

NATIVE SEED PROCESSING

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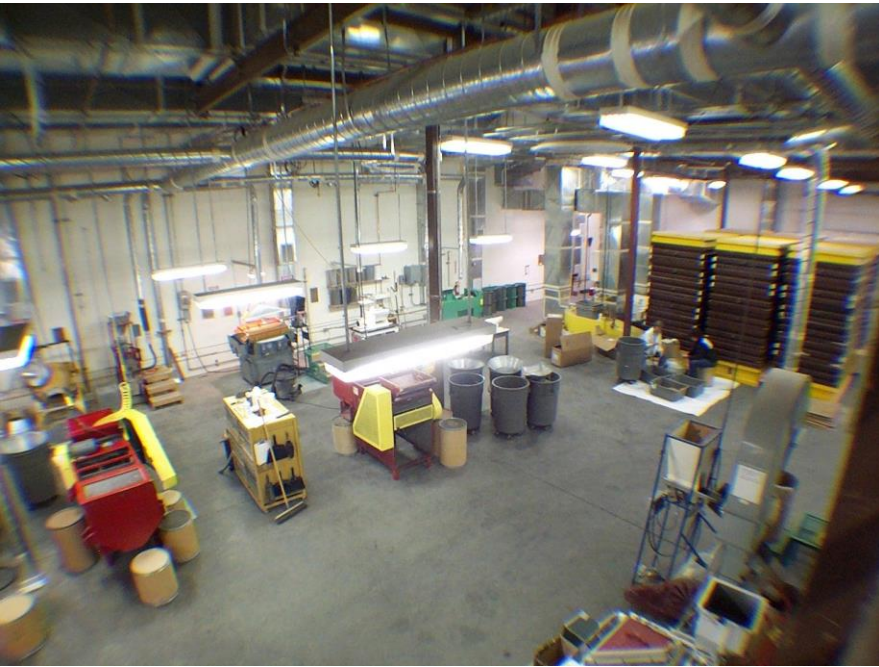


National Native Seed Conference
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Is seed cleaning necessary?

- Challenges
 - Availability
 - Time
 - Cost
 - Coordination
- Benefits
 - Known viability
 - Known purity
 - Provides options for sowing
 - Storage potential

What does the extractory provide?



- Extracts, cleans and stores seed
 - Any governmental agency
 - (USFS, BLM, USFWS, NPS, Fed. Hwy., BIA, Tribes)
- Over 3,000 native plant species
- Provides granary & freezer storage
- Arranges for testing & shipping
- Maintains seed inventory database
- Information hub

How is seed processed?

Machines:

- Screens
- Air
- Motion

Seed separation

- Machines exploit the difference in physical properties of target seed and non-target material.



What does processing look like?

Raw Material



Pure Seed



Seed with Inert and Non-target Material



Seed with Inert Material



What information do we have?

- BSE has records associated with every collection
 - Incoming weight
 - Processing notes
 - Machines used and settings
 - Time spent
 - Final weight
 - In-house testing
 - Certified testing results
 - Final processing reports



How can data help?

Atriplex canescens (ATCA2)

- 10,000 pure live seed (PLS) are required for long-term storage
- 5,000 PLS are needed for nursery grow out.

Average yield data show that approx 7,700 PLS/lb of raw wt. can be expected for ATCA2, so...

15,000 PLS/7,700pls/lb = 1.94 lbs raw material needed

* Average PLS/lb of raw wt. was used in this calculation instead of yield (%) or seeds/lb because ATCA2 typically finishes with a lower than desired percent purity and/or percent fill due to limitations in the extraction process. This is typical of many *Atriplex* species, conifers, and species producing fleshy fruit. If unsure, make calculations using all methods and take the highest number for field collection.

SHRUBS

GENUS	SPECIES	AVG YIELD (%)	AVG PLS/LB RAW WT	AVG SEED/LB	# OF RECORDS
Ambrosia	dumosa	28	15,373	78,563	43
Artemesia	tridentata ssp. tridentata	6	109,629	2,220,807	47
Artemesia	tridentata ssp. wyomingensis	4	62,887	1,716,151	61
Atriplex	canescens	28	7,726	55,975	93
Atriplex	confertifolia	26	11,123	102,309	60
Atriplex	polycarpa	5	165,597	1,210,903	35
Cercocarpus	ledifolius	21	7,704	45,054	62
Chrysothamnous	viscidiflorus	5	29,940	889,877	53
Ericameria	nauseosa	8	37,575	621,749	102
Krascheninnikovia	lanata	5	8,787	236,802	48
Larrea	tridentata	18	14,177	116,269	53
Ribes	cereum	6	13,718	308,321	26
Salvia	dorrii	4	5,736	150,149	15
Symphoricarpos	albus	4	2,021	66,786	32
Tetradymia	canescens	3	2,765	116,811	20



Kate Pavich, an SCA Team Member with the BLM Bishop Field Office (California) collecting seed at the Volcanic Tablelands. Photo by Student Conservation Association

Seed Increase: Processing Large Quantities



Elymus elymoides
bottlebrush squirreltail



Achnatherum occidentale
western needlegrass



Successes and Challenges of Large Quantities

- *Lomatium cookii*
 - Multiple flowers per plant, various heights
 - Seed attached to umbel
 - Seed has a tough wing compared to most *Lomatium* species



Successes and Challenges of Large Quantities

- *Asclepias speciosa*
 - Timing of harvest
 - Generally good fill
 - Seed has a silky pappus
 - Pappus must be removed
 - Seed is fragile



Successes and Challenges of Large Quantities

- *Solidago canadensis*
 - Seed is very small
 - Has a late bloom window, affecting pollination and seed fill
 - Seed has pappus which must be removed
 - High amount of inerts



Successes and Challenges of Large Quantities

- *Plagiobotheris* spp.
 - Flowers occur along the length of the stem
 - Seed must be harvested before it dehisces
 - Seed is textured
 - Seed size is variable



Seed Increase Yields

BSE Average Yields			BSE Average Yields		
Species	Small Collections	Seed Increase	Species	Small Collections	Seed Increase
POSE	52.5%	60.3%	SOCA6	8.4%	29.6%
FECA	55.7%	65.1%	LOCO8	-	58.1%
ACLE8	48.2%	62.7%	ASSP	38.0%	36.4%
BRLA3	59.3%	30.5%	Plagiobothrys	18.4%	28.9%
DEEL	40.8%	66.9%	ERLA6	22.5%	12.5%
ACLE9	47.0%	30.8%	MOOD	5.6%	6.7%
BRCA5	88.5%	75.0%	ACMI2	10.1%	12.0%

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This and additional presentations available at <http://nativeseed.info>

