

JUMPING TO CONCLUSIONS: YEAR 3 IN A 5YEAR STUDY...

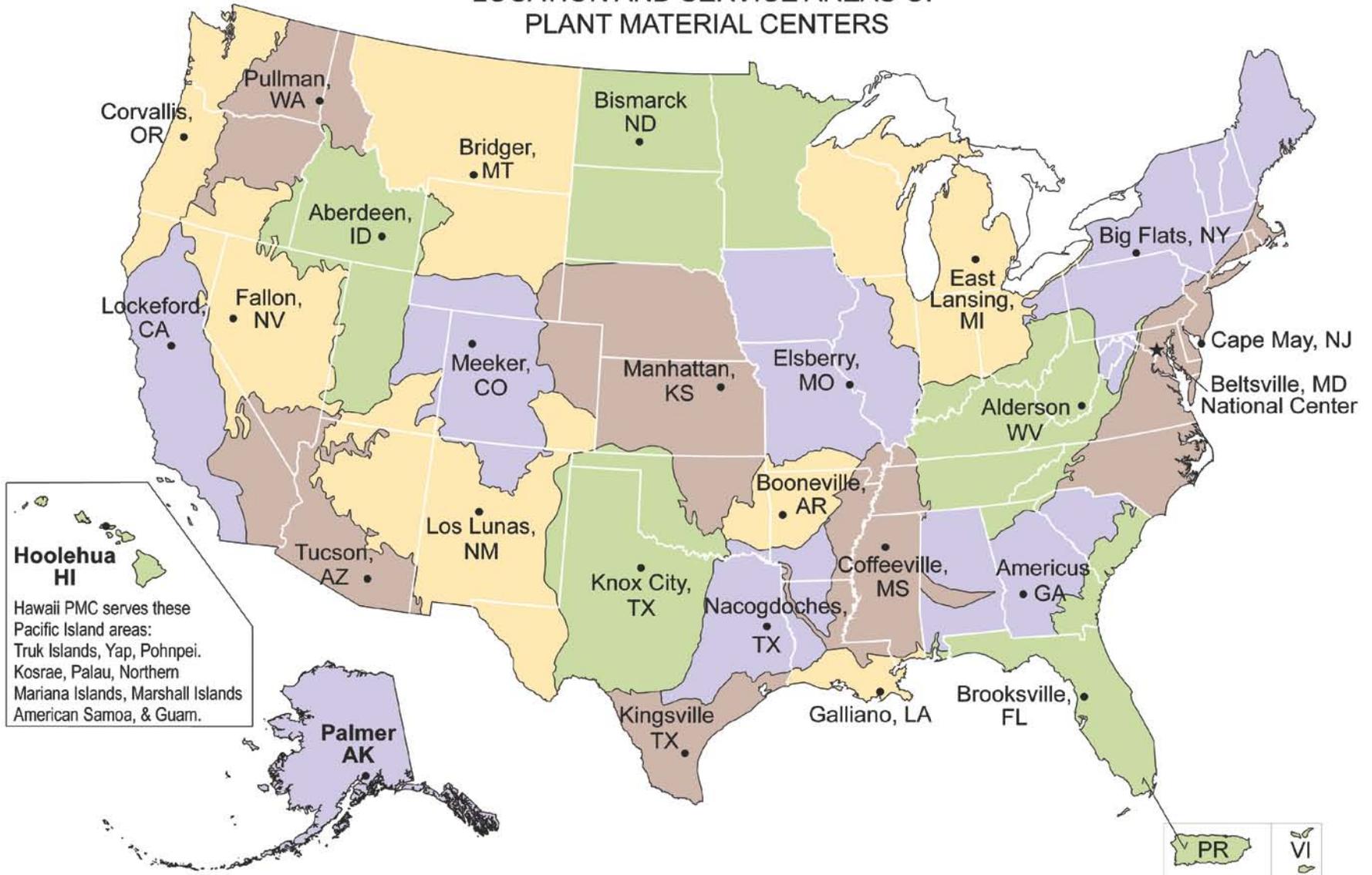
And the latest
Plant Materials
releases from
NRCS

By Karen J. Clause, RMS
USDA-NRCS
March 11, 2009



PEPA8

LOCATION AND SERVICE AREAS OF
PLANT MATERIAL CENTERS





COOPERATORS

- USDI-BLM
- WGFD
- USDA-NRCS
- SWEPI LP (SHELL)
- SCCD



ERUM



GOAL

OEPA

ADDRESS OBJECTIVES
OUTLINED IN THE
PINEDALE RESOURCE AREA
COOPERATIVE WORKING AGREEMENT

- Test grass, forb, and shrub **species**
 - Test **cultivars and varieties** of grass, forb, and shrub species
 - Test **seeding mixtures and rates**
- 
- 

SPECIES/CULTIVARS

- NATIVE TO ROCKY MOUNTAIN REGION
- 72 DIFFERENT ENTRIES
 - 32 GRASSES
 - 24 FORBS
 - 16 SHRUBS

SPMU2





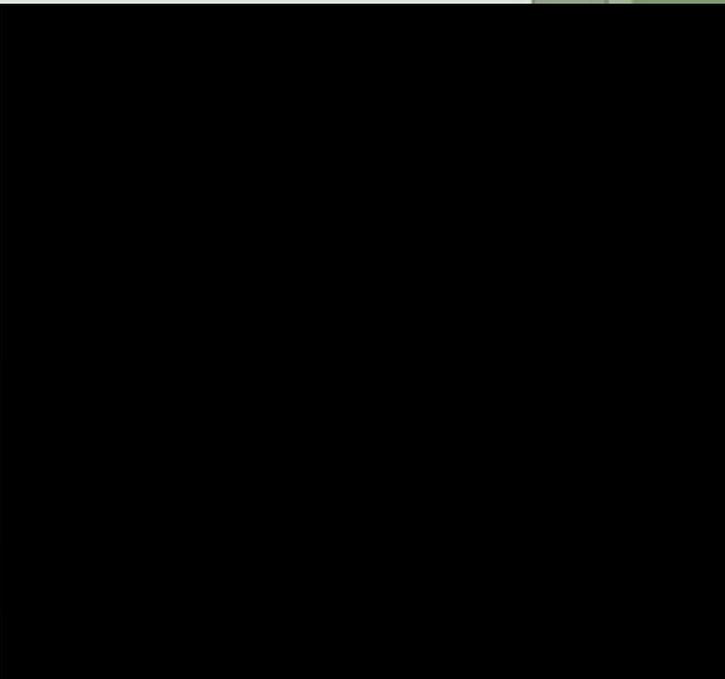
PLANTING METHOD/TIMING

PLANTED OCT 17-20, 2005

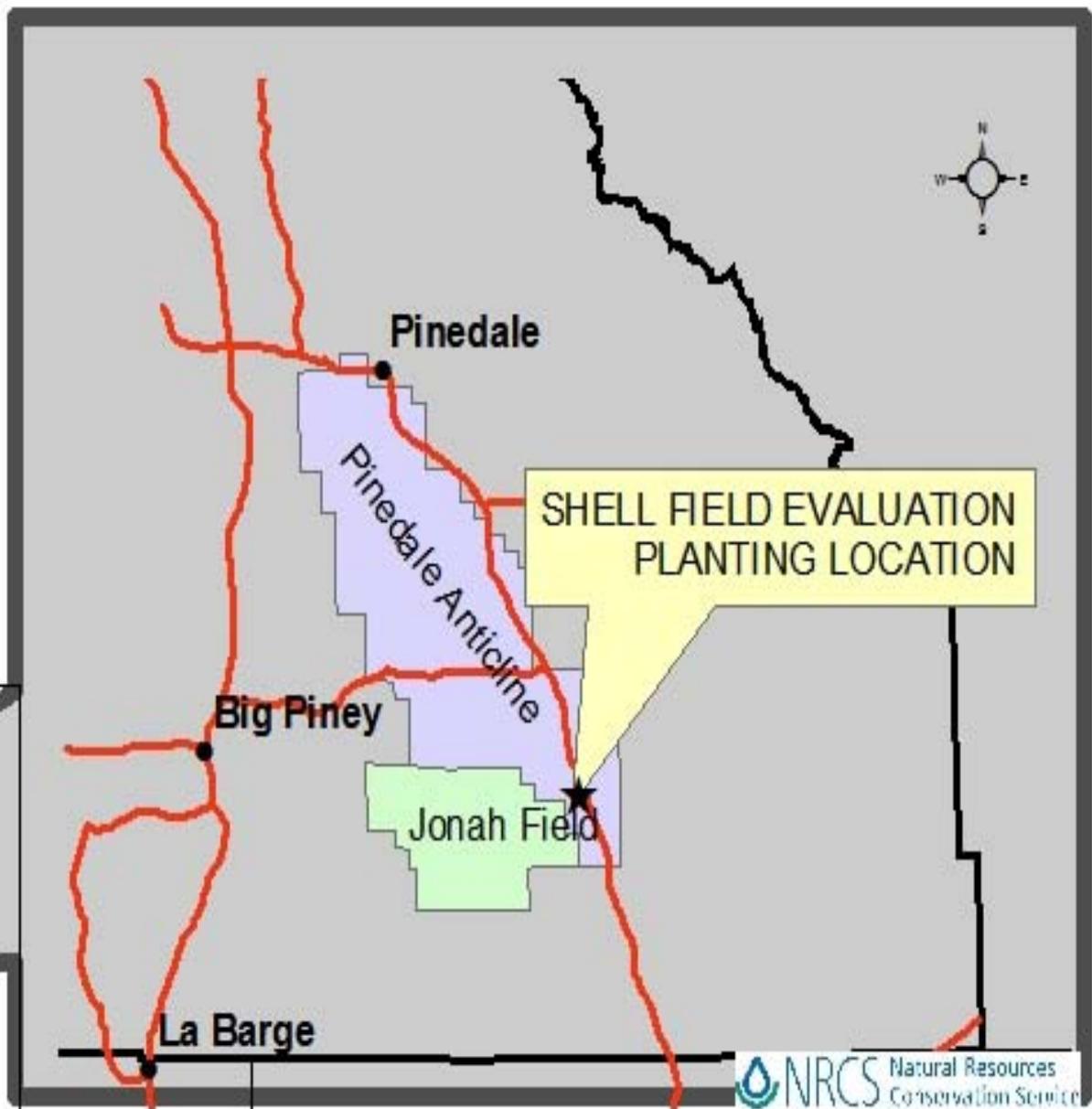
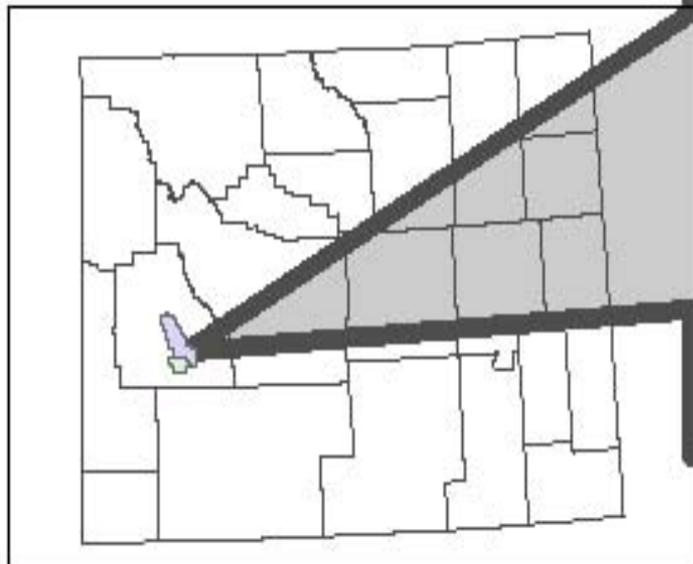
4 PLANTING METHODS:

1. PRECISION PLANTING - CONE SEEDER
2. BROADCAST
3. TRUAX DRILL SEEDING
HYDRO-SEEDING

CLSE



LOCATION



PLOT LAYOUT



PLOT LAYOUT



CONE SEEDER



FINISHED PLOTS



BROADCAST SEEDING



CALIBRATION



TRUAX DRILL

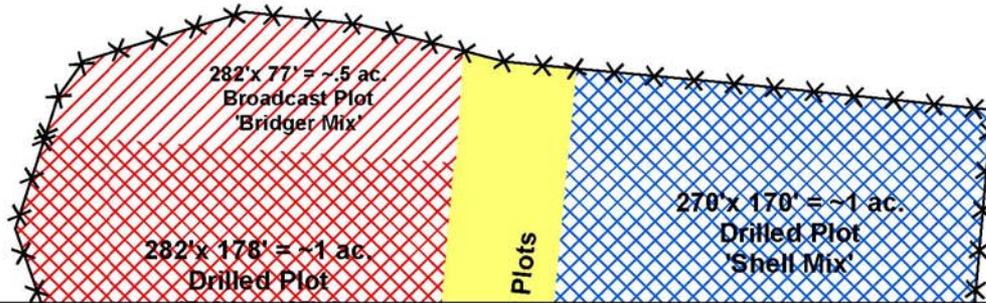


HYDRO-SEEDING



AS-BUILT PLOT DESIGN

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W

E

S



POST PLANTING MANAGEMENT

- WEED CONTROL – MECHANICAL AND CHEMICAL AS NECESSARY
- FENCE MAINTENANCE TO CONTROL MOST UNGULATE ACCESS
- FENCE REMOVAL AFTER 5 YEARS

2006 EVALUATION

- GERMINATION/EMERGENCE
 - 4 SITE VISITS MAY-JUNE
- STAND/DENSITY - JULY
- HEALTH/VIGOR – JULY
- PHOTO POINTS - JULY

EUGL19



2007 EVALUATION

- GERMINATION/EMERGENCE
 - 3 SITE VISITS END OF MAY, JUN, AUG
- STAND/DENSITY - SEP
- HEALTH/VIGOR - SEP
- PHOTO POINTS - SEP

STILLWATER



2008 EVALUATION

- FORBS EVALUATED END OF JUNE
- GRASSES/SHRUBS EVALUATED END OF JULY
- MIXES EVALUATED END OF JULY
- PHOTO POINTS – JUN-JUL
- PRODUCTION (GRASS PLOTS ONLY)

MAPLE GROVE

BRIDGER MIX – DRILL

SPECIES	SEEDED (39)*	2006 (.33)*	2007 (.35)*	2008 (.42)*
CRITANA (ELLAL)	13%	-	11% (4")	40% (7")
PRYOR (ELTRT)	13%	12% (2")	23% (4")	21% (6")
ROSANA (PASM)	13%	39% (2")	9% (3")	12% (6")
TRAILHEAD (LECI4)	8%	-	20% (3")	10% (9")
HIGH PLAINS (POSE)	13%	-	3% (2")	7% (2")
PHHA	5%	6% (1/2")	-	5% (1")
RIMROCK (ACHY)	13%	27% (2")	17% (3")	2% (3")
ARTRW8	1.5%	12% (1/2")	-	2% (15")
WYTANA (ATxAP)	1.5%	3% (1")	11% (7")	T (16")

*SEEDED AND EXPRESSED DENSITIES IN SEEDS(PLANTS)/SQFT

BRIDGER MIX – DRILL

SPECIES	SEEDED (39)*	2006 (.33)*	2007 (.35)*	2008 (.42)*
OPEN RANGE (KRLA2)	1.5%	-	6% (3")	T (10")
MAPLE GROVE (LILE3)	5%	-	-	T (14")
ARFR4	1.5%	-	-	T (12")
STILLWATER (RACO3)	5%	-	-	T (9")
GREAT NORTHERN (ACMIO)	5%	-	-	-
SPCO	3%	-	-	-

***SEEDED AND EXPRESSED DENSITIES IN SEEDS/SQFT**

.42 PLANTS/SQFT / 39 SEEDS/SQFT = 1% STAND EXPRESSION

BRIDGER MIX – BROADCAST

SPECIES	SEEDED (78)*	2006 (.55)*	2007 (.94)*	2008 (.73)*
CRITANA (ELLAL)	13%	18% (3")	33% (4")	34% (4")
PRYOR (ELTRT)	13%	29% (3")	16% (2")	32% (4")
TRAILHEAD (LECI4)	8%	-	2% (2")	10% (4")
WYTANA (ATxAP)	1.5%	-	6% (4")	5% (9")
HIGH PLAINS (POSE)	13%	5% (1")	-	5% (1")
ROSANA (PASM)	13%	-	12% (2")	4% (5")
MAPLE GROVE (LILE3)	5%	-	4% (3")	3% (15")
ARTRW8	1.5%	15% (1")	10% (5")	4% (7")

*SEEDED AND EXPRESSED DENSITIES IN SEEDS (PLANTS)/SQFT

BRIDGER MIX – BROADCAST

SPECIES	SEEDED (78)*	2006 (.55)*	2007 (.94)*	2008 (.73)*
RIMROCK (ACHY)	13%	33% (1'')	15% (2'')	-
PHHA	5%	-	4% (1'')	-
GREAT NORTHERN (ACMIO)	5%	-	2% (2'')	-
OPEN RANGE (KRLA2)	1.5%	-	1% (2'')	-
ARFR4	1.5%	-	-	-
STILLWATER (RACO3)	5%	-	-	-
SPCO	3%	-	-	-

*SEEDED AND EXPRESSED DENSITIES IN SEEDS/SQFT

.73 PLANTS/SQFT / 78 SEEDS/SQFT = 1% STAND EXPRESSION

SHELL MIX – DRILL

SPECIES	SEEDED (69)*	2006 (.54)*	2007 (.27)*	2008 (.32)*
ARTRW8	42%	35% (1")	26% (6")	53% (11")
ATCA	1%	-	33% (3")	22% (6")
RIMROCK (ACHY)	5%	13% (3")	15% (3")	22% (6")
POSE	31%	24% (1")	11% (1")	3% (3")
KRLA2	2%	4% (3")	7% (6")	-
PERY	7%	-	4% (1/2")	-
LUAR3	1/2%	24% (1/2")	-	-
ACMIO	5%	-	-	-
ARFR4	8%	-	-	-
SPCO	1/2%	-	-	-

*SEEDED AND EXPRESSED DENSITIES IN SEEDS/SQFT

.32 SEEDS/SQFT / 69 SEEDS/SQFT = 1/2 % STAND EXPRESSION

SHELL MIX – BROADCAST

SPECIES	SEEDED (138)*	2006 (.81)*	2007 (.68)*	2008 (1.31)*
ARTRW8	42%	64% (1")	29% (4")	25% (7")
POSE	31%	20% (1")	60% (1")	47% (2")
ATCA	1%	4% (2")	6% (3")	4% (7")
KRLA2	2%	6% (1")	6% (5")	4% (7")
ARFR4	8%	-	-	4% (5")
RIMROCK (ACHY)	5%	4% (1")	-	1% (4")
LUAR3	1/2%	4% (1")	-	-
PERY	7%	-	-	-
ACMIO	5%	-	-	-
SPCO	1/2%	-	-	-

*SEEDED AND EXPRESSED DENSITIES IN SEEDS/SQFT

1.31 SEEDS/SQFT / 138 SEEDS/SQFT = 1 % STAND EXPRESSION

SHELL MIX – HYDRO-SEEDING



REPLICATED PLOTS

GRASSES

TOP GRASS PERFORMERS

SPECIES	PLANTS/SQFT	PRODUCTION (#/ac)
L-46 (LECI4)	6.71	160
Sodar (ELLAL)	4.34	117
Critana (ELLAL)	3.42	141
Bannock (ELLAL)	3.17	67
Copperhead (ELTRT)	3.04	65
Continental/L-45 (LECI4)	2.79	91
Washoe (LECI4)	2.71	144
P-24 (PSSPS)	2.63	103

Sodar

RUNNER UP...

SPECIES	PLANTS/SQFT	PRODUCTION (#/ac)
Magnar (LECI4)	1.92	86
Rosana (PASM)	1.92	22
Anatone (PSSPS)	1.88	66
San Luis (ELTRT)	1.79	35
P-19 (PSSPS)	1.79	45
Trailhead (LECI4)	1.67	124
ELEL5	1.5	108
Rodan (PASM)	1.46	75

REPLICATED PLOTS

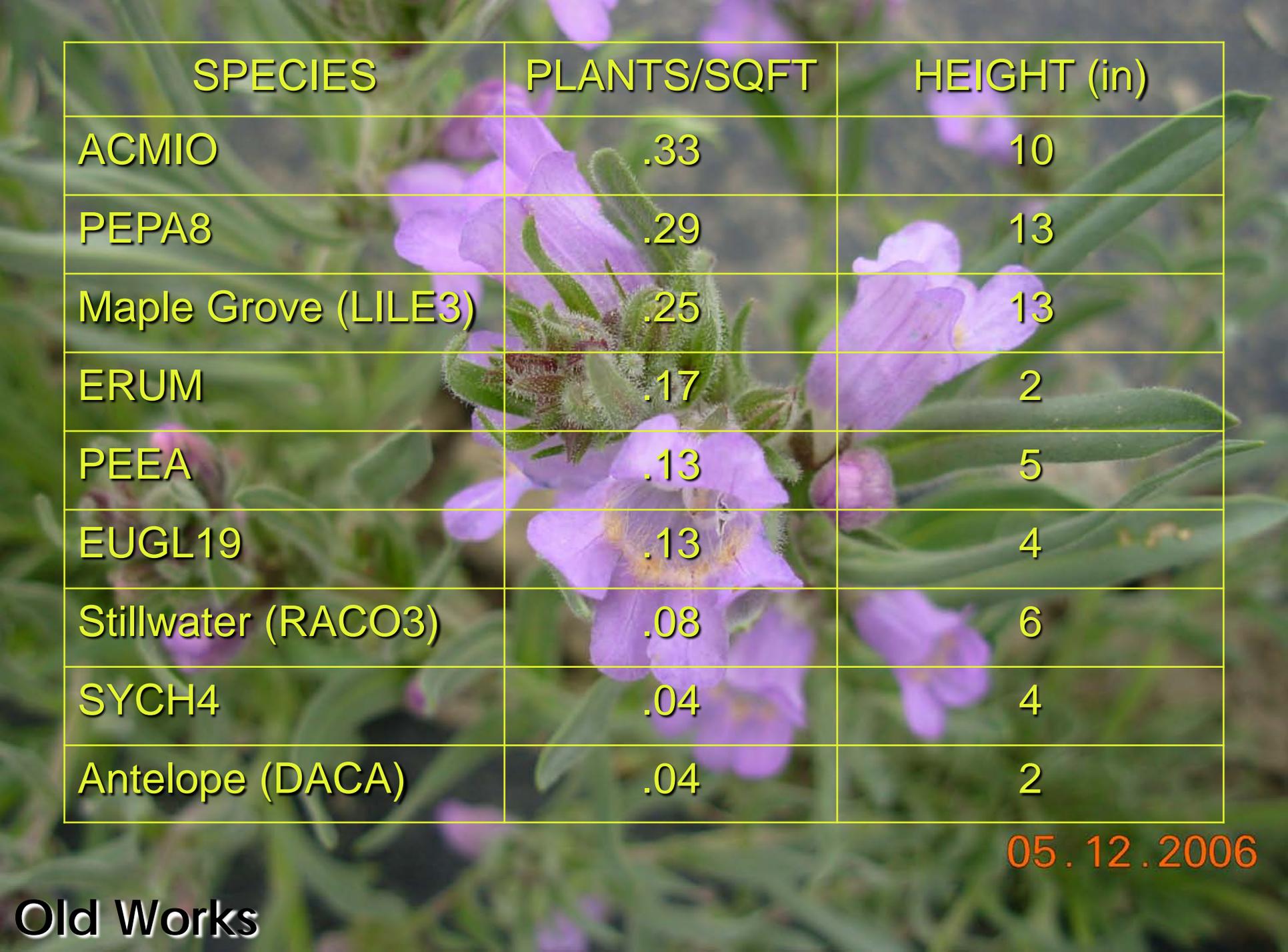
FORBS

Appar

TOP FORB PERFORMERS

SPECIES	PLANTS/SQFT	HEIGHT (in)
Appar (LIPE2)	1.00	10
Richfield (PEEA)	.46	8
Old Works (PEER)	.46	4

Richfield

A background image of purple flowers, likely Salvia, with green foliage. The flowers are in various stages of bloom, some fully open and some as buds. The image is slightly out of focus, emphasizing the data table overlaid on it.

SPECIES	PLANTS/SQFT	HEIGHT (in)
ACMIO	.33	10
PEPA8	.29	13
Maple Grove (LILE3)	.25	13
ERUM	.17	2
PEEA	.13	5
EUGL19	.13	4
Stillwater (RACO3)	.08	6
SYCH4	.04	4
Antelope (DACA)	.04	2

05.12.2006

REPLICATED PLOTS

SHRUBS

Wytana

TOP SHRUB PERFORMERS

SPECIES	PLANTS/SQFT	HEIGHT (in)
Wytana (ATxAP)	.67	10
Snake River Plains (ATCA)	.33	14
Hatch (KRLA2)	.13	8
ATGA	.13	6

Snake River Plains

RUNNER UP...

SPECIES	PLANTS/SQFT	HEIGHT (in)
Northern Cold Desert (KRLA2)	.08	9
Open Range (KRLA2)	.04	10
ARTRT	.04	10
ARTRW8	.04	9
GRSP	.04	8
ARNO4	.04	4

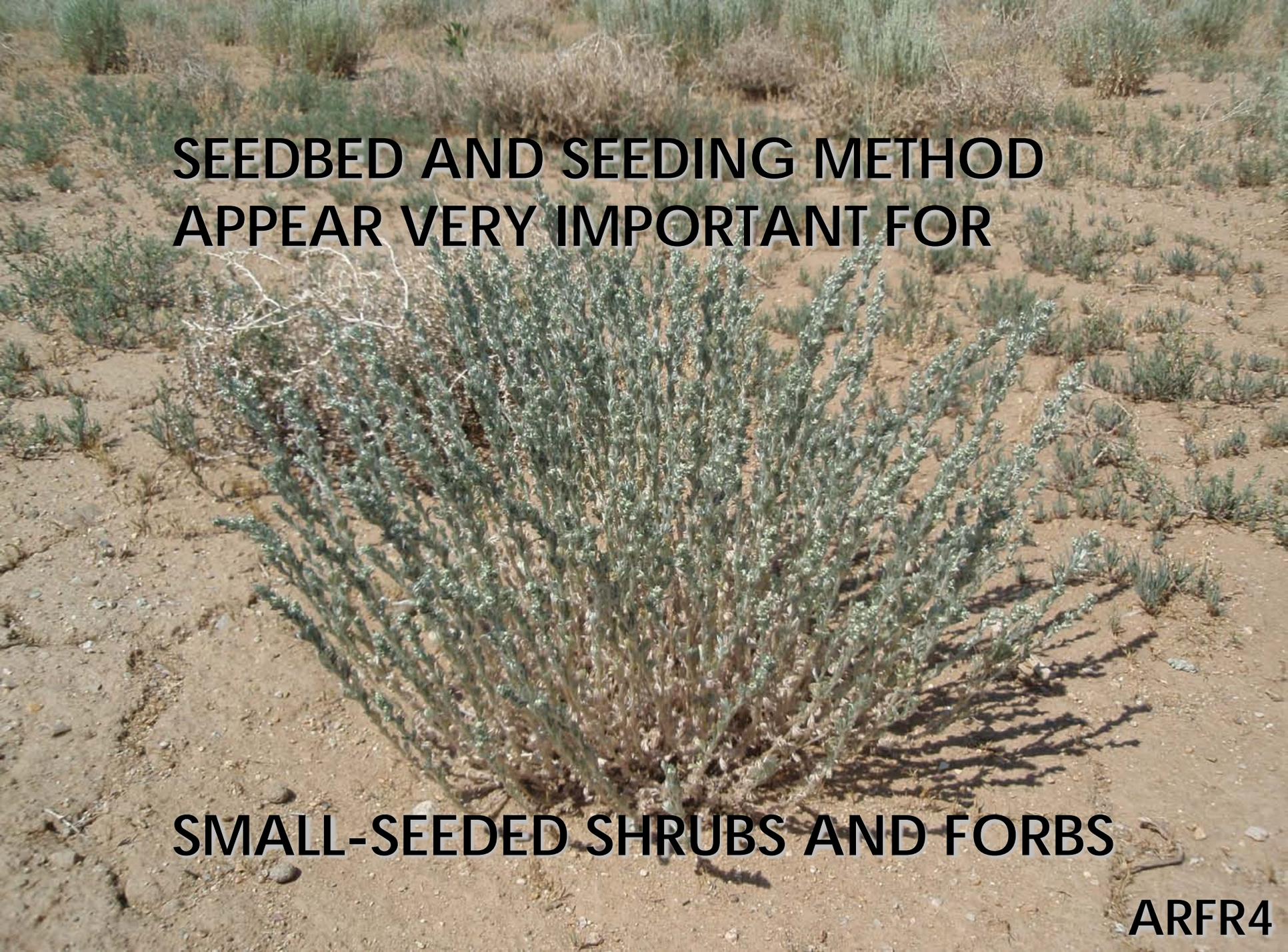
Hatch

OBSERVATIONS

SHRUB DENSITIES...

COULD THERE BE SUCH A THING AS
TOO MUCH OF A GOOD THING?

GRSP



**SEEDBED AND SEEDING METHOD
APPEAR VERY IMPORTANT FOR**

SMALL-SEEDED SHRUBS AND FORBS

ARFR4

**MORE WORK COULD BE DONE
TESTING TIMING OF SEEDING**

**FOR BETTER ESTABLISHMENT OF
SOME FORBS**

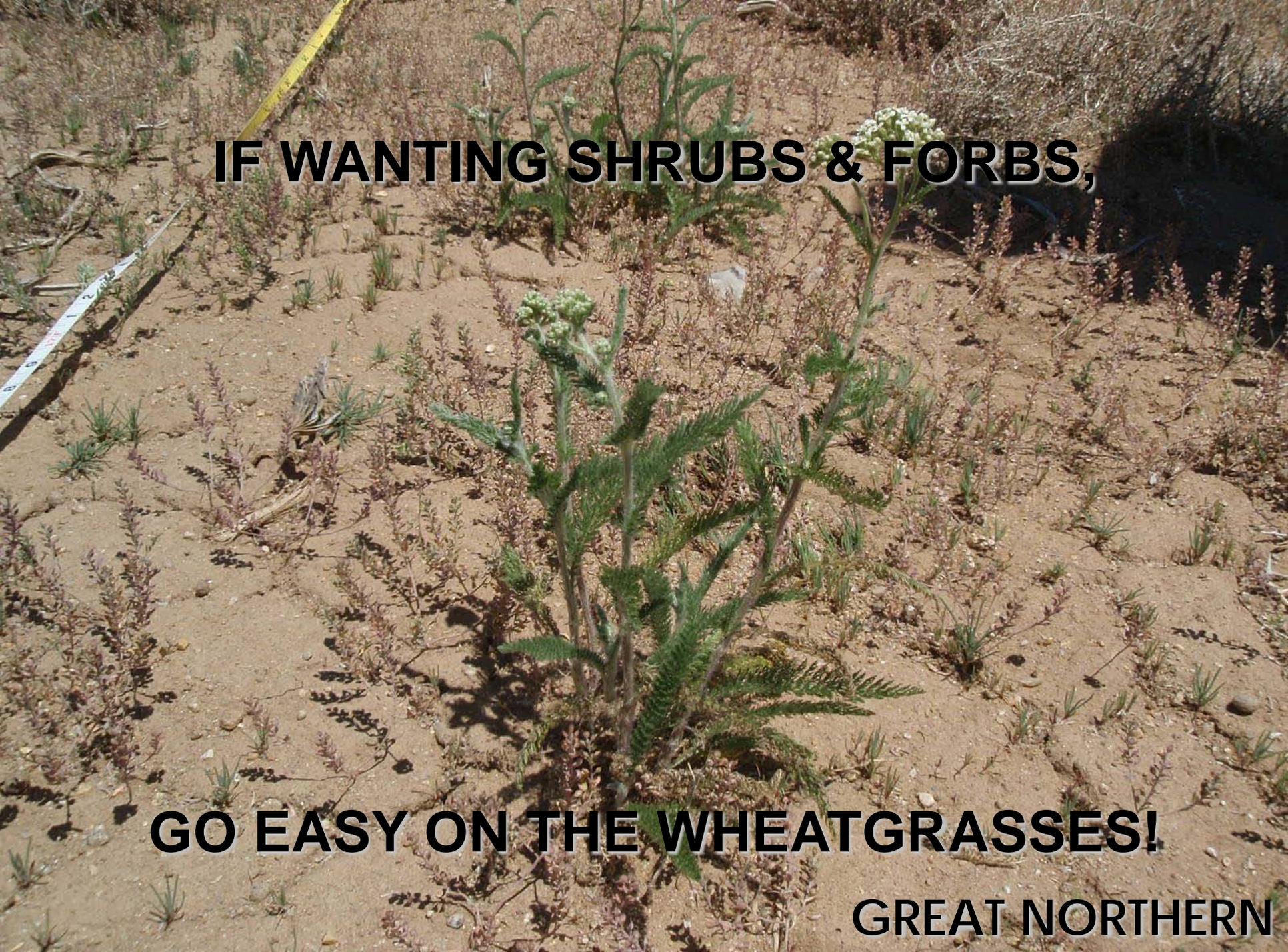
PHHA

**JUST BECAUSE A FORB HAS POOR
OR ONLY TEMPORARY**

**ESTABLISHMENT MAY NOT MEAN IT
IS NOT A VALUABLE RESTORATION**

TOOL

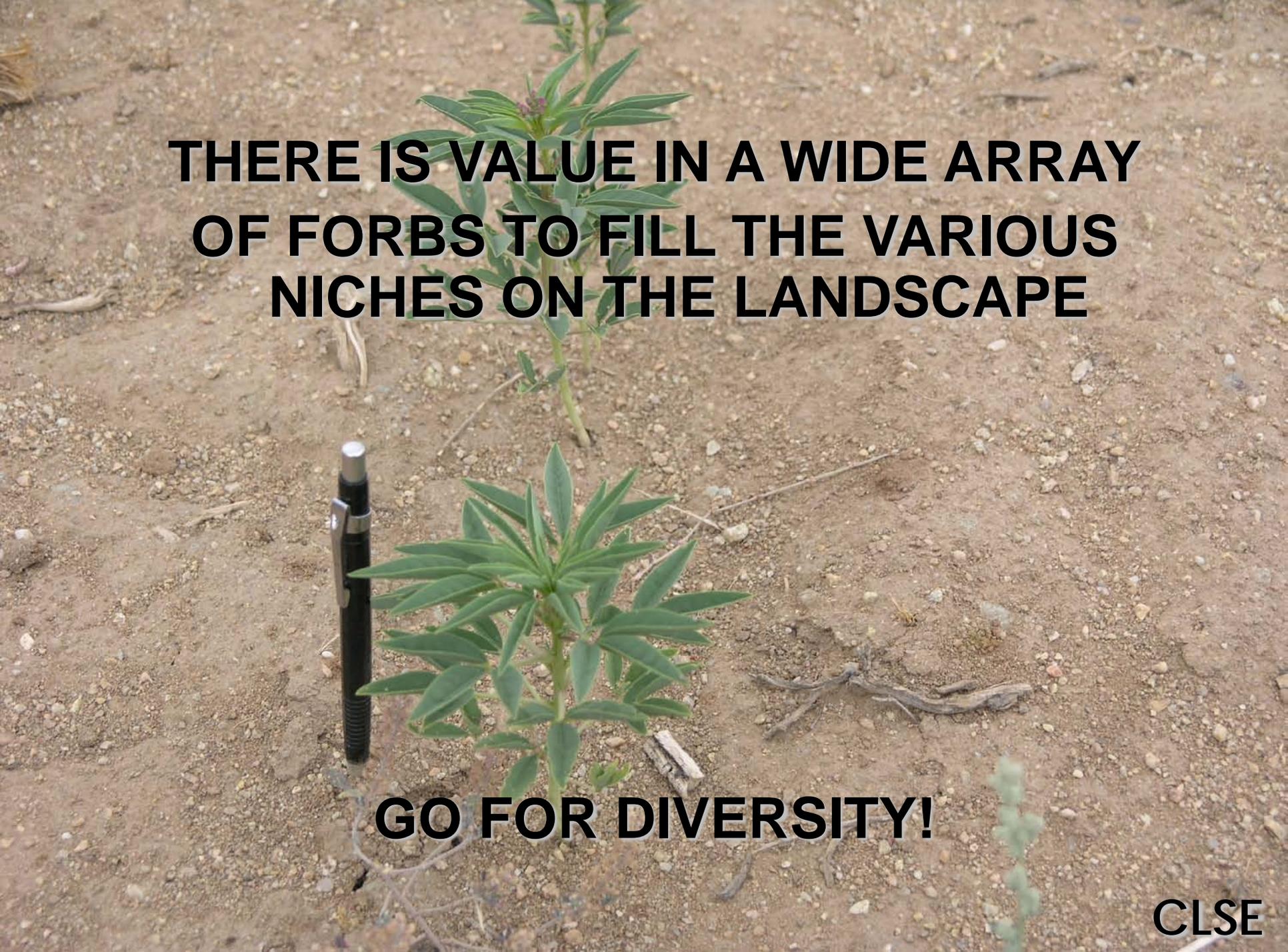
CLEARWATER



IF WANTING SHRUBS & FORBS,

GO EASY ON THE WHEATGRASSES!

GREAT NORTHERN

The image shows two small green plants growing on a sandy, light-brown soil. The plants have several green, lanceolate leaves. A black pen is placed vertically on the ground to the left of the lower plant to provide a sense of scale. The background is a uniform expanse of the same sandy soil with some small pebbles and dried plant matter.

**THERE IS VALUE IN A WIDE ARRAY
OF FORBS TO FILL THE VARIOUS
NICHEs ON THE LANDSCAPE**

GO FOR DIVERSITY!



**PREDATION
PROBLEMS?**

**TRY SLENDER
WHEATGRASS
BUFFERS!**

NEW RELEASES

- High Plains Sandberg bluegrass (2000)
- Northern Cold Desert winterfat (2001)
- Snake River Plains four-wing saltbush (2001)
- Open Range winterfat (2002)
- Old Works fuzzytongue penstemon (2002)
- Maple Grove prairie flax (2003)
- Great Northern western yarrow (2004)
- Copperhead slender wheatgrass (2007)
- Opportunity Nevada bluegrass (2007)
- Continental basin wildrye (2008)

HIGH PLAINS

NEEDS

- **Bottlebrush squirreltail for arid rangelands**
- **Bluebunch wheatgrass for high elevation**
- **Indian ricegrass for clay soils**
- **Scarlet globemallow that works!**
- **Gardner's saltbush that works!**
- **Forbs, forbs, and more forbs!**

QUESTIONS???

