WHAT YOU SEED IS WHAT YOU GET

Stanford Young
Utah Crop Improvement Association
Utah State University
Logan, UT
What is the Need For Revegetation Seed?

- 270,000 square miles of BLM lands—If only 10% are damaged and degraded, that is over 17 million acres
NATIONAL SEED STRATEGY

- **Vision:**
  The **Right Seed**
  In the **Right Place**
  At the **Right Time**

- **Mission:**
  - To Ensure The Availability Of **Genetically Appropriate Seed**
  - To Restore Viable And Productive Plant Communities And **Sustainable Ecosystems**
Degraded Sites Are Not Sustainable Ecosystems

Do Not Provide Sufficient Ecosystem Services

- Filtering water, purifying air, controlling erosion, nutrient recycling, building soil structure and organic matter, providing animal forage and cover, and producing resources for human use and recreation
Does National Seed Strategy provide that degraded and damaged sites be mitigated with **Proactive Projects**?
Reactive Projects
Seed Is Procured, Mixed, And Applied-- As Available In The Marketplace
Big fire years = big demand for revegetation seed

- Supply shortages and high prices of many desired species
- Thus, what is seeded may be less than ideally adapted to specific fire damaged sites

Small fire years = small demand for revegetation seed

- Leads to dumping of excess seed inventories at lower than production cost
- Plowing under of seed fields thus not available for the next big fire year
- Good wildland seed crops may not be collected (lost opportunity, as good seed years are intermittent)
- Resultant whip-saw pricing means unavailability of many desirable but less mainstream species for more diverse habitat recovery.
- Seed industry has the ability to provide these species but unreliable seed demand discourages production.
- **Right seed?** What’s available
- **Right place?** Where the fire is
- **Right time?** When the fire’s out
INTRODUCTION

- Framework for actively working with the private sector to build a “seed industry” for rehabilitation and restoration
- Restoring native plant communities on a landscape scale poses special challenges
- Such as obtaining and delivering adequate quantities of appropriate seed to meet the need
- However, PCA business plan will not create a government-run seed business
SCOPE

- Will improve the biological and physical conditions at a site, ranging from reclamation to restoration
  - (While improving ecosystem services)
- Strategy does not preclude the use of nonnative plant materials where they are appropriate
  - (While improving ecosystem services)
So if Federal Agencies want the right seed,
And the seed industry wants to provide the right seed,
Why is it so difficult to have the right seed available at reasonable prices?
Shortage of degraded sites, whose rehabilitation and restoration would build a stable seed industry?

No, deficiency of $ to fund Proactive Projects for those degraded sites

- Emergency Stabilization and Recovery rules,
- Utah Watershed Restoration Initiative template is ignored,
- And discouraging words are heard wherever buffalo roam
What Are The Genetics And Quality Of Available Seed?
What is actually in that container of seed?
Recent Release of the bulletin:

“How To Be A Seed Connoisseur”

- Compiled by
  - Utah Crop Improvement Association, Utah State University, Logan, UT
  - Utah State Seed Laboratory, Utah Department of Agriculture and Food, SLC, UT
- Available: www.utahcrop.org
This bulletin will explain how to find out what is in that container of seed.

I. How to Decipher a Seed Analysis Label

II. How to Comprehend a Certified Seed Label

III. How to Take a Representative Seed Sample for Analysis
I. How to decipher a seed analysis label

Where does the information on the tag/label come from?

<table>
<thead>
<tr>
<th>Variety: Rosana (I.F.1.)</th>
<th>VNS&gt; (I.F.1.a.)</th>
<th>Kind: Western Wheatgrass (I.F.1.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure Seed</td>
<td>95.36%</td>
<td>Germination 94%</td>
</tr>
<tr>
<td>Inert Matter</td>
<td>0.70%</td>
<td>&lt;Germination&gt; 89%</td>
</tr>
<tr>
<td>Other Crop Seed</td>
<td>0.38%</td>
<td>&lt;Hard/Dormant Seed&gt; 5%</td>
</tr>
<tr>
<td>Weed Seed</td>
<td>0.11%</td>
<td>&lt;Total Viability&gt; 94%</td>
</tr>
<tr>
<td>Noxious Weed Seed</td>
<td>None</td>
<td>&lt;TZ&gt; 96%</td>
</tr>
<tr>
<td>&lt;Restricted Noxious Weed Seed&gt;</td>
<td>Wild oats 5 seeds/lb.</td>
<td>Germ./ Viability Test Date 10/2014</td>
</tr>
<tr>
<td>&lt;Origin&gt;</td>
<td>UTAH</td>
<td>Lot No. RWW-05614</td>
</tr>
<tr>
<td>&lt;Net Weight&gt;</td>
<td>50 lbs.</td>
<td>&lt;Cert No.&gt; G-3974</td>
</tr>
</tbody>
</table>
III. How to take a representative seed sample for analysis
- **PURE SEED**
  - Pure seed units

- **INERT MATTER**
  - Broken seed, chaff, dirt, etc.

- **WEED SEED**
  - Common
  - Noxious

- **OTHER CROP SEED**
  - Non-weed species
Germination

Germination plus hard seed/dormant seed = **Total Viability**

**Total Viability** may be estimated by tetrazolium chloride staining, **TZ Test**
Preliminary Seed Analysis Report  No: 11245

Kind And Variety*: Utah Sweetvetch, Timp
Sample Received:  4/23/2014       Test Completed:  5/14/2014
Lot No: TSV JD-13                Certification No: F-713
Lot Size: 19.5 lb(s)             Treated: No
Sample Other Info: twday@msn.com Sampled by M. Bouck

* - Sender's Identification

TOM DAY
DAY FARMS
2049 RIDGE RD
LAYTON UT 84040

PURITY ANALYSIS

<table>
<thead>
<tr>
<th>Kind</th>
<th>19.21 g(s) Analyzed</th>
<th>Pure Seed (%)</th>
<th>Germination (%)</th>
<th>Dormant %</th>
<th>Hard Seed (%)</th>
<th>Total Viable (%)</th>
<th>TZ (%)</th>
<th>Viable Hard (%)</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah Sweetvetch</td>
<td></td>
<td>95.47</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Other Crop Seeds: 0.00%

Seed Name               | Seeds Per Pound
None                     | Seeds Per Pound

VIABILITY ANALYSIS

Weed Seeds: 0.01%

Seed Name               | Seeds Per Pound
Downy Brome (Bromus tectorum) | 14
Foxtail Barley (Hordeum jubatum) | 9
Goatsbeard (Tragopogon sp.) | 2

Restricted Weed Seeds

Seed Name               | Seeds Per Pound | Per Sample
None                     |               |

Inert Matter: 4.52%, Broken Seed, Dirt, Sticks, Chaff and Similar Material

Noxious Weed Seeds: Analyzed: 191.7 g(s)

Seed Name               | Seeds Per Pound | Per Sample
Bindweed (Convolvulus sp.) | 2 | 1

Inspector: CURTIS L. PARKER
Rules Followed: AOSA

Report Remarks: Bindweed is a noxious weed seed in Utah.
This is a preliminary report. Germination will be sent when completed.

CC: Michael Bouck; Stan Young

Seed Analyst: Stanley Akagi

Information contained in this report is based on the sample as received from the sender. Utah Department of Agriculture and Food makes no warranty as to the variety of the seed. Unless otherwise noted the noxious weed seed exam conducted was for Utah Noxious weed seeds.
Cultivar/Germplasm Verification Methods

- Chemical/DNA Testing
- Grow-Outs
- Seed Certification
  - Field grown seed
  - Wildland collected seed

II. How to Comprehend a Certified Seed Label
Germplasm Procurement for direct planting on revegetation projects

- Provenance information listed on tag
  - State, county, elevation minimum info required
  - Species specific seed transfer zones can be listed
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<th>Kind: Western Wheatgrass (I.F.1.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure Seed 95.36% (I.F.2.a.)</td>
<td>Germination 94% (I.F.3.)</td>
</tr>
<tr>
<td>Inert Matter 0.70% (I.F.2.a.)</td>
<td>&lt;Germination&gt; 89% (I.F.3., 3.a.)</td>
</tr>
<tr>
<td>Other Crop Seed 0.38% (I.F.2.b.)</td>
<td>&lt;Hard/Dormant Seed&gt; 5% (I.F.3., 3.a.)</td>
</tr>
<tr>
<td>Weed Seed 0.11% (I.F.2.c.)</td>
<td>&lt;Total Viability&gt; 94% (I.F.3., 3.a.)</td>
</tr>
<tr>
<td>Noxious Weed Seed None (I.F.2.d.)</td>
<td>&lt;TZ&gt; 96% (I.F.3.a.)</td>
</tr>
<tr>
<td>&lt;Restricted Noxious Weed Seed&gt; Wild oats 5 seeds/lb. (I.F.2.d.)</td>
<td>Germ./Viability Test Date 10/2014 (I.F.3.b.)</td>
</tr>
</tbody>
</table>

Note: Items listed in <brackets> are included only in certain circumstances; the notations in (parenthesis) specify the section(s) of the text explaining the item. (Linked to text in electronic version).
For any container of seed, the primary goal of seed laws and seed certification programs is to make sure that “the tag is on the bag”, and that “what's on the tag is what’s in the bag”.

- So, What You Seed Is What You Get, right?
- Well, It Depends
- Even with the right seed at the right place at the right time, it is up to the sower to:
  - Apply proper planting techniques
  - Arrange for application of sufficient moisture
YOU TOO CAN BE A SEED CONNOISSEUR!

- Dr. Stanford Young, UCIA Exec. Sec./Mgr., USU
  stanford.young@usu.edu
- Michael Bouck, UCIA Supervisor, USU
  michael.bouck@usu.edu
- Ronald Larsen, UDAF, Seed Control Official
  rlarsen@utah.gov
- Stanley Akagi, UDAF, AOSA Seed Analyst
  sakagi@utah.gov
- Terry Freeman, UDAF, AOSA Seed Analyst
  terryfreeman@utah.gov
$ For Proactive Projects?

- Current $; Lobby Executive, Congressional, and Judicial Branches to reserve Land and Water Conservation Fund for intended purposes
- Redirected $; Agency ESR Funds for more proactive vs. reactive projects
- New $, Executive Order
- New $, Act of Congress
- New $, Private Sources Solicitation
- But who is going to bell the cat?
- Ok, I’m stepping off the soapbox now
So if Federal Agencies want the right seed, 
And the seed industry wants to provide it, 
Why is it so difficult to have the right seed available at reasonable prices?

- Deficiency of degraded sites to create seed demand?
- Deficiency of $ to fund Proactive Projects
So if you have read and understood and implemented all of the information in the bulletin,

CONGRATULATIONS!

You are now a **Seed Connoisseur**!

- Dr. Stanford Young, UCIA Exec. Sec./Mgr., USU  stanford.young@usu.edu
- Michael Bouck, UCIA Supervisor, USU  michael.bouck@usu.edu
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- Stanley Akagi, UDAF, AOSA Seed Analyst  sakagi@utah.gov
- Terry Freeman, UDAF, AOSA Seed Analyst  terryfreeman@utah.gov
Public Lands

- Bureau of Land Management (BLM)
- Department of Defense (DoD)
- National Park Service (NPS)
- USDA Forest Service (USFS)
- U.S. Fish and Wildlife Service (USFWS)
- State lands

NOAA lands are included on both maps but are too small to detect.
The largest landowner in the United States is the American people through their national government and various federal agencies. In the 48 contiguous states, there are around 810,000 square miles of land under some form of federal government management and control. About 92 percent of these lands, or nearly 741,000 square miles, are in the 22-state West. These include 280,000 square miles of National Forest Service lands, over 270,000 square miles of Bureau of Land Management lands, 97,000 square miles of Bureau of Indian Affairs lands, over 34,000 square miles of National Park Service lands, and 32,000 square miles of lands under the control of either the Department of Defense or Department of Energy.

These 741,000 square miles of federal lands account for over one-third of all land in the 22-state West. The largest concentrations are found in states west of the Plains regions; including states in the Rocky Mountain West, Southwest, Pacific Northwest, and California/Nevada region. Among the eleven states in these regions, Nevada has the largest amount of federal lands; nearly 98,000 square miles accounting for 88 percent of the entire state, while Washington has the smallest amount; over 26,000 square miles accounting for 37 percent of the state. Nearly 70 percent of the entire areas of the states of Utah, Idaho, and Arizona are federal lands.

The management and use of these lands have heavily shaped the history of settlement and economic development in the West. These lands also will play a significant role in the West’s economic future. However, the varying economic roles they play from place to place are changing as the larger economy restructures and the pattern and make-up of economic activity shift and change.