

Status of the *Amaranthus* Seed Collection

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Amaranthus collection

- 3,345 total accessions
- 3,193 (94%) available
- 3,235 (97%) backed up at the NCGRP
- 72 seed orders 2012
- 969 packets distributed 2012
- 512 (15%) accessions distributed 2012
- 2,339 (70%) have permanent PI numbers

National Plant Germplasm System

GRIN (our web site)

<http://www.ars-grin.gov/npgs/>

Images and other data online



PI 477918



638

REF CGRH



SCN *Amaranthus tricolor*

NUM RRC 701

DETA Unknown

ACLY PI 477918 11ncax01 SD



ACLY PI 477918 93ncax01 SD



CM

Diversity in *Amaranthus*

- Grain (three species)
- Vegetable (numerous species)
- Ornamental (four important species)
- Wild (most of the 70 species)



Amaranthus species

- 40 of the estimated 70 *Amaranthus* species
- Most recent *Amaranthus* ×*tucsonensis* from Arizona in 2010 (PI 664490)





Super Dwarf
Amaranthus
caudatus

Plainsman beside a dwarf in 2004





Improved dwarf lines 2013



Amaranth Institute Missouri 2001



- The weeds were not there the previous year
- The harvest was okay, not too many black weed seeds

Crop-weed hybrids



counting weedy off-types



% Crop-weed hybrid progeny

Place	'D136-1'	'Plainsman'
East Lansing, MI	0.2	1.2
Ames NE, IA	0.0	2.0
Ames SW, IA	0.0	50.2
Culver, IN	0.0	0.0
Rochester, IN	2.3	43.6
Urbana, IL	0.7	6.0
Butlerville, IN	0.2	1.5
Columbia, MO	2.4	17.7
Carbondale, IL	15.9	82.7
TOTAL	2.5	24.3

'D136-1' has about 1/10th as many as 'Plainsman'

The long-day growth chamber

2012



Daylength Sensitivity



Two Planting Dates in 2013

June 14 versus August 1



Male Sterility



- Peters and Jain 1987
- Plant breeding Aid
- F_1 hybrid vigor
- Are hybrid seeds wanted?

Green Vegetable and Grain



The End

Guinness World Record 2004



- 15 ft 1 in (4.61m)
- 2007: 27 ft 10 in, (8.48 m) Jesse Eldrid of New York

Biomass



- Dr. Muchna, Czech Republic
- Has 15 t/ha
- Wants 20 t/ha economic threshold for electric power generation
- Breed to increase dry mater from 15%

‘Pillar Orange’ and ‘Pillar Red’



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Gomphrena nealleyi







F₁ 100% Male Sterile from PI 568125 X K432



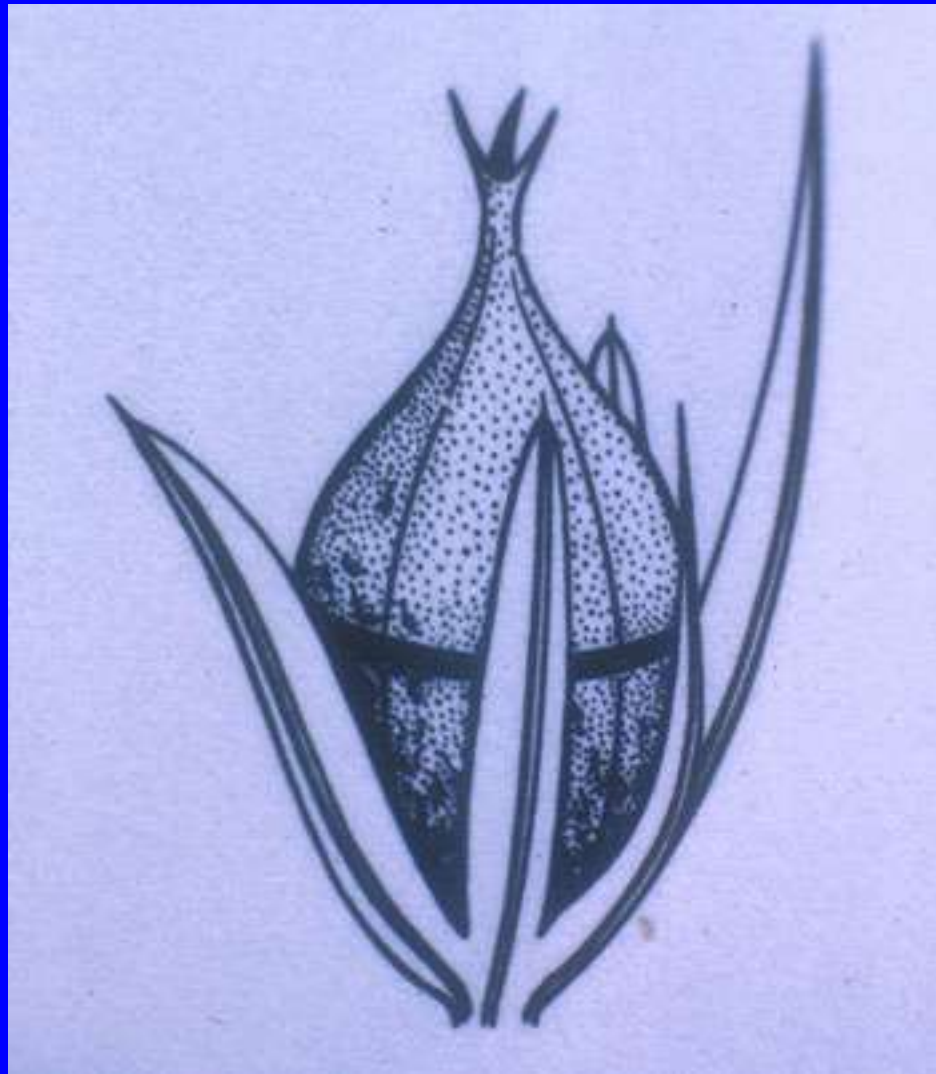
- Restore fertility?

Spaced Nursery 2003



- Only short plants selected
- Bags for self pollination

Shattering



Stem boring insects



ACCESSION:

PI 603896

PAR LOT: 98ncai01

INC LOT: 03ncax01

TAXON:

Amaranthus tricolor



Amaranthus tricolor disease

Phomopsis amaranticola



- Studied by Charlie Block
- Stem boring insects are also present





Tall Biomass DB 98246

dwarf 2008

