Estimated yields from native wildland seed collections processed by the Bend Seed Extractory

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Process: Wildland seed collection data from the Bend Seed Extractory (BSE) were summarized to answer the following questions:

1) Which species of forbs, grasses, and shrubs are most commonly collected and sent to BSE for processing?

2) What is the average yield, avg. PLS/lb of raw weight collected, and average seed/lb for the top 15 mostly commonly collected species in each category?

3) Which species have an average yield of less than 5% or an average PLS/lb of raw weight of less than 10,000?

Purpose: To make yield data from BSE available to collectors with the intent of helping them meet target seed weight or PLS needs. Similar data for additional species are available upon request. Contact Sarah Garvin, at 541-383-5646 or at sarahegarvin@fs.fed.us

FORBS

FORBS					
GENUS	SPECIES	AVG YIELD (%)	AVG PLS/LB RAW WT	AVG SEED/LB	# OF RECORDS
Achillea	millefolium	10	279,688	3,333,936	101
Agastache	urticifolia	16	102,223	743,133	30
Balsamorhiza	sagittata	21	8,793	49,760	50
Chaenactis	douglasii	18	57,675	382,129	31
Eriogonum	fasciculatum	6	22,068	466,265	32
Eriogonum	heracleoides	23	29,312	174,514	51
Eriogonum	umbellatum	13	22,105	210,373	92
Eriophyllum	lanatum	16	134,505	982,234	60
Heterotheca	villosa	16	106,716	838,595	41
Lupinus	argenteus	20	2,807	20,580	32
Macaeranthera	canescens	14	141,318	1,154,719	39
Monardella	odoratissima	5	40,233	800,330	20
Penstemon	deustus	11	315,379	3,471,280	36
Phacelia	hastata	10	41,596	489,759	31
Wyethea	amplexicaulis	13	3,528	30,093	20

Forbs with less than 5% *yield*:

Monardella odoratissima (MOOD)

-Typically has a low initial fill% and collections often include a large amount of heavy inert material

-Forbs with an average PLS/LB of raw weight less than 10,000 :

Balsamorhiza sagittata (BASA3)

Wyethia amplexicaulis (WYAM)

-Typically has a low initial fill% and a high percentage of insect damage

Lupinus argenteus (LUAR3)

-Typically has a high percentage of insect damage

GRASSES

GRASSES					
GENUS	SPECIES	AVG YIELD (%)	AVG PLS/LB RAW WT	AVG SEED/LB	# OF RECORDS
Achnatherum	hymenoides	19	19,240	124,338	148
Achnatherum	thurberianum	27	30,000	134,685	46
Bouteloua	curtipendula	12	46,113	573,933	32
Bouteloua	gracilis	11	76,720	951,230	61
Deschampsia	cespitosa	32	427,245	1,694,839	27
Elymus	elymoides	23	32,723	165,836	160
Elymus	glaucus	63	65,627	115,468	163
Festuca	californica	54	59,154	137,740	68
Festuca	idahoensis	33	106,466	377,112	106
Hespirostipa	commata	16	9,172	75,237	110
Koeleria	macrantha	12	140,929	1,592,721	67
Leymus	cinereus	34	41,255	135,164	34
Pleuraphis	jamesii	5	14,541	352,110	26
Pseudoroegernia	spicata	27	29,037	130,488	127
Sporobilus	airoides	28	411,890	1,766,189	45

Grasses with less than 5% yield:

Pleuraphis jamesii (PLJA)

-Typically has a low initial fill% and collections often include a large amount of heavy inert material

Grasses with an average PLS/LB of raw weight less than 10,000 :

Hesperostipa commata (HECO26)

-Often has a low initial fill% . Seed is easily damaged when excess inert material is included in the collection, especially stems over 6" in length.

SHRUBS

SHRUBS					
GENUS	SPECIES	AVG YIELD (%)	AVG PLS/LB RAW WT	AVG SEED/LB	# OF RECORDS
Ambrosia	dumosa	28	15,373	78,563	43
Artemesia	tridenta ssp. tridentata	6	109,629	2,220,807	47
Artemesia	tridenta ssp. wyomingensis	4	62,887	1,716,151	61
Atriplex	cansecens	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

Shrubs with less than 5% yield:

Artemesia tridentata ssp. wyomingensis (ARTRW8)

Chrysothamnous viscidiflorus (CHVI8)

Krascheninnikovia lanata (KRLA2)

Salvia dorrii (SADO4)

Tetradymia canescens (TECA2)

-The above species often have a low initial fill% and often include a large amount of inert material. In addition, *Krascheninnikovia*, *Chrysothamnous*, and *Tetradymia* are easily damaged during processing.

Atriplex polycarpa (ATPO)

-Collections often include a large amount of inert material (unavoidable)

Shrubs with an average PLS/LB of raw weight less than 10,000 :

Atriplex canescens (ATCA2)

Cercocarpus ledifolius (CELE)

Symphoricarpos albus (SYAL)

-The above species often have a low initial fill%

Examples of how to use BSE data

Artemesia tridentata ssp. *wyomingensis* (ARTRW8)

- Bare-root grow out
  - 1.5 million seedlings requested
- 2lbs needed by nursery to meet targets
  - considering seed quality and nursery factors

Average yield data from BSE shows that wildland ARTRW8 collections typically produce 4% of their weight in seed, so…

2lbs/.04 = 50 lbs of raw material needed.

Symphoricarpos albus (SYAL)

- Container grow out
  - 1000 plants needed by client,
- Nursery requests 3,000 seeds
  - Considering seed quality and nursery factor

Average seed/lb data show that there are approximately 66,700 seed in one lb of processed SYAL seed, so…

3,000 seed/66,700 seed/lb = .0449 lb of cleaned seed

Average yield for SYAL is approximately 4%, so…

0.0449 lb/.04 = 1.12 lbs of raw material needed

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.

Supplemental List Requested by SOS April 2018					
GENUS	SPECIES	AVG YIELD (%)	AVG PLS/LB RAW WT	AVG SEED/LB	# OF RECORDS
Agoseris	grandiflora	36	162,767	428,055	10
Amsinckia	tessellata	26	28,761	115,093	34
Astragalus	filipes	13	11,365	102,477	19
Cleome	lutea	44	43,416	119,701	32
Crepis	acuminata	15	20,383	162,159	50
Erigeron	pumilus	13	740,996	8,251,033	25
Heliomeris	multiflora	17	142,285	883,996	59
Lomatium	dissectum	49	19,022	46,765	28
Machaeranthera	tanacetifolia	35	170,494	557,398	43
Penstemon	pachyphyllus	33	69,173	238,319	20
Penstemon	speciosus	17	68,030	830,166	21
Poa	secunda	28	205,301	948,576	181
Sphaeralcea	ambigua	17	49,531	340,884	58
Sphaeralcea	coccinea	33	50,198	188,369	31
Sphaeralcea	grossulariifolia	13	37,340	335,613	17
Sphaeralcea	munroana	28	73,441	304,823	23
Sphaeralcea	parvifolia	14	48,259	405,636	48
Sporobolus	cryptandrus	28	1,042,203	4,435,138	60