

Status of the *Amaranthus* Seed Collection

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Outline

- Who's seed collection, how large and why
 - Issues: purity, documentation, progress
 - Features of our GRIN database: seed weight data

Hot amaranth topics: Geosmin, leaf protein,
'Red Garnet' microgreens and cover crop,

Breeding projects: male sterility, dwarves,
Iowa State University releases

National Plant Germplasm System
United States Department of
Agriculture, Agricultural Research
Service

GRIN (our web site)

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

- Preserve the genetic diversity of plants
- We distribute germplasm world wide, free of charge for research and development





Amaranthus collection, 2015

- 3,338 total accessions
- 3,210 (96%) available
- 3,244 (96%) backed up at the NCGRP
- 57 seed orders 2014
- 1,557 packets distributed 2014
- 929 (29%) accessions distributed 2014

Improving the online notes and fixing old errors



Crop-weed hybrid purity issues

Brenner, D.M., W.G. Johnson, C.L. Sprague, P.J. Tranel, and B.G. Young. 2013. Crop-weed hybrids are more frequent for the grain amaranth 'Plainsman' than for 'D136-1'. *Genetic Resources and Crop Evolution*. 60:2201-2205.



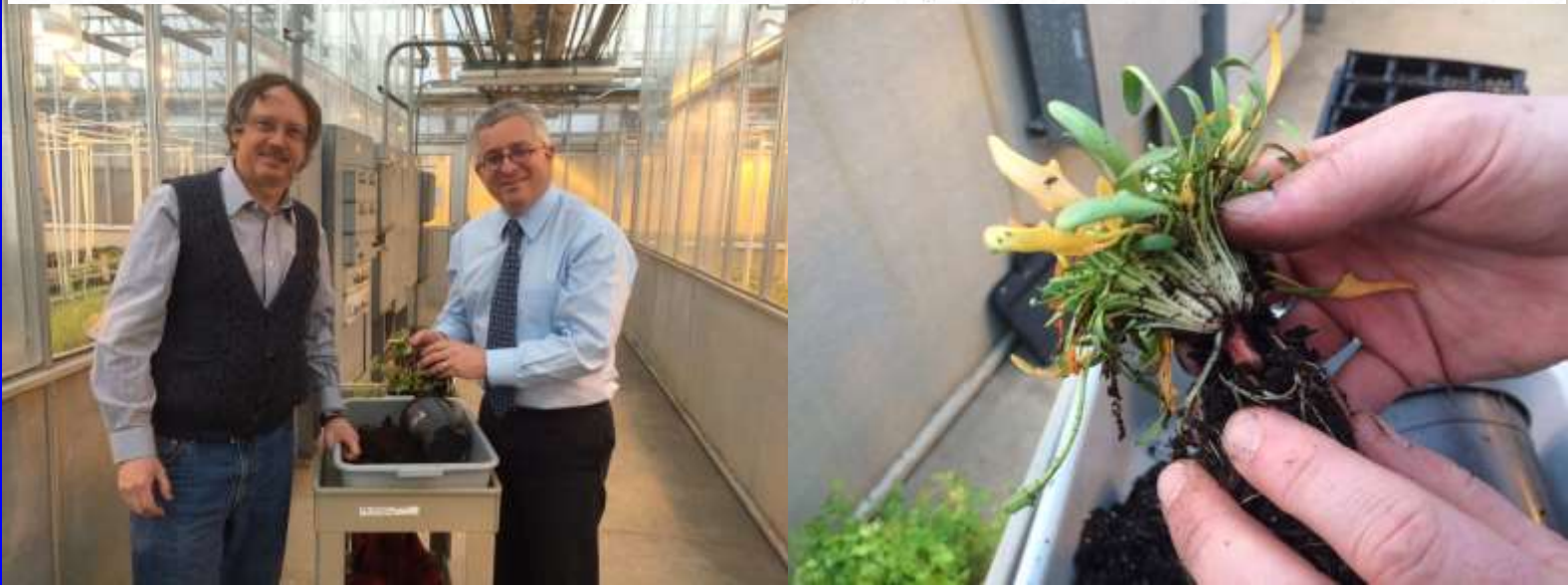
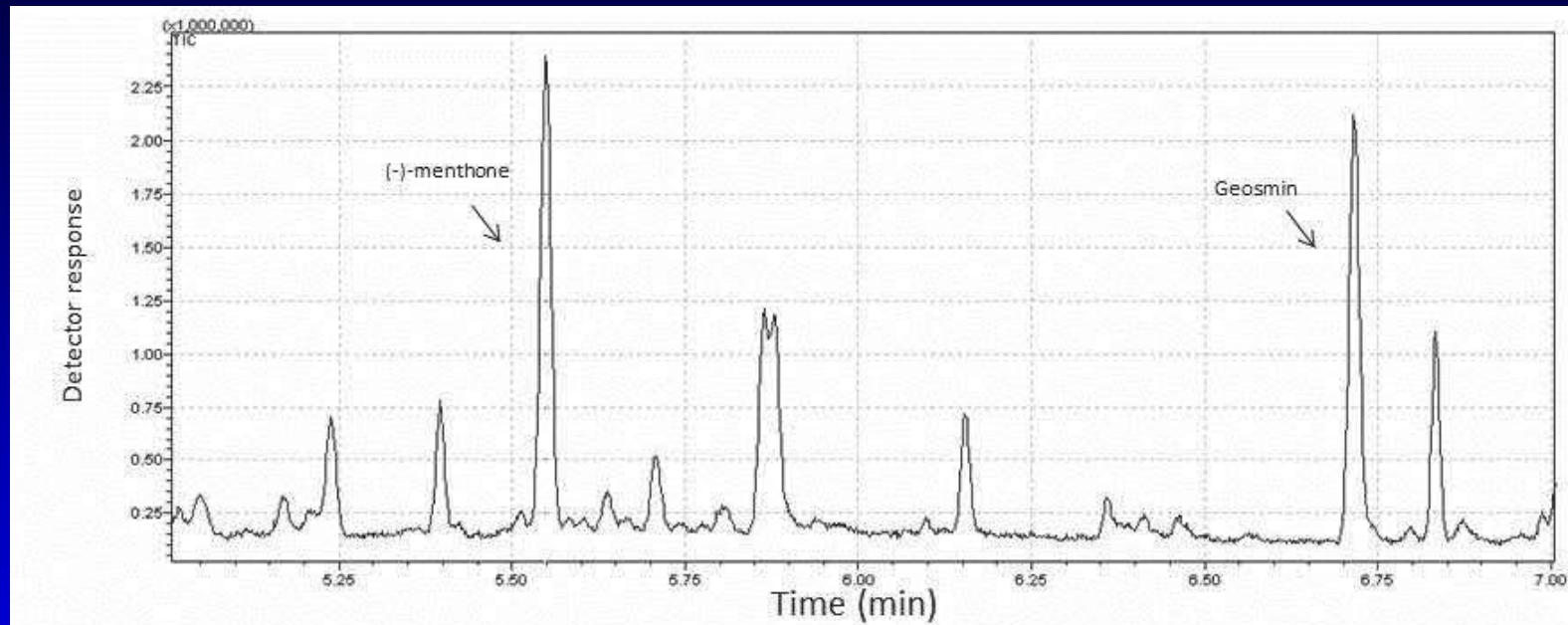
Hundred-Seed Weight in GRIN amaranth grain species

- 8,598 Observations on 2,680 accessions
- 363 accessions have a seed lot with \geq 0.1 g/100 seeds
- 37 accessions have more than one seed lot with \geq 0.1 g/100 seeds

Large seeded PI 636182
'Don Armando'



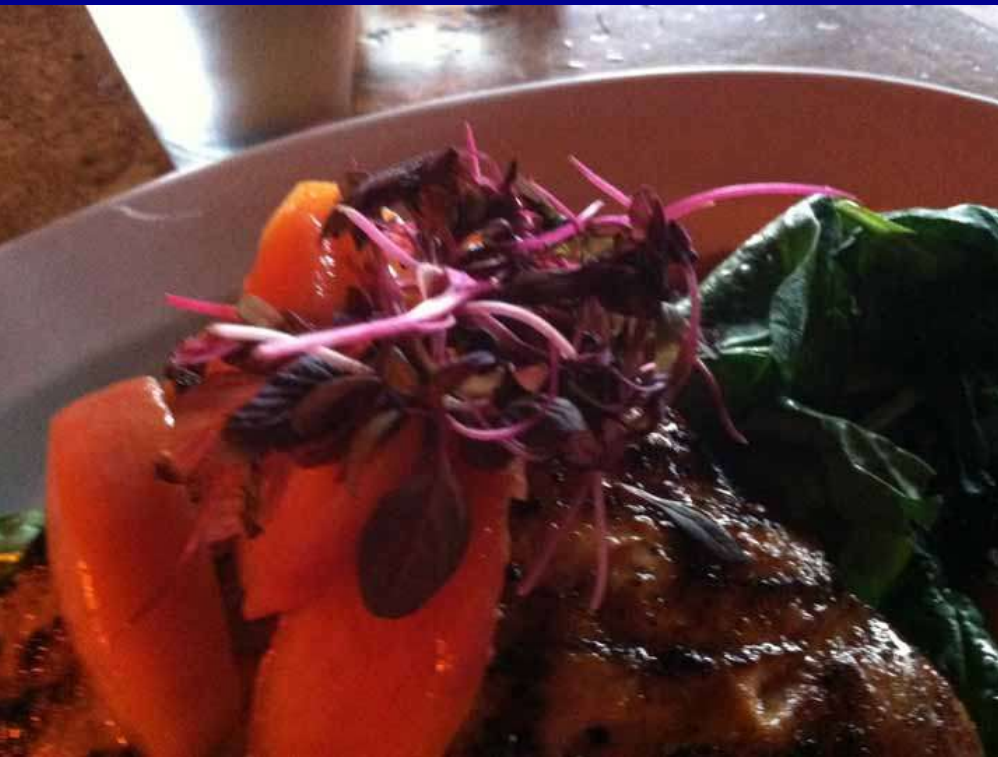
Geosmin flavor in beets and related taxa Irwin Goldman



'Red Garnet' microgreens and cover crop

- Seed Savers inventory between 1998 and 2004
- market type, and the new standard

Garnish



Joel Gruver's cover
crop experiment



Quantity and quality of leaf protein

Since AI last met in 2013

- Andini, R., S. Yoshida, and R. Ohsawa. 2013. Variation in protein content and amino acids in the leaves of grain, vegetable, and weedy types of amaranths. *Agronomy* 3:391-403.
- Achigan-Dako, E. G., O. E. D. Sogbohossou, and P. Maundu. 2014 Current knowledge on *Amaranthus* spp.: research avenues for improving nutritional value and yield in leafy amaranths in sub-Saharan Africa. *Euphytica* 197:303-317.

Chinese amaranth root use



Male sterility



PI 568125
383
Anacardium occidentale
C000000

breeding for dwarf amaranths



2015 field compare old and new seeds



Is this dwarf spinach-like
amaranth useful?



Earlier spike type



Big Hearted amaranth



The End