum for sharing information within the WVNPMP and to other interested parties and the general public.

Objectives are designed to address both short term priorities, such as the creation of a strategic plan and signing of a Memorandum of Understanding, and long term priorities, such as the development of a seed collection program and storage facilities. Progress will be reviewed by assessing the achievement of stated objectives. See Appendix B for an implementation timeline for achieving milestones. The Coordinator will publish an annual report to the partners with information about WVNPMMP activities, achievements, status of contract production, and funding status. The report will be posted on the website ([wvcoop.nativeseednetwork.org](http://wvcoop.nativeseednetwork.org)). The strategic plan is meant to be adaptive and may be changed or updated as needed. However, a formal review of the plan and development of the strategy for the next five years will take place in 2017. Goals and objectives will be re-evaluated and adjusted when the Strategic Plan is reviewed formally.

**Goal 1 – Establish the Willamette Valley Native Plant Materials Partnership and build organizational infrastructure to support WVNPMMP activities.**

Objective	Measure	Expected Result
A) Create and sign a Memorandum of Understanding among all founding partners.	Date of last signature.	1) Ready for signature by Oct 31, 2013; 2) Final signature by Dec 31, 2013.
B) Finalize a 5-year strategic plan.	Date finalized.	Finalized by Dec 31, 2013.
C) Complete a 5-year budget projection for 2013-2017.	Completed budget projection.	Budget projection completed by Dec 2013.
D) Secure funding for first year of WVNPMMP operation.	Percentage of funding secured.	1) 80% of funding secured by January 31, 2013; 2) 100% of funding secured by March 31, 2013. 3) Backup plan developed if project is not fully funded.
E) Finalize charter documents for the WVNPMMP.	Date finalized.	Finalized by December 31, 2013.
F) Secure funding for 2014.	Percentage of funding secured.	1) 80% of funding secured by January 31, 2014; 2) 100% of funding secured by March 31, 2014. 3) Backup plan developed if project is not fully funded.
G) Develop an agreement for shared investment and equitable distribution of plant materials to partners.	Approval of recommended agreement by WVNPMMP members.	1) Draft agreement presented to WVNPMMP at November 2013 meeting. 2) Final agreement by November 2014.
H) Transition from start-up financial model of WVNPMMP support to business model of internal support (partner investment tied to percentage or share of product).	1) Date transition begun; 2) Date transition completed.	1) Transition begun by fiscal year 2014; 2) Transition completed by fiscal year 2016.
I) Formally review strategic plan every five years.	Date completed.	Review completed and plan updated by Dec. 31 of 2017 and subsequently at least every five years.
J) Complete an annual report.	Date completed.	Completed annually by February 15 of the following year.
K) Seek out and add WVNPMMP partners.	Number of partners added annually.	At least 1 partner added per year for first 3 years.

**Goal 2 – Increase availability of native plant materials, increase marketplace stability by aligning projected needs with grower capacity, and reduce the risk of growing plant materials on speculation.**

Objective	Measure	Expected Result
A) Use partner projections to forecast plant materials needs over multiple years.	Completed annual document with all partner projections forecast for five years.	Partner projections compiled annually by May 31.
B) Supply growers with partner projections of all focus species so that production on speculation can be better aligned with projected need even when a given species is not yet under contract.	Number of growers who adjust their production to better fit projected plant materials needs.	At least 1 grower will adjust production each year.
C) Enter new priority species into production annually.	Number of species put into production annually.	2-10 species put into production annually.
D) Develop contracts with growers for new production.	Number of completed contracts with growers for new species.	Agreements for 2-10 species arranged annually by Mar 31; contracts signed by Oct 31.
E) To expand WVNPM focus from mostly seed production to include production of other plant materials such as bulbs, bare root propagules, plugs, and divisions.	First species in production for non-seed plant materials.	1) First division production in 2014; 2) First bulb production initiated by 2015; 3) Bare root and plug production evaluated by 2016.

**Goal 3 – Centralize coordination of collecting, producing, and distributing native plant materials to improve efficiency and lower costs.**

Objective	Measure	Expected Result
A) Develop prioritized species focus list.	Focus list adopted by WVNPM.	Focus list adopted by March 31, 2013.
B) Develop seed collection, cleaning, and storage protocols following established and agreed upon standards.	Completed collection, cleaning, and storage protocols.	1) Protocols completed by May 31, 2013; 2) Reviewed and updated as needed annually.
C) Track collection, production, and distribution of all WVNPM species with a database or other system.	Tracking system created or adapted from existing functional system.	Database or other tracking system established by Dec 31, 2013.
D) Hire seasonal seed crew for native seed collection.	1) Date collection crew hired; 2) Number of personnel on crew.	1) Seed crew hired by March 31 annually; 2) 2-4 people hired each year.
E) Collect source seed for production.	Number of species collected annually.	8-15 species collected annually.
F) Coordinate contributions of collected seed by partners.	Number of donated collections annually.	At least 2 donated collections annually.
G) Identify seed storage need and establish arrangement for WVNPM seed storage through purchase or partner agreement.	1) Seed storage needs identified; 2) Date established.	1) Seed storage needs identified by September 2014; 2) Establish storage arrangement by September 2015 (at first significant harvest).

**Goal 4 – Improve quality and genetic appropriateness of native plant materials used in restoration, mitigation, and revegetation projects in the Willamette Valley.**

<b>Objective</b>	<b>Measure</b>	<b>Expected Result</b>
A) Determine appropriate seed transfer zones for each species entered into WVNMPMP growout using available research, literature, and experience.	1) Develop guidelines for determining genetic appropriateness for WVNMPMP production 2) Accepted seed transfer zones for each species to be entered into production. 3) Collaborate with researchers/academics to collect data on genetics and seed transfer zones.	1) Guidelines for genetic appropriateness developed by May 31, 2013; 2) Seed transfer zones established during decision making process for species recommendations. 3) At least two instances of collaboration with researchers/academics by December 31, 2015.
B) Develop seed quality standards for each species put into production.	Established seed quality standards for each species to be entered into production.	Seed quality standards established prior to collection planning for that species.
C) Use seed certification as appropriate to meet WVNMPMP objectives.	Every species recommended for production will be evaluated for inclusion in certification program.	1) At least half of the species will be certified at collection 2) At least one species will be certified in production by 2017.

**Goal 5 – Provide an online forum for sharing information within the WVNMPMP and to other interested parties and the general public.**

<b>Objective</b>	<b>Measure</b>	<b>Expected Result</b>
A) Establish a website that is used for WVNMPMP business and information sharing for WVNMPMP members and the public.	1) Date first available for use by WVNMPMP members; 2) Date first available to the public and searchable	1) First available for use by WVNMPMP members by December 2012. 2) First available to the public by being publicly searchable on line by January 2013.
B) Maintain the WVNMPMP website for both public access and use by members.	1) Number of website subscribers; 2) Number of subscribers participating in discussions; 3) Number of committees using the website for discussion.	1) 100% of partners are website subscribers by Dec 2013; 2) 25% of partners participate in on line discussion by November 2014; 3) All committees using website for discussion by November 2014.
C) Create a quarterly blog for the partners and the public on the website.	Average number of posts per year.	4 or more posts on average per year.



### III. Species Selection



#### A. Focus habitats

In the first years of production, more than half of the species will be Willamette Valley wet or upland prairie matrix<sup>3</sup> species. Also included will be a few less common species for the sake of diversity as well as species used for nectar by butterflies and other invertebrate pollinators. After two years of operation and the successful establishment of cooperatively- owned production fields, we will begin transitioning toward fewer common species, more diversity and nectar species, and other desirable species that are considered more difficult to collect or grow.

Native plant species produced through the WVNPM will be almost exclusively those that can be found in at least one of the following Strategy Habitats as designated by the Oregon Department of Fish and Wildlife in the Oregon Conservation Strategy: Grasslands, Wetlands, Oak Woodlands, and Riparian habitats (ODFW 2006). As we develop further and begin to diversify, other habitats may be included. See Appendix C for candidate species grouped by vegetation type (perennial matrix forbs, annual matrix forbs, graminoids, and diversity/nectar) and priority.

- ***Wet and upland prairie matrix species*** – The majority of species grown through the WVNPM, especially in the first few years, will be common plants of wet and upland prairies (Wetland and Grassland Strategy Habitats, respectively). With less than one percent of remnant native prairie remaining in the Willamette Valley, common matrix prairie species are the mainstay of most restoration and revegetation programs. There are many of this group that are not available at higher quantities, are not available in a broad genetic accession, or that are more costly to produce (and therefore cost-prohibitive for many buyers). Through contract growout with participation from multiple partners, we may be able to help make these more challenging species available in sufficient quantities at an affordable cost. Matrix species are also ones that are widely in demand and are easier for producers to sell outside of the partnership if a grower chooses to plant the species outside of contract or if the contract ends before the life of the production field is over. By sharing multi-year projections of need with growers and making available to them collected seed that is in excess of contract production needs, we may be able to help stabilize the commercial market as well as facilitate getting seed from production fields onto the open market for those buyers who are not members.

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<sup>3</sup> Native plant species that are considered historically common and widespread throughout their habitat.



- ***Diversity/nectar species*** – The WVNPMMP will also facilitate increased production of some less common prairie and oak savanna/woodland species, as well as butterfly nectar species, for the sake of habitat diversity and restoration of butterfly and wildlife habitat. While fewer restoration organizations buy significant quantities of seed from nectar plants and less common prairie species, this is partly because of the cost associated with producing plant materials on a smaller scale and partly because of the tendency to prioritize plant materials that are more widely available on a larger scale for planting projects. Some of these species, such as many of the native lilies, may have higher rates of establishment when planted as bulbs rather than seed and therefore have higher costs associated with their production. Production of diversity/nectar species is likely to occur at a smaller scale than matrix species, but will likely be more than what each participating organization would be able to do on its own. With shared investment from partners interested in planting those species, the costs of starting and maintaining production can be shared as well.
- ***Oak woodland/savanna species*** – Oak woodland and savanna habitats (Oak Woodland and Grassland Strategy Habitats, respectively) are also severely impacted habitats in the Willamette Valley that have been a focus of many restoration programs in the last decade. There is less than seven percent of native oak woodlands remaining in the valley; most of them exist on private land, making the preservation and restoration of this habitat type on public land and participating private properties of high importance. However, many of these species are more difficult to produce in commercial quantities and may take some time to integrate into WVNPMMP growout. Some prairie matrix species will be appropriate for use in these habitats, and within the next five years, with sufficient interest from members, we will begin to add species from these habitats into contract production.
- ***Riparian species*** – Riparian Strategy Habitat includes river- and streambank habitats as well as springs and seeps, ponds and lakes, and adjacent floodplains. Almost all WVNPMMP partners participate in some form of riparian restoration. Species composition can vary widely, but most riparian plantings occur with plant materials in the form of bareroot stems and plugs rather than seed. We are unlikely to focus on non-seed production for at least a couple of years, particularly of species that are not for prairie restoration, but we will look for ways to add in this important component of valley restoration work within the next five years. The Willamette Model Watershed Program, managed by the Bonneville Environmental Foundation, has taken steps toward a large-scale coordination effort to purchase non-seed plant materials for riparian restoration in the Willamette Valley ecoregion. We will strive to join forces with this program in the future.
- ***Threatened and endangered species*** – Working with Federal and State Threatened and Endangered (T&E) plant species will not be a high priority in the first several years of WVNPMMP operation. While many partners are working with T&E species, the designation and size of recovery zones as well as the need for protected sites for outplanting may limit the number of individual partners who will contribute to shared production of a given species. The USFWS is supporting a major multi-year, valley-wide project to increase and/or begin production of valley T&E species for the purpose of meeting recovery goals in priority recovery zones. We will be able to facilitate the sharing of information relevant to T&E species conservation, and there may be an

opportunity in the future to facilitate production of certain species in specific recovery zones where there is high interest from partners and agreement from regulatory agencies.

## B. Species focus lists

Species focus lists were derived from surveys and interviews of partners and other organizations with a stake in Willamette Valley restoration, as well as native plant materials producers in the valley. Questions asked of respondents solicited information about annual usage of native plant materials, projected usage, diversity of species used in projects, concerns about genetics and provenance, availability of less common species, efficiency of production, cost, and other factors that influence the choice of which species will be suitable for growout efforts through the WVNPMMP. The lists are based on vegetation type: perennial matrix forbs (List 1), annual matrix forbs (List 2), graminoids (List 3), and nectar/diversity (List 4). The species on each list are given in order of priority for production (see Appendix C). While most native prairie and oak habitat species are or will be under consideration for potential growout at some stage of WVNPMMP operation, those species for which there is the greatest demand and the lowest current availability or genetic diversity were included in the group that was under consideration for the first year.

## C. Selection guidelines

The main factors involved in choosing species for growout through the WVNPMMP are demand, genetics, cost, production logistics, and species ecology. We have developed a set of comprehensive guidelines to assist in evaluating as many issues as possible in the process of making the choice whether or not to recommend a given species (see Appendix D). Each species will be evaluated individually by working through these guidelines, and the more positive answers to the questions the more suitable the species is for WVNPMMP growout. Since there are so many important issues to consider in this process, the guidelines are intended to be used as a primary tool but not as a replacement for experience and careful consideration by committee members and the larger group.

There are two steps to the guidelines. Step one is a basic screening process that evaluates whether there is enough demand for the species to be worth prioritizing for growout through the WVNPMMP and whether there is at least one producer willing to grow it. Step two has several questions each under each category of concern, listed below, that will steer the evaluation process:

- 1) **Demand** – There must be enough demand projected through the partnership to invest in starting and maintaining a field of it for multiple years. If there is already consistently available open-market seed with appropriate genetics in sufficient quantities to cover general needs, then the species is probably not a priority for the WVNPMMP.
- 2) **Genetics** – We will use genetically appropriate plant materials in restoration, revegetation, and mitigation sites. At least in the beginning, most plant materials produced commercially through the WVNPMMP should be able to provide large amounts of seed to multiple partners, which will lead to the selection of species that lend themselves to broadly acceptable, large-scale seed transfer zones.

- 3) **Cost** – While cost per pound may not always be reduced by growing a species through the WVNMP on a larger scale than through growout by individual partners on a smaller scale, it should at least be cost effective.
- 4) **Production** – Production logistics of an individual species may determine whether or not a species is selected. If a species is very difficult to grow, harvest, maintain genetic diversity, etc., it may make more sense for individual partners who desire this species to arrange for their own growout. As we get off the ground, most species selected will tend to be easier to grow, harvest, and maintain.
- 5) **Ecology** – Establishing consistent commercial availability for genetically appropriate matrix prairie species in the Willamette Valley is important for supporting use of native plant materials in revegetation, restoration, and mitigation projects in the Valley. It is also desirable to promote the availability and use of other native grasses and forbs for added ecological diversity, for increasing the presence of early- and late-season species, for providing nectar species for butterflies and other pollinators, and for planting out in other Valley habitats such as riparian, oak savannah/woodland, conifer forest, etc. To the extent that such species are cost-effective, have enough demand, and are genetically appropriate, they are desirable for growout through the WVNMP.
- 6) **Storage** – Seed loses viability over time after harvest. The rates of decline depend on the species and the method of storage, but some species may retain high viability over several years while other species lose significant viability in the first few months. It is important to determine whether seed from this species can be stored for at least a couple of years for use by partners. Also, if the seed retains viability under normal storage conditions, and a grower has unsold overstock of this species with the appropriate genetics, it may be just as good to use this seed on projects before beginning a new production field.

## IV. Production



### A. Approach

The species selection committee provided goals for the number of species to put into production each year for each vegetation type that is currently prioritized by the partnership (Table 1). In the first two years, perennial matrix forbs will be emphasized in collection and production, with half of the species being taken from this list. Over time, as we build an inventory of workhorse species, the emphasis will shift from matrix perennials to nectar/diversity forbs, with half the species being taken from the latter list in 2016 and 2017.

Within each category, species are prioritized for production (Table 2, Appendix C) in the event that full funding is not available or an insufficient quantity of seed is collected. In 2012, a list of 10 species was chosen for collection and production in 2013 (see Appendix D for attributes and

reasoning for each species): five perennial matrix forbs (List 1), two annual matrix forbs (List 2), two graminoids (List 3), and one nectar/diversity species (List 4). The top five species on List 1 in order of priority are woolly sunflower, slender cinquefoil, self-heal, western yarrow, and meadow checkermallow. Since there are only enough funds to produce three of these species, the two species with the lowest priority, western yarrow and meadow checkermallow, will be dropped from production in 2013 and appear at the top of the list for the next year. Seed for these species will still be collected in 2013 in case funding is secured for more species and to give us the most flexibility in the final decision. Alternatively, if the quantity or diversity of seed for a particular species in the top group is insufficient, the next species on the list with sufficient seed would be entered into production instead or the funds would be held until sufficient seed is available. For example, if not enough seed of self-heal is collected to start a production field, the next priority species with sufficient seed collected will be chosen (in this case, western yarrow if there is enough seed).

Table 1. Five-year production plan by vegetation type.

<b>Vegetation Type</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Perennial Matrix Forbs	5	5	3	1	1
Annual Matrix Forbs	2	2	2	2	2
Graminoids	2	2	2	2	2
Nectar/Diversity Forbs	1	1	3	5	5

Table 2. Species prioritization.

<b>Scientific Name</b>	<b>Common Name</b>	<b>Priority</b>	<b>Prod. Year</b>
<b><i>List 1. Perennial Matrix Forbs</i></b>			
<i>Eriophyllum lanatum</i> var. <i>leucophyllum</i>	woolly sunflower	1	2013
<i>Potentilla gracilis</i>	slender cinquefoil	2	2013
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	self-heal	3	2013
<i>Achillea millefolium</i>	western yarrow	4	2014
<i>Sidalcea campestris</i>	meadow checkermallow	5	2014
<i>Grindelia integrifolia</i>	Willamette Valley gumweed	6	2014
<i>Lomatium nudicaule</i>	barestem lomatium	7	2014
<i>Solidago lepida</i> var. <i>salebrosa</i>	western goldenrod	8	2014
<i>Camassia quamash</i> var. <i>maxima</i>	common camas	9	2015
<i>Camassia leichtlinii</i> var. <i>suksdorfii</i>	tall camas	10	2015
<b><i>List 2. Annual Matrix Forbs</i></b>			
<i>Lotus purshianus</i> ( <i>unifoliolatus</i> )	Spanish clover	1	2013
<i>Clarkia amoena</i> var. <i>lindleyi</i>	farewell-to-spring	2	2014
<i>Madia elegans</i>	showy tarweed	3	2014
<i>Epilobium densiflorum</i>	dense spike-primrose	4	2015
<i>Plagiobothrys figuratus</i>	fragrant popcornflower	5	2015
<b><i>List 3. Graminoids</i></b>			
<i>Juncus occidentalis</i> ( <i>tenuis</i> )	western rush	1	2013

Scientific Name	Common Name	Priority	Prod. Year
<i>Elymus trachycaulus</i>	slender wheatgrass	2 or 3	2013
<i>Danthonia californica</i>	California oatgrass	2 or 3	2014
<i>Carex tumulicola</i>	foothill sedge	4	2014
<i>Deschampsia cespitosa</i>	tufted hairgrass	5	2015
<i>Hordeum brachyantherum</i>	meadow barley	6	2015
<b>List 4. Nectar/Diversity Forbs</b>			
<i>Symphyotrichum hallii</i>	Hall's aster	1	2013
<i>Sidalcea malviflora</i> ssp. <i>virgata</i>	dwarf checkermallow	2	2014
<i>Plectritis congesta</i>	rosy plectritis	3	2015
<i>Allium amplexans</i>	narrowleaf onion	4	2015
<i>Calochortus tolmiei</i>	Tolmie's mariposa lily	5	2015

Some of the species put into production, such as woolly sunflower and California oatgrass, will remain in production for the foreseeable future as there is a consistently high need by multiple partners every year. Other species, such as slender wheatgrass or barestem lomatium, may be removed from production after a few years if current needs have been met or if it was possible to stockpile seed for storage over several years to even out distribution to partners. Annuals, short-lived perennials, and species for which there is high variation in projected partner needs will most fit this profile. All production will occur under contract between IAE and a commercial grower. See Appendix E for a sample production contract.

Field size will be determined by using yield estimates from producers with projected usage from partners. If the combined future need of partners is 600 pounds of a given species, and a one-acre field will produce 300-350 pounds, then a two-acre field will be sufficient to meet partner needs with the possibility of storing some for use in a low-yield year. For many species, especially grasses, growing at least one acre will cost less on a per acre basis than growing less than an acre as costs remain relatively consistent above that amount. For many forbs, the projected need is not large enough to justify a one acre field, nor are they efficient to harvest at that field size. Most forbs will be planted in smaller fields due to both projected needs and production logistics. Where larger amounts are needed of a species that is difficult to harvest on a larger scale, two or more fields may be planted. For species produced for divisions or plugs rather than seed, smaller fields will yield enough product.

## B. Existing production fields

If there are existing production fields of a priority species and enough plant materials from those fields to cover the needs of the partners, we will choose alternate species for shared contract production. In some cases, an existing crop that acceptably meets all criteria may be at risk of being taken out of commercial production. For example, a field under contract through another organization may no longer be funded, or a field grown on speculation by a producer is deemed to be of low financial value on the open market. In such cases, we may choose to allocate funds to adopt the field in order to keep it in production and use the plant materials for partners. By adopting an established production field, the WVNPM will benefit financially from not having to collect wild seed and removing the risk of potential crop failures in the first year or two of production. Existing fields must meet standards for genetic provenance and there must be a

reasonable level of genetic diversity maintained in that production field (described later in this section).

Two established fields were adopted in 2013, a 0.15 acre field of western rush and a 0.25 acre field of Hall's aster. Both fields are valley-wide accessions and both species are a high priority for many partners. Hall's aster is very inefficient (and therefore expensive) to grow for seed but because there is an existing field we can use divisions of the established plants to distribute to partners at planting time. This will also allow us to incorporate non-seed plant materials into the program earlier than originally planned with relatively low risk, and open the way for other such species.

### C. Short-term production goals

In 2013 we will collect up to 15 species, of which 5-10 will be put into production in the fall of 2013. The remainder of the species collected in 2013 are slated for 2014 production. Some species may require collection in 2014 as well in order to acquire sufficient seed for production. Funding is currently available for the two adopted fields in addition to five new species. If additional funding becomes available, we will consider adding species but will not exceed a total of 10 new species each year. If the seven species listed in Table 3 are put into production, the total cost will be \$34,300, not including the cost of collection certification, viability testing, or coordination. The estimated total acreage is 6.4 acres, giving an average cost per acre of \$5,359. It may take two years to collect enough seed of the Spanish clover (an annual) to put into production; if so, the next species down the list with sufficient seed (in this case, farewell-to-spring) will be chosen to replace it for 2013 production. While slender wheatgrass is listed as the grass chosen for production in 2013, both that species and California oatgrass will be collected this year. If we are unable to acquire an adequate quantity of slender wheatgrass, the oatgrass will replace it.

Table 3. Production costs in 2013 for the seven priority species.

Species	Field size (ac)	Cost/ac	Annual cost	Yr planted
western rush	0.15	\$12,000	\$1,800	Adopted in 2013
Hall's aster	0.25	\$10,000	\$2,500	Adopted in 2013
woolly sunflower	1	\$5,000	\$5,000	2013
slender cinquefoil	1	\$5,000	\$5,000	2013
self-heal	1	\$5,000	\$5,000	2013
Spanish clover	1	\$5,000	\$5,000	2013
slender wheatgrass	2	\$5,000	\$10,000	2013
<b>Total Acreage</b>	<b>6.4</b>			
<b>Total Cost in 2013</b>			<b>\$34,300</b>	
<b>Average Cost per Acre</b>				<b>\$5,359</b>

In 2014 we will conduct supplemental collections of species collected in 2013 as needed for new production. In addition, 10-15 new species will be collected. The goal for each year is to produce up to 10 new species. The ten new species recommended for 2014 are listed and prioritized in Table 4 along with the continued production from 2013. If all of the species in the 2014 table are entered into production, the total cost for that year will be \$92,800, not including



indirect production costs. The estimated total acreage is 16.2 acres, giving an average cost per acre of \$5,728. If the 2014 budget does not allow for entering ten new species into production, a subset of the 2014 species in different habitat types will be selected in order of priority (provided enough seed has been collected). Field size may be reduced as appropriate to accommodate new species.

Table 4. Production costs in 2014 for seventeen species.

Species	Field size (ac)	Cost/ac	Annual cost	Yr planted
western rush	0.15	\$12,000	\$1,800	Adopted in 2013
Hall's aster	0.25	\$10,000	\$2,500	Adopted in 2013
woolly sunflower	1	\$5,000	\$5,000	2013
slender cinquefoil	1	\$5,000	\$5,000	2013
self-heal	1	\$5,000	\$5,000	2013
Spanish clover	1	\$5,000	\$5,000	2013
slender wheatgrass	2	\$5,000	\$10,000	2013
western yarrow	2	\$5,000	\$10,000	2014
meadow checkermallow	0.25	\$8,000	\$2,000	2014
barestem lomatium	0.2	\$8,000	\$1,600	2014
Willamette Valley gumweed	0.5	\$5,000	\$2,500	2014
western goldenrod	0.15	\$12,000	\$1,800	2014
farewell-to-spring	0.5	\$10,000	\$5,000	2014
showy tarweed	0.2	\$8,000	\$1,600	2014
California oatgrass	5	\$5,000	\$25,000	2014
foothill sedge	0.5	\$10,000	\$5,000	2014
dwarf checkermallow	0.5	\$8,000	\$4,000	2014
<b>Total Acreage</b>	<b>16.2</b>			
<b>Total Cost in 2014</b>			<b>\$92,800</b>	
<b>Average Cost per Acre</b>				<b>\$5,728</b>

#### D. Maintenance of genetic diversity in production fields

The maximum level of genetic diversity occurs at collection, and depends on how the source populations are sampled (addressed in the next section). However, the level of diversity can be eroded by subsequent events (Rogers 2004). While we will not use a scientific measure of diversity, we will do everything reasonable and/or possible to avoid leaving viable genetic material out of the final product through accidental selection. Much genetic diversity can be lost during all stages of native species production (including pre-production stages such as wild collection, cleaning, and storage) including sowing, germination, seedling establishment, harvest, and cleaning of large lots. Some factors are not controllable, such as the differential selection that happens due to the weather varying from year to year, and many factors are very expensive to fully control, such as harvesting to collect every possible seed from cultivated plants in fields or beds over the entire ripening period. However, there are actions to promote higher retention of genetic diversity that may be worth the added expense in time and materials if used strategically:



- 1) ***Balancing the genetic contribution of source seed*** – For each species, population size will vary among sites. To prevent any one site from being too dominant in the mix (and swamping the genetics of the other sites), accessions will be balanced so that each site contributes a similar amount of wild-collected seed (after Ward et al. 2008). The amount in the smallest collections will determine the contribution of all sites in that all of the seed from the smallest populations will be included, but the amounts from medium and large populations will be limited to a similar amount as the smaller populations. In some cases, two or more sites with small collections that are near each other and similar in habitat and phenology may be pooled to increase the proportion of seed available for mixing in the accessions.
- 2) ***Germinating and transplanting across the genetic spectrum of the source seed*** – Seeds should be sown, germinated, and transplanted in such a way that there is no avoidable selection of certain traits such as size, vigor, timing, color, etc. (Rogers 2004).
- 3) ***Careful site selection*** – Species should be planted in an area of ground where conditions approximate their natural growing conditions. For example, a species that inhabits an ecological niche of dry, upland prairie can be planted in a well-drained field that has little to no standing water during the year. A species that typically grows in a vernal pool can be planted in a very wet site that dries out completely in the summer. The perfect site may not always be available, and not all species need such careful selection to produce a healthy field, but certain locations may favor a narrower range of genetic material than others.
- 4) ***Maintaining the crop at a low generation (G0-G2)*** – The harvested seed is not likely to reflect the entire genetic spectrum of the parent plants due to the necessity of restricting the number of harvests as well as the mechanized nature of commercial harvest. While a crop grown on a very small scale may allow for continuous harvesting by hand to capture every seed produced, it is labor intensive and drives up the costs of production. When a crop is harvested only once at the peak of ripeness to maximize efficiency, early and late seeds are lost unless the seeds remain on the plant and can all be harvested at one time at the end of the ripening period. When a new field is started from the seed of the parent crop, it will generally possess only a subset of the genetic diversity of the parents. The seed produced from the new crop will be further reduced. By maintaining a low generation level, loss of diversity can be diminished. For annuals, G0 seed (either new wild collections or from reserves if sufficient seed was collected to store some) will be used every 3-4 years as a genetic refresher to keep the generation low.
- 5) ***Harvesting across a broader temporal range of the ripening period*** – Many species produce ripe seed over an extended period of time so that there are flowers, developing seed, ripe seed, and empty fruit on the same plant at the same time. This can complicate harvest when the most economical way to harvest most fields of most species is to do it on one day when the most seed is ripe. There are a variety of techniques that may be used to minimize accidental selection at this stage including conducting multiple harvests, hand-harvesting, and using ground cloth to capture all seed. All of these techniques increase the overall cost of the seed and may not be feasible for species grown on a large scale. One method that may be efficient on a large scale is using diversity enhancement blocks, in which two or more accessions of the same species are grown side-by-side to allow for separate harvest while allowing outcrossing between plants from many source populations (Ward et al. 2008). This can be effective when there is a difference in phenology among source populations in the

wild, or when it is desirable for some other reason to keep populations separate according to geographic area or habitat (Ward et al. 2008). For certain species we may contract for the same species with two different producers in order to ensure harvest of at least one field if problems arise in production, and also to capture diversity from more than one set of growing conditions.

#### E. Certification and seed quality

We will certify collections of most wild-collected seed with the Oregon Seed Certification Service (OSCS) at Oregon State University, according to the requirements for native seed certification. This, along with seedling inspections of these crops by OSCS, will allow us to choose to certify seed in any given year from those crops if desired. It will also allow producers to certify their crops if they wish in the event that the crop is dropped from WVNPMMP production. Most crops are unlikely to be kept in certification past the seedling stage, unless and until Partnership production crops are able to be sold to non-partners, due to the ability of the Partnership to work with the growers to inspect crops in situ and evaluate purity and weed species present.

Baseline seed quality standards for purity and non-native seed content will be those set by the OSCS for native seed certification. Because we will not be certifying most crops, the standards for those crops may be adjusted to better fit the unique production and cleaning profile of each species. The WVNPMMP will continue to work with OSCS as they refine their standards for native seed certification.

We have developed our own seed label that incorporates all information typically included in a producer's label plus information such as provenance, notes on special or unusual characteristics, and native vs. non-native contaminants. This label says nothing about certification, which, if utilized, will be designated by a separate tag applied by OSCS. See Appendix F for a sample label.

#### F. Clearing current inventory and using overstock

Native seed is very costly to produce and loses viability every year it is in storage waiting to be purchased. By sharing partner projections of native plant use over several years into the future, we may be able to help growers predict the species for which there will be enough demand to warrant starting or continuing production even for species not grown under contract for the WVNPMMP. The Native Seed Network, a national web-based marketplace for buyers and sellers of native seed, is available for listing overstock. For any plant materials not appropriate for listing on the NSN website, we may also be able to assist in finding buyers for excess production by using the partnership to connect producers to potential buyers.

#### G. Selection of seed producers

The WVNPMMP will give first preference to producers in the Willamette Valley, with those outside the valley being considered if a local alternative is not available. This preference is largely due to the desire to grow native crops in conditions similar to what they encounter in their natural habitat, and it also allows us to support the local native plant materials production industry. There is little niche overlap among seed producers in the valley, which will allow selection of producers to be based on preference for field size, facilities, species preference,

experience, and interest. In cases where multiple producers are interested in the same species growout, we will use a formal bid process with contracts awarded for best value rather than lowest cost. In this case, best value will be considered the most advantageous balance of price, quality, and performance.

#### H. Paying for production

Initially, the WVNPMP will be supported through partner contributions, with a small number of partners able to contribute larger sums in order to maintain operations and production, and grant funding when available. In preparation for a transition to self-support, the Steering Committee will develop a plan in 2013 for how production fields will be supported, and, once harvested, how production will be shared among partners. Some approaches under consideration are 1) a share system where partners can purchase shares and receive seed in proportion to number of shares, 2) outright purchase of seed with operating costs calculated into the price of the seed, 3) a combination of one of the above approaches with some funding from outside sources such as foundations and other grant programs.

#### I. Excess production

Excess production could occur in at least two ways. If a field produces more seed than needed in a given year, the seed will be stockpiled and stored for future use (maintaining viability by storing in a temperature and humidity controlled environment). In the case of a field consistently producing more seed than partners can use, the WVNPMP will consider selling the seed of certain species to buyers outside the partnership (being careful not to compete directly with local growers). This will allow us to recover production costs and use the savings to support further operations. If it is too inefficient for the WVNPMP to market the excess seed, and depending on contract specifications, the producer may be allowed to sell the extra seed. In some cases producers may choose to plant more than specified in the contract in order to plan to sell on the open market. All of these options will increase the amount of genetically appropriate, local seed available on the open market, which is an important part of our mission. If the market outside of the partnership is too limited, the field will be taken out of production.

### V. Seed Collection, Processing, and Storage



We will use standardized seed collection, cleaning, and storage protocols derived from established programs including West Eugene Wetlands Program, Metro, Institute for Applied Ecology, Bureau of Land Management, and the Uncompaghre Partnership. The seed protocols for the WVNPMP are available upon request from the Coordinator. When accepting seed from partner organizations or contract collectors, we will verify that the seed was collected by

following the same protocols (including voucher collection if needed) or similar protocols if approved by the Species Selection and Genetics Committee. This will ensure achievement of the following goals:

- 1) ***Coordination with partners and landowners for permission to collect*** – Seed collection will not take place on any property without explicit permission to do so by the landowner or land manager with authority to grant permission. Permission will be documented in writing before collection or as soon as possible thereafter (if in the case of verbal permission being granted while in the field). Collection permits will be required each year from agencies that require them. Visits to private properties will be coordinated as requested by the landowner.
- 2) ***Willamette Valley collections*** – Collections will occur only within the Willamette Valley, with elevation limits set by the boundaries of the Willamette Valley ecoregion as designated by the Omernik system (EPA 1996). Where genetically appropriate and possible, the Partnership will create accessions from seed collected from multiple sites throughout the valley, with the term “Willamette Valley Germplasm” being used for accessions with source seed from at least 15 sites from the north, mid, and south valley, or throughout its distribution if narrower than the Willamette Valley. If any accessions are significantly smaller than the valley, then terms such as “North Willamette Valley” or “South Willamette Valley” will be used.
- 3) ***Maintenance of genetic diversity in collections*** – The WVNPMMP will strive to maintain spatial, temporal, morphological, and genetic diversity in collections while minimizing the chance of inappropriate or too few genotypes being included in accessions. The genetic makeup of a collection is largely influenced by the locations and the number of plants from which the seeds are collected (Rogers 2004). Seed should be collected multiple times at a given site over the maturation period (unless seeds hold on the plant until all are ripe at the same time). Seed should be collected from multiple sites, across habitats, throughout the appropriate elevation range, from across each population, across phenotypes, and from both vigorous and less vigorous plants. In some cases, certain phenotypes should be avoided if it is thought they might be the result of hybridization or that they may be easily confused with a different taxon. It is important not to collect only from the largest or tallest plants, from those that are the most accessible, or that have the most seed, or those that look healthier and more vigorous to the human eye. The plants that look the most attractive or healthiest to the human eye may not represent all of the genetics of a population, and, in other years with different weather patterns, plants with a different genetic makeup may be the ones that grow bigger and yield more seed. Collections will occur only from remnant populations, never planted populations.
- 4) ***Collection of seed with the highest viability and purity possible*** – Seed will be collected only after it is truly ripe in order to avoid inclusion of underdeveloped seed with low viability. In order to protect the seed from mildew, fungal infections, and rot it is very important to collect seed that is dry and hasn’t fallen to the ground. Collection will occur when the weather is dry to further avoid mold and mildew. Great care will be taken to avoid collecting weed seed and/or other plant material along with the target seed.
- 5) ***Protection of native plant populations from inappropriate collection pressure*** – In general, no more than 25% of the seed from populations of perennials and 20% of the seed from annuals will be collected in any given year, and not at the maximum rate in more than one in 3 years. The Species Selection Committee will also evaluate collection limits on a species by

species basis, and may allow higher collection limits for populations of more than 500 individuals, species that do not need to be collected often, and populations that are not under collection pressure from other organizations or individuals. The following site conditions will require more restrictive or no seed collection: 1) significant weed encroachment and/or habitat degradation, 2) smaller populations of the target species, 3) other known collections in the same year, and 4) significant disease or predation. The minimum population size for collection of perennials will be 50 plants, and for annuals it will be 100 plants. Exceptions to these conservative limits may be made in each of the following situations at the discretion of the Coordinator: 1) a population is going to be destroyed because of development or other human-caused issue, 2) a particularly good seed production year occurs, 3) collecting more seed than the upper limit in a given year will provide enough seed for a production field and relieve the wild sites from collection for the next several years, 4) other situations where collecting more than the minimum may be done with minimal impact to the population and may increase the success of the program.

- 6) ***Proper storage of collected and cleaned seed*** – After collection, seed will be dried in the open air for at least one week before cleaning and storage. If seed is to be stored temporarily before cleaning later in the season, it will be stored in paper bags to aid air circulation and reduce the chance for mildew. After cleaning, seed will be stored in either plastic ziploc bags or paper seed envelopes until ready to be given to the contracted grower or put into longer term storage. Seed that is retained by the WVNPMMP over winter will be stored in a seed cooler with appropriate temperature and humidity control for native seed storage.
- 7) ***Clean source seed provided to producers*** – Seed that is provided to growers for starting production fields will be as pure as possible with as few weed contaminants as possible. All seed provided to producers will have been tested for purity and viability through the Oregon Seed Testing Laboratory or other approved testing facility. Accessions delivered to growers will be tracked in the database and included in the contract (see Appendix E). Delivery of seed for production will be coordinated with the growers to ensure on-time delivery for fall production.

## VI. Data management

### A. Collection

At a minimum, collection will be tracked by species name, collection site, date, and collector names. Identification of each species at each site will be verified by qualified personnel. Population and habitat information will also be recorded and tracked. For each site and species there will be photos taken and georeferenced to site data. Voucher specimens may be collected at some sites for the crop certification program. Source information and other collection data will be entered into a database, photos attached to GIS data, and vouchers stored at either IAE or another designated herbarium. All data will be available to partners.

### B. Resource mapping

Each site will be mapped in GIS and populations of each species will be mapped for future reference, with notes on population status included. Maps of the sites and populations will be updated accordingly each year. This will be important for returning to sites in the future, but also for the purpose of mapping planted versus seeded populations in order to keep remnant, natural populations free from contamination by non-local genetic material.



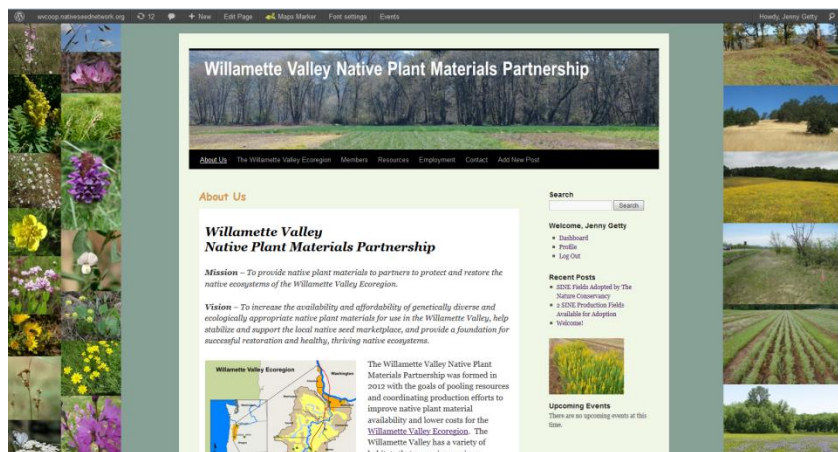
## C. Production

Partner projections by species of future needs will be tracked and used to inform the decision-making process of species recommendations for WVNPMMP production. This information will be provided to growers upon request for their own use in deciding which species to grow on speculation. In addition, yield and viability data from production fields will be tracked. This information will be shared with partners and compared with previous data and experience, and will inform the management of production fields.

## VII. Information Sharing



The WVNPMMP website will be used primarily as a mode of information sharing for both members and the public. It will provide a link between the WVNPMMP and the public, as well as providing partners and growers with a forum for sharing information and technological



knowledge. The website will integrate with the Native Seed Network website, where some information related to the commercial seed industry may have already been produced and posted. The website will be updated at least once a month and more often as needed to keep it current. Information to be posted to the website will include:

- **Information about the WVNPMMP** – Background and history of the partnership, the strategic plan, annual reports, a current list of partners (including growers) with contact information, and links to partner websites.
- **Education and technology transfer** – Propagation protocols, recommendations for selecting and buying seed on the open market, information on genetics, seed collection and cleaning protocols, viability data, and restoration techniques.
- **Updates on WVNPMMP progress and meetings** – Production field progress, collection and production issues, yield information, changes to operational plans and activities, meeting dates and background materials, committee discussions, draft documents, minutes,

announcements, and updates.

- **Resources** – Links to native plant and restoration resources relevant to the Willamette Valley and beyond, such as the Oregon Flora Project, the ODA Plant Conservation Website, the Native Seed Network, and other plant materials cooperatives.
- **Quarterly blog** – Highlighting partner projects and growers, relevant research, updates on WVNPMP growout, news about the partnership, etc.

## VIII. Future Directions



In the first few years of operation we will focus most efforts on seed production and developing a consistent and reliable funding mechanism. Once the WVNPMP has become established and has stable funding through its own partners, there may be opportunities to include activities such as:

- ***Working with threatened & endangered species/species of concern.*** Many partners are actively restoring habitat for Federal and State listed species and are already partnering in projects to produce enough seed and other plant materials for reintroduction and augmentation on protected sites throughout the valley. There may be opportunities in the future for partners who work with Threatened and Endangered plant species to pool resources through the WVNPMP to grow out accessions of these species from specific recovery zones.
- ***Working with researchers to develop common garden/reciprocal transplant studies for species of interest lacking enough data to make a solid decision about STZs.*** While there is data from common garden studies available for some species, there is no scientific data for most species in the Willamette Valley Ecoregion. It is unlikely that we will conduct our own research at this stage, but collaborating with researchers who are interested in performing these studies is another way to gather the needed data.



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## Acknowledgements



The funding for the development of the Willamette Valley Native Plant Materials Partnership was generously provided by the Oregon Watershed Enhancement Board. Management of the project and housing for the WVNPMMP is provided by the Institute for Applied Ecology. All of our partners and many others contributed their time and expertise attending meetings, answering surveys, being interviewed, and responding to phone calls and email discussions:

Al Kitzman (BC)  
Amy Bartow (PMC), Grower's Advisory Committee  
Barry Schrumpf (Oregon Seed Certification), Seed Quality Committee  
Cheshire Mayrsohn (BLM – Eugene District), Steering Committee  
Chris Seal (USFWS), Steering Committee  
Chris Vogel (MRT)  
Craig Edminster (PNN), Steering and Grower's Advisory Committees  
Diane Steeck (COE), Species Selection Committee  
Henry Storch (MRWC)  
Jarod Jebousek (USFWS), Species Selection Committee  
Jason Blazar (FBP)  
Jason Nuckols (TNC)  
Jean Jancaitis (TNC), Steering Committee  
Jeff Baker (GLT)  
Jenny Getty (IAE), WVNPMMP Coordinator; Steering, Species Selection, and Seed Quality Committees  
Jock Beall (USFWS)  
Jonathan Soll (Metro), Steering Committee  
Kathy Pendergrass (NRCS), Species Selection Committee  
Kevin Loe (Triangle Farms), Grower's Advisory Committee  
Lou Westphal (Buggy Crazy Nursery)  
Lynda Boyer (Heritage), Species Selection and Grower's Advisory Committees  
Marsha Holt-Kingsley (Metro), Species Selection Committee  
Marvin Gilmour (Gilmour Farms)  
Melanie Gisler (IAE), Species Selection Committee  
Mike Shippey (ODOT), Steering and Seed Quality Committees  
Peter Kenagy (Kenagy Family Farms), Seed Quality and Grower's Advisory Committees  
Ray Fiori (Mid-Valley Mitigation Bank)  
Rebecca Currin (USFWS and ODA)  
Rob Fiegenger (IAE), Seed Quality Committee

Sally Villegas-Moore (BLM – Eugene District)  
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Steve Smith (USFWS), Steering Committee  
Tom Kaye (IAE), Steering Committee  
Trevor Taylor (COE), Steering Committee  
Wes Messenger (USACE)

## Appendix A. WVPNMP Partners and Roles

Partner	Role
RESTORATION PRACTITIONERS	
Benton County	Allow for collection on BC managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
Bureau of Land Management, Eugene District	Allow for collection on BLM managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
City of Eugene	Allow for collection on City and West Eugene Wetlands managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
City of Corvallis	Allow for collection on City managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
Confederated Tribes of the Grand Ronde	Promote and utilize WVPNMP resources and serve in an advisory capacity.
Friends of Buford Park and Mt Pisgah	Allow for collection on FBP managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
Greenbelt Land Trust	Allow for collection on GLT managed lands with proper permit. Promote and utilize WVPNMP resources and serve in an advisory capacity. Provide space for seed processing on Bald Hill Farm.
Institute for Applied Ecology	Provide leadership, coordination, administrative services for the WVPNMP. Promote and utilize WVPNMP resources.
Long Tom Watershed Council	Promote and utilize WVPNMP resources and serve in an advisory capacity.
Marys River Watershed Council	Promote and utilize WVPNMP resources and serve in an advisory capacity.
McKenzie River Trust	Promote and utilize WVPNMP resources and serve in an advisory capacity.
Oregon Department of Transportation	Allow for collection on ODOT managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
Oregon Metro	Allow for collection on Metro managed lands with proper permit. Promote and utilize WVPNMP resources and serve in an advisory capacity.
Oregon Parks and Recreation Department	Allow for collection on OPRD managed lands with proper permit. Promote and utilize WVPNMP resources and serve in an advisory capacity.
The Nature Conservancy, Oregon Chapter	Allow for collection on TNC managed lands with proper permit. Promote and utilize WVPNMP resources and serve in an advisory capacity.
USDA Natural Resources Conservation Service	Utilize WVPNMP resources and serve in an advisory capacity.
US Army Corps of Engineers, Portland District, Willamette Project	Allow for collection on USACE managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity.
US Fish & Wildlife Service	Allow for collection on USFWS managed lands with proper permit. Utilize WVPNMP resources and serve in an advisory capacity. Provide space for seed storage and processing on Finley NWR.
PRODUCERS	
Heritage Seedlings, Inc.	Promote WVPNMP resources and serve in an advisory capacity.
Kenagy Family Farms	Promote WVPNMP resources and serve in an advisory capacity.
Pacific Northwest Natives	Promote WVPNMP resources and serve in an advisory capacity.
Triangle Farms, Inc.	Promote WVPNMP resources and serve in an advisory capacity.
Trillium Nursery	Promote WVPNMP resources and serve in an advisory capacity.

## Appendix B. Implementation Timeline

Shaded areas indicate the quarter in which the task will occur; M=milestone achieved.

Implementation Time line	2012		2013				2014				2015				2016				2017			
	Nov.	Dec.	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F
<b>Goal 1 – Establish the Willamette Valley Native Plant Materials Cooperative and build organizational infrastructure to support Cooperative activities.</b>																						
A) Create and sign a Memorandum of Understanding among all founding partners.	M					M																
a) MOU created and sent out for review by partners																						
b) Reviewed and ready for signature																						
c) All signatures received																						
B) Finalize a 5-year strategic plan.						M																
C) Complete a 5-year budget projection for 2013-2017.			M																			
D) Secure funding for first year of Cooperative operation.				M																		
a) 80% of funding secured																						
b) 100% of funding secured																						
E) Finalize charter documents for the Cooperative.			M																			
F) Secure funding for each year of operation.				M			M				M				M				M			
a) 80% of funding secured																						
b) 100% of funding secured																						
G) Develop an agreement for shared investment and equitable distribution of plant materials to partners.								M														
a) Draft agreement presented to Cooperative																						
b) Final agreement																						
H) Transition from start-up financial model of Cooperative support to business model of internal support (partner investment tied to percentage or share of product).															M							
a) Transition begun																						
b) Transition completed																						
I) Formally review strategic plan every five years.																						M
J) Complete an annual report.							M				M				M				M			
K) Seek out and add Cooperative partners.																						
<b>Goal 2 – Increase availability of native plant materials and increase marketplace stability by better aligning projected needs with grower capacity.</b>																						
A) Use partner projections to forecast plant materials needs over multiple years.			M																			
B) Supply growers with partner projections of all focus species so that production on speculation can be better aligned with projected need even when a given species is not yet under contract.							M															
C) Choose species used by most partners.																						
D) Develop contracts with growers for new production.			M				M				M				M				M			
E) Enter new priority species into production annually.						M				M				M				M				M

Implementation Timeline	2012		2013				2014				2015				2016				2017			
	Nov.	Dec.	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F
F) To receive produced seed from production contracts annually.						M				M				M				M				M
<i>a) First Cooperative harvest received</i>						M				M				M				M				M
<i>b) Annual harvest received</i>						M				M				M				M				M
G) To expand Cooperative focus from mostly seed production to include production of other plant materials such as bulbs, bare root propagules, plugs, and divisions.										M				M	M							
<i>a) First plug production</i>										M				M								
<i>b) First bulb production</i>														M								
<i>c) Evaluation of bare root and division production</i>														M								
<b>Goal 3 – Centralize coordination of collecting, producing, and distributing native plant materials to improve efficiency and lower costs.</b>																						
A) Develop prioritized species focus list.			M																			
B) Develop seed collection, cleaning, and storage protocols following established and agreed upon standards.			M																			
C) Track collection, production, and distribution of all Cooperative species.					M																	
D) Hire seasonal seed collection crew for Cooperative collection.			M				M				M				M				M			
E) Collect source seed for production.																						
F) Coordinate contributions of collected seed by partners.																						
G) Identify seed storage need and establish arrangement for Cooperative seed storage through purchase or partner agreement.										M				M								
<i>a) Seed storage needs identified</i>										M				M								
<i>b) Seed storage arrangement established</i>														M								
<b>Goal 4 – Improve quality and genetic appropriateness of native plant materials used in restoration, mitigation, and revegetation projects in the Willamette Valley.</b>																						
A) Determine appropriate seed transfer zones for each species entered into Cooperative growout using available research, literature, and experience.			M				M				M				M				M			
<i>a) Develop guidelines for genetic appropriateness</i>																						
<i>b) Seed transfer zones established during decision making process for each species</i>																						
B) Develop seed quality standards for each species put into Cooperative production.																						
C) Use seed certification as appropriate to meet Cooperative objectives.																						
D) Supply collected seed with the desired genetics and provenance to producers.																						
<b>Goal 5 – Provide an online forum for sharing information within the Cooperative and to other interested parties and the general public.</b>																						
A) Establish a Cooperative website that is used for Cooperative business and information sharing for Cooperative members and the public.		M	M																			
<i>a) First available to Cooperative members</i>																						
<i>b) First available to the public through web search</i>																						
B) Maintain the Cooperative website for both public access and use by members.			M			M																
<i>a) 80% partners are website subscribers</i>																						
<i>b) At least one committee using website for discussion</i>																						
<i>c) 50% of partners participate in online discussion</i>																						
C) Create a quarterly blog for the partners and the public on the website.																						



## Appendix C. Species Focus Lists

Highest priority species in each category prioritized by number; other species prioritized by high (H), medium (M), or low (L).

Scientific Name	Common Name	Propagule Type	Priority	Production Year
<b>List 1. Perennial Matrix Forbs</b>				
<i>Eriophyllum lanatum</i> var. <i>leucophyllum</i>	woolly sunflower	Seed	1	2013
<i>Potentilla gracilis</i>	slender cinquefoil	Seed	2	2013
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	self-heal	Seed	3	2013
<i>Achillea millefolium</i>	western yarrow	Seed	4	2014
<i>Sidalcea campestris</i>	meadow checkermallow	Seed	5	2014
<i>Grindelia integrifolia</i>	Willamette Valley gumweed	Seed	6	2014
<i>Lomatium nudicaule</i>	barestem lomatium	Seed	7	2014
<i>Solidago lepida</i> var. <i>salebrosa</i>	Canada goldenrod	Seed	8	2014
<i>Camassia quamash</i> var. <i>maxima</i>	common camas	Bulbs to seed	9	2015
<i>Camassia leichtlinii</i> var. <i>suksdorfii</i>	tall camas	Bulbs to seed	10	2015
<i>Fragaria virginiana</i>	common strawberry	Bareroot	H	TBD
<i>Lupinus rivularis</i>	riverbank lupine	Seed	H	TBD
<i>Ranunculus occidentalis</i>	western buttercup	Seed	H	TBD
<i>Wyethia angustifolia</i>	mule's ears	Plugs?	H	TBD
<i>Lupinus polyphyllus</i>	big-leaf lupine	Seed	M	TBD
<i>Perideridia oregana</i>	Oregon yampah	Seed	M	TBD
<i>Ranunculus orthorhynchus</i>	straight-beaked buttercup	Seed	M	TBD
<i>Sisyrinchium idahoense</i>	Idaho blue-eyed grass	Seed	M	TBD
<b>List 2. Annual Matrix Forbs</b>				
<i>Lotus purshianus</i> ( <i>unifoliolatus</i> )	Spanish clover	Seed	1	2013
<i>Clarkia amoena</i>	farewell-to-spring	Seed	2	2014
<i>Madia elegans</i>	showy tarweed	Seed	3	2014
<i>Epilobium densiflorum</i>	dense spike-primrose	Seed	4	2015
<i>Plagiobothrys figuratus</i>	fragrant popcornflower	Seed	5	2015
<i>Castilleja tenuis</i>	hairy owl's clover	Seed	H	TBD
<i>Lupinus bicolor</i>	two-colored lupine	Seed	M	TBD
<i>Clarkia purpurea</i>	purple godetia	Seed	M	TBD
<i>Madia gracilis</i>	grassy tarweed	Seed	M	TBD



Scientific Name	Common Name	Propagule Type	Priority	Production Year
<i>Lupinus polycarpus</i>	small-flowered lupine	Seed	L	TBD
<i>Madia glomerata</i>	mountain tarweed	Seed	L	TBD
<i>Madia sativa</i>	coast tarweed	Seed	L	TBD
<b>List 3. Graminoids</b>				
<i>Juncus occidentalis (tenuis)</i>	western rush	Seed	1	Adopted in 2013
<i>Elymus trachycaulus</i>	slender wheatgrass	Seed	2 or 3	2013
<i>Danthonia californica</i>	California oatgrass	Seed	2 or 3	2014
<i>Carex tumulicola</i>	foothill sedge	Plugs	4	2014
<i>Deschampsia cespitosa</i>	tufted hairgrass	Seed	5	2015
<i>Hordeum brachyantherum</i>	meadow barley	Seed	6	2015
<i>Koeleria macrantha</i>	prairie junegrass	Seed	H	TBD
<i>Festuca californica</i>	California fescue	Seed	H	TBD
<i>Poa secunda (scabrella)</i>	Sandberg bluegrass	Seed	M	TBD
<i>Alopecurus geniculatus</i>	water foxtail	Seed	M	TBD
<i>Bromus californica</i>	California brome	Seed	M	TBD
<i>Bromus sitchensis</i>	Sitka brome	Seed	M	TBD
<i>Carex densa</i>	dense sedge	Seed	M	TBD
<i>Carex unilateralis</i>	one-sided sedge	Seed	M	TBD
<i>Dichanthelium acuminatum</i>	western witchgrass	Seed	M	TBD
<i>Juncus patens</i>	spreading rush	Seed	M	TBD
<i>Achnatherum lemmonii</i>	Lemmon's needlegrass	Seed	L	TBD
<i>Agrostis exarata</i>	spike bentgrass	Seed	L	TBD
<i>Beckmannia syzygachne</i>	American sloughgrass	Seed	L	TBD
<i>Bromus vulgaris</i>	Columbia brome	Seed	L	TBD
<i>Carex obnupta</i>	slough sedge	Seed	L	TBD
<i>Deschampsia danthonioides</i>	annual hairgrass	Seed	L	TBD
<i>Deschampsia elongate</i>	slender hairgrass	Seed	L	TBD
<i>Elymus glaucus</i>	blue wildrye	Seed	L	TBD
<i>Eleocharis palustris</i>	common spikerush	Seed	L	TBD
<i>Festuca roemerii</i>	Roemer's fescue	Seed	L	TBD
<i>Glyceria occidentalis</i>	western mannagrass	Seed	L	TBD
<i>Juncus effuses var. pacificus</i>	Pacific rush	Seed	L	TBD

Scientific Name	Common Name	Propagule Type	Priority	Production Year
<i>Luzula campestris</i>	field woodrush	Seed	L	TBD
<b>List 4. Nectar/Diversity Forbs</b>				
<i>Symphyotrichum hallii</i>	Hall's aster	Divisions	1	Adopted in 2013
<i>Sidalcea malviflora ssp. virgata</i>	rose checkermallow	Seed	2	2014
<i>Plectritis congesta</i>	rosy plectritis	Seed	3	2015
<i>Allium amplexans</i>	narrowleaf onion	Bulbs to seed	4	2015
<i>Calochortus tolmiei</i>	Tolmie's mariposa lily	Bulbs to seed	5	2015
<i>Triteleia hyacinthina</i>	white brodiaea	Bulbs to seed	H	TBD
<i>Asclepias speciosa</i>	showy milkweed	Seed	H	TBD
<i>Agoseris grandiflora</i>	bigflower agoseris	Seed	H	TBD
<i>Collinsia grandiflora</i>	large-flowered blue-eyed Mary	Seed	H	TBD
<i>Geranium oreganum</i>	Oregon geranium	Divisions	H	TBD
<i>Gilia capitata</i>	blue-headed gilia	Seed	H	TBD
<i>Iris tenax</i>	Oregon iris	Seed	H	TBD
<i>Lomatium dissectum</i>	fern-leaved lomatium	Seed	H	TBD
<i>Microseris laciniata</i>	cutleaf silverpuffs	Seed	H	TBD
<i>Saxifraga oregana</i>	Oregon saxifrage	Seed	H	TBD
<i>Vicia Americana</i>	American vetch	Seed	H	TBD
<i>Allium acuminatum</i>	tapertip onion	Bulbs to seed	M	TBD
<i>Brodiaea coronaria</i>	crown brodiaea	Bulbs to seed	M	TBD
<i>Brodiaea elegans</i>	elegant brodiaea	Bulbs to seed	M	TBD
<i>Collomia grandiflora</i>	large-flowered collomia	Seed	M	TBD
<i>Dichelostemma congestum</i>	ookow	Bulbs to seed	M	TBD
<i>Lomatium utriculatum</i>	spring gold	Seed	M	TBD
<i>Downingia elegans</i>	elegant calicoflower	Seed	M	TBD
<i>Downingia yina</i>	cascade calicoflower	Seed	M	TBD
<i>Geum macrophyllum</i>	large-leaved avens	Seed	M	TBD
<i>Orthocarpus bracteatus</i>	rosy owl's clover	Seed	M	TBD
<i>Perideridia gairdneri (montana)</i>	common yampah	Seed	M	TBD
<i>Rumex salicifolius</i>	willow dock	Seed	M	TBD
<i>Ligusticum apiifolium</i>	parsley-leaved lovage	Seed	L	TBD
<i>Lomatium triternatum</i>	nineleaf lomatium	Seed	L	TBD

Scientific Name	Common Name	Propagule Type	Priority	Production Year
<i>Microsteris (Phlox) gracilis</i>	slender phlox	Seed	L	TBD
<i>Mimulus guttatus</i>	seep monkeyflower	Seed	L	TBD
<i>Ranunculus alismaefolius</i>	plantain-leaved buttercup	Seed	L	TBD
<i>Ranunculus uncinatus</i>	disappointing buttercup	Seed	L	TBD
<i>Rorippa curvisiliqua</i>	curvepod yellowcress	Seed	L	TBD

## Appendix D. Attributes of Top Twelve Priority Species

Priority	Species	Habitat	Projected Annual Use	Ecology	Genetics Issues	Notes
1	<i>Juncus occidentalis</i> western rush	wp, up	85 lbs	Matrix per. graminoid.	Potential ssp. mixing.	Existing WV accession at PMC adopted from NSN. Meets current partner needs. Confirmed ID.
2	<i>Symphyotrichum hallii</i> Hall's aster	wp	35 lbs	Matrix per. forb. Possible nectar. Late flowers.		Existing WV accession at PMC adopted from NSN. Meets current partner needs. Use for divisions.
3	<i>Eriophyllum lanatum</i> var. <i>leucophyllum</i> woolly sunflower	wp, up	80 lbs	Matrix per. forb. Nectar for FBB and other insects. Mid-summer flowers.	Both 2n + 4n ploidy present in valley	Need larger WV-wide accession. Will test for ploidy after collection at OSU seed lab. May drop populations.
4	<i>Potentilla gracilis</i> slender cinquefoil	wp, up	235 lbs	Matrix per. forb. Nectar for bees, butterflies, others. Mid-summer flowers.		Invasive lookalike = <i>P. recta</i>
5	<i>Prunella vulgaris</i> var. <i>lanceolata</i> self-heal	wp, up	225 lbs	Matrix per. forb. Nectar for native bees, butterflies. Mid-summer flowers.	Hybridization with non-native <i>P. vulgaris</i> var. <i>vulgaris</i>	Collect only from high-quality remnant sites.
6	<i>Lotus unifoliolatus</i> Spanish clover	wp, up	240 lbs	Matrix ann. forb. Nectar for butterflies.		May take two or more years of seed collection.
7	<i>Elymus trachycaulus</i> slender wheatgrass	up	530 lbs	Under-utilized upland per. grass.		May take many years of seed collection. Not many populations to collect from.
8	<i>Achillea millefolium</i> western yarrow	wp, up	400 lbs	Matrix per. forb. Nectar for wasps, flies, beetles.		
9	<i>Sidalcea campestris</i> meadow checkermallow	wp, up	90 lbs	Per. forb. Nectar for FBB and other butterflies.	Not as common in south valley. Early and late-blooming	Use exclusionary STZ? May take two or more years of seed collection.

Priority	Species	Habitat	Projected Annual Use	Ecology	Genetics Issues	Notes
					populations.	
10	<i>Clarkia amoena</i> var. <i>lindleyi</i> farewell-to-spring	up	150 lbs	Ann. forb. Nectar for honey bees, native bees and butterflies.		May take two or more years of seed collection.
11	<i>Danthonia californica</i> California oatgrass	wp, up	910 lbs	Matrix per. bunch grass.		WV-wide field in existence but too small to meet partner needs. Collect ahead for when current field productivity decreases.
12	<i>Sidalcea malviflora</i> ssp. <i>virgata</i> dwarf checkermallow	up	95 lbs	Per. forb. Nectar for FBB and other butterflies.	High variation. Uncommon in north valley.	Use exclusionary STZ? May take two or more years of seed collection.



## Appendix E. Sample Production Contract

### Contractor Agreement

This Agreement is made and entered into on **Month dd, 201x**, by and between the Institute for Applied Ecology, a 501(c)3 not-for-profit corporation hereinafter referred to as "IAE", and an Independent Contractor, **[Producer]**, hereinafter referred to as "Contractor." This Agreement may be subordinate to a Grant or Master Agreement between IAE and a client of IAE, hereinafter referred to as "Client." Both IAE and Contractor agree to the following provisions.

**Scope of Work:** The work, services, and deliverables to be provided by **[Producer]** include the following: 1) maintain fields of x acres of **Species A** and x acres of **Species B** totaling approximately x acres; 2) [if applicable] maintain isolation areas between production plots, totaling approximately x acres; 3) [if applicable] apply ground cloth and shade cloth including materials and labor; burn holes in ground cloth; 4) harvest and collect all produced seed; 5) clean produced seed; 6) provide a summary annual report by December 30 of each year of production; and 7) start production of x acres of **Species C** and x acres of **Species D**. IAE will provide the seed to plant the *Species C* and *Species D* production fields by Month 201x.

**Specifications:** Seed lots shall be tracked from sowing through shipping. [If applicable] Plugs shall be labeled with at least one upright label with owner name per plug tray. Seed bags shall be labeled with a WVNPM label (Exhibit B) and should include scientific name, farm name, harvest date, seed lot number, weight, and seed testing results, along with information provided by IAE on provenance and unique characteristics. Planting beds shall be isolated by at least 900+ feet from other accessions of the same species or from species in the same genus if hybridization is possible. Maintenance should include: weed control, fertilization as needed, and protection from herbicide drift. Planting beds shall be maintained to be free from species on the Oregon noxious weed or OSCS Prohibited Weed list and as free as possible from all common weeds. Seed tests will be conducted as per Oregon law and WVNPM requirements, and provided to IAE prior to seed delivery. During the duration of this contract, the contractor will not stop production of the crop, plow a field, or replant the field without prior written consent from IAE.

**Term:** The effective date of this Agreement shall be **Month dd, 201x**. Unless the project is completed or terminated earlier, as herein provided, Contractor's services shall be provided during the term between the effective date and **Month dd, 201x**. The term of this contract is contingent on future funding and a determination that the species and accessions listed above are appropriate for restoration activities in the Willamette Valley throughout the term of this contract.

**Compensation:** In consideration for the work and services rendered, IAE shall pay Contractor. Contractor's invoices will provide adequate documentation for work, services and expenses. All expense reimbursements for a calendar year will be included in Contractor's Form 1099 as reported to the IRS. Total cost for the Contractor's work, services and expenses under this Agreement shall not exceed **\$X** in 201x, comprising x acres of plant production plots plus isolation at \$X /acre (\$Total); \$X for [other materials], and [if applicable] a total of \$X for nursery plant production [Breakdown of costs]. In subsequent years, services and expenses under this Agreement shall not exceed **\$X** for x acres at \$X /acre.

**Payment:** When Contractor provides an invoice with adequate support documentation (e.g., documentation of number of species produced, area of production, pounds of seed produced, pounds of cleaned seed delivered, submittal and approval of annual report with photos, etc.), IAE will remit payment to Contractor in a timely manner, provided that IAE shall have no duty to remit payment to Contractor for work, services or expenses until ten (10) days after IAE has received payment for such work, services and expenses from Client.

**Cooperation:** Contractor shall at all times expend best efforts to assist and cooperate with IAE in order to minimize scheduling conflicts and delays, and to produce quality results.

**Records:** Contractor shall keep adequate records of all work done under this Agreement and shall turn such records over to IAE upon termination of this project together with any and all documents, records, data, reports, statistics, software, computer programs, drawings, maps, or other papers developed, compiled, prepared, or acquired by Contractor in the course of performing the work or providing the services required by this Agreement. All such records shall be the absolute property of IAE and shall not be used by Contractor for purposes unrelated to this Agreement without the prior written approval of IAE. If any of the foregoing records are used by the Contractor to develop articles, papers, reports or other materials for scientific publication during or after termination of this Agreement, IAE shall be acknowledged.

**Confidentiality and Nondisclosure:** Contractor shall not give photographs, films or CDs to anyone but IAE, nor make any news release or any public announcement concerning any phase or aspect of any program, work or service provided for under this Agreement or under the agreement between IAE and Client, without the prior written approval of IAE. If any of the foregoing materials are used by Contractor to develop articles, papers, reports or other materials for scientific publication during or after termination of this Agreement, IAE shall be acknowledged.

**Independent Status:** Contractor is and shall be an Independent Contractor. While performing the work or services provided for under this Agreement, Contractor or Contractor's employees shall not be construed as being IAE employee(s) for any purpose, including but not limited to the accrual of any employee benefits such as health insurance, life insurance, retirement or vacation time. As an Independent Contractor, Contractor assumes full responsibility for making all necessary federal, state and social security tax payments and will file all returns and forms required in connection with compensation received in connection with this Agreement.

**Indemnification:** Contractor shall indemnify and hold IAE and Client harmless from and against any and all claims, liabilities, suits, loss, cost, expense and damages arising from or occurring in connection with Contractor's performance of any work or service to be rendered under this Agreement.

**Safety:** Contractor hereby assumes all risks of injury to Contractor or Contractor's representatives and damage to the property of any of them in connection with the performance of work or services required by this Agreement. Contractor will take prudent and necessary precautions with regard to the safety of Contractor or Contractor's representatives.

**Commercial General Liability:** Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Commercial General Liability Insurance covering bodily injury and property damage in a form and with coverages that are satisfactory to the State of Oregon. This insurance shall cover personal and advertising injury liability, as well as product and completed operations liability. Coverage may be written in combination with Automobile

Liability Insurance (with separate limits). Coverage shall be written on an occurrence basis. Combined single limit per occurrence shall not be less than \$1,000,000 for each job site or location. Each annual aggregate limit shall not be less than \$2,000,000.


**Changes:** Without invalidating this Agreement, IAE may order changes in the Scope of Work by adding to, altering or deducting from the work and services to be performed. If any changes ordered cause an actual increase or decrease in Contractor's cost, or time required to perform any part of the work or service, the parties shall negotiate an equitable adjustment. All changes in the Scope of Work shall be in writing, and shall be made subject to the provisions of this Agreement and to the agreement between IAE and Client.

**Termination:** IAE may terminate this Agreement at any time. In the event of termination, IAE will pay the Contractor only for work and services performed to the date of termination, at a proration of the rates provided for in the Attachment, and for any expenses which Contractor reasonably and necessarily incurred to the date of termination in performance of work and services under this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

Contractor	IAE
Company name: <b>Producer</b> Tax ID: <b>XX-XXXXXXX</b>  <b>Street</b> <b>City, ST zip</b>  Phone: <b>XXX-XXX-XXXX</b> Fax: <b>XXX-XXX-XXXX</b>  Signed:	<b>Institute for Applied Ecology</b>  <b>PO Box 2855</b> <b>Corvallis, OR 97339-2855</b>  Phone: <b>(541)753-3099</b> Fax: <b>(541)753-3098</b>  Signed:
Name: <b>Producer/Representative</b> Title/position: <b>Owner/Principal/Position</b>  Project contact: <b>Contact Name</b> Email: <b>Contact email</b>	<b>Thomas N. Kaye</b> <b>Executive Director</b>  Project contact: <b>Jenny Getty</b> Email: <b>jenny@appliedeco.org</b> Phone extension: <b>ext. 504</b>

## Appendix F. Sample Production Label

	<h1 style="margin: 0;">Willamette Valley</h1> <h2 style="margin: 0;">Native Plant Materials Partnership</h2> <p style="margin: 0;"><i>Willamette Valley Germplasm</i></p>																								
<h3 style="margin: 0;">California oatgrass (<i>Danthonia californica</i>)</h3>																									
<p style="text-align: center;">Tested by OSU Seed Laboratory</p>																									
<table border="0"> <tr><td>Pure Seed:</td><td>82.46%</td></tr> <tr><td>Weed Seed:</td><td>0.12%</td></tr> <tr><td>Other Crop:</td><td>0.07%</td></tr> <tr><td>Combined:</td><td>0.19%</td></tr> <tr><td>Inert Matter:</td><td>17.35%</td></tr> <tr><td>All States Noxious:</td><td>none</td></tr> </table>	Pure Seed:	82.46%	Weed Seed:	0.12%	Other Crop:	0.07%	Combined:	0.19%	Inert Matter:	17.35%	All States Noxious:	none	<table border="0"> <tr><td>Viability:</td><td>90%</td></tr> <tr><td>Germ or TZ:</td><td>TZ</td></tr> <tr><td>Test Number:</td><td>126727</td></tr> <tr><td>Date Tested:</td><td>8/15/2014</td></tr> <tr><td>Bulk Wt.</td><td>40 lbs</td></tr> <tr><td>PLS Percentage</td><td>74.20%</td></tr> </table>	Viability:	90%	Germ or TZ:	TZ	Test Number:	126727	Date Tested:	8/15/2014	Bulk Wt.	40 lbs	PLS Percentage	74.20%
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Bulk Wt.	40 lbs																								
PLS Percentage	74.20%																								
<p>Lot No. B39-8-N16DC01</p>																									
<p><b>Provenance:</b> 18 collection sites from Lane, Benton, Linn, Polk, Yamhill, Washington, and Clackamas counties. Elevation range: 305 - 760 feet. G0 seed collected from wet and upland prairie habitats.</p>																									
<p><b>Producer:</b> Producer Farm</p>																									
<p><b>Generation:</b> G1</p>																									
<p><b>Exotic/Noxious Seed (seeds/lb):</b></p> <table border="0"> <tr><td>Rattail fescue</td><td>83/lb</td></tr> <tr><td>Soft chess</td><td>23/lb</td></tr> <tr><td>Perennial ryegrass</td><td>178/lb</td></tr> <tr><td>Hairy chess</td><td>22/lb</td></tr> </table>	Rattail fescue	83/lb	Soft chess	23/lb	Perennial ryegrass	178/lb	Hairy chess	22/lb	<p><b>Native Seed (seeds/lb):</b></p> <table border="0"> <tr><td>Oregon sunshine</td><td>764/lb</td></tr> </table>	Oregon sunshine	764/lb														
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Soft chess	23/lb																								
Perennial ryegrass	178/lb																								
Hairy chess	22/lb																								
Oregon sunshine	764/lb																								
<p><b>Notes &amp; Unique Characteristics:</b> Grown in 3 breeder blocks and mixed after harvest.</p>																									
<p style="text-align: center;">Willamette Valley Native Plant Materials Partnership, Willamette Valley, OR</p>																									