

# **Current and Future Objectives of the NMSU Onion Breeding Program**

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# Today's presentation

- ❑ Current objectives of program
- ❑ New onion varieties
- ❑ Future objectives





# Filling harvest gaps

- ❑ Later maturing fall-seeded varieties that mature the same time as transplants
- ❑ More white and red varieties needed to fill harvest gaps



# Pink root resistance

- ❑ Pink root - a major disease in NM
- ❑ Reduces bulb size and yield
- ❑ Resistant varieties are currently available
- ❑ Will continue to develop PR resistant varieties



# Bolting resistance

- ❑ Bolting susceptible varieties form seedstalks if planted too early
- ❑ Late planting can result in winter injury
- ❑ Bolting resistant varieties
  - ❑ Plant earlier
  - ❑ Less bolting
  - ❑ Less winter injury
  - ❑ Potential higher yield



# Low pungency

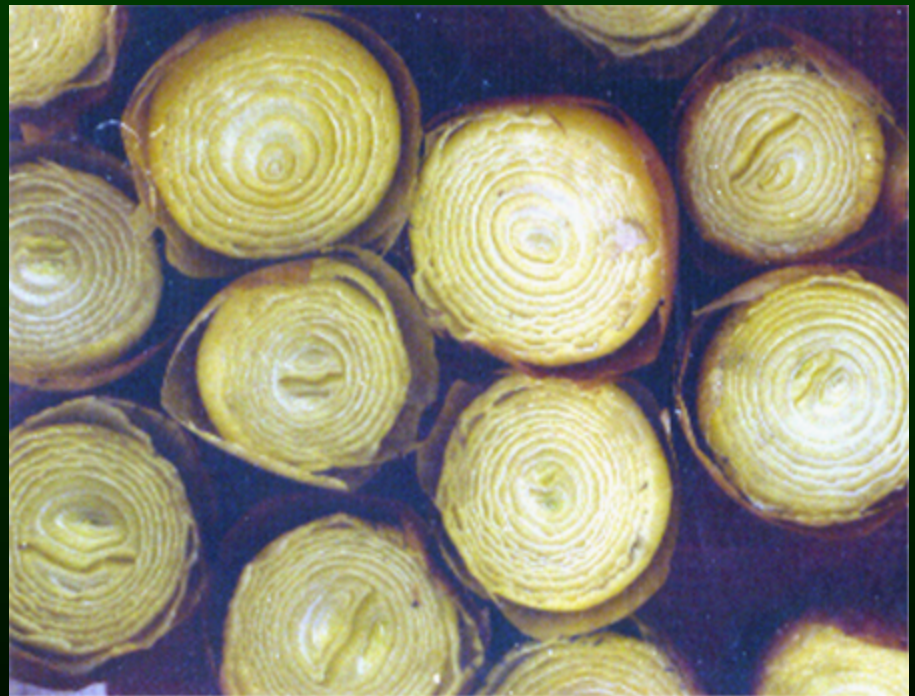
- ❑ Low pungency onions marketed as sweet onions
- ❑ Potential for higher returns
- ❑ Lack of varieties
- ❑ New varieties have extended harvest period
- ❑ Fill in harvest gaps





# Ring processing - % single centers

- ❑ More NM onions being used for ring processing
- ❑ Single center - single growing point in center of onion
- ❑ 85% single centers desired
- ❑ Few fall-seeded varieties with high single centers
- ❑ Developing highly single centered varieties





# New 'NuMex' onion varieties

Variety	Year released
'NuMex Arthur'	2000
'NuMex Chaco'	2000
'NuMex Freedom'	2000
'NuMex Snowball'	2000
'NuMex Crimson'	2002
'NuMex Solano'	2002

# ‘NuMex Chaco’

- ❑ Fall-seeded, short-day
- ❑ Open-pollinated, early-maturing
- ❑ Yellow, grano-type
- ❑ Excellent bolting & pink root resistance
- ❑ Late May maturity
- ❑ Firm bulbs
- ❑ 80-85% single centers



# ‘NuMex Snowball’

- ❑ Spring-seeded, intermediate-day
- ❑ Open-pollinated, late maturing
- ❑ Round, white
- ❑ July 25 - August 5 maturity
- ❑ Hard bulbs
- ❑ Excellent pink root resistance
- ❑ Clean white scale color
- ❑ 55-60% single centers
- ❑ Lockhart Seeds, Inc.





# ‘NuMex Freedom’

- ❑ Fall-seeded, intermediate-day
- ❑ Open-pollinated, late maturing
- ❑ Yellow, grano-type
- ❑ June 25 to July 1 maturity
- ❑ Low pungency
- ❑ High yield, large bulbs
- ❑ Excellent bolting and pink root resistance
- ❑ No other sweet onion at this time



# ‘NuMex Arthur’

- ❑ Spring-seeded, intermediate-day
- ❑ Open-pollinated, late maturing
- ❑ Round, yellow
- ❑ Low pungency
- ❑ July 23 to Aug. 1 maturity
- ❑ High yield, large bulbs
- ❑ Excellent bolting and pink root resistance
- ❑ No other sweet onion at this time
- ❑ Lockhart Seeds Inc., Helena





# ‘NuMex Crimson’

- ❑ Fall-seeded, short-day
- ❑ Open-pollinated, early-maturing
- ❑ Red, flat-globe
- ❑ 70-80% single centers
- ❑ Purple internal & external color
- ❑ Excellent bolting resistance
- ❑ As compared to ‘Cardinal’ on pink root ground
  - ❑ Better pink root resistance
  - ❑ Lower Fusarium basal rot
  - ❑ Higher yields



# ‘NuMex Solano’

- ❑ Fall-seeded, intermediate-day
- ❑ Open-pollinated, late maturing
- ❑ Round, white
- ❑ June 13 to 21 maturity
- ❑ Hard bulbs
- ❑ Excellent bolting & pink root resistance
- ❑ Clean white scale color, resists greening and staining
- ❑ 70-80% single centers
- ❑ Bids accepted until March 31



# Variety trials

- ❑ Fall-seeded, fall-transplanted, spring-seeded
- ❑ 'NuMex' varieties, NMSU experimental lines, commercial varieties
- ❑ Field day - June 13, 2002
- ❑ Variety trial reports
- ❑ NMSU onion breeding homepage - [onion.nmsu.edu](http://onion.nmsu.edu)





# Future objectives



# Variety development and cultural practices for mechanical harvesting

- ❑ Mechanical harvesting less costly than hand harvesting
- ❑ Other short-day regions mechanically harvesting onions
- ❑ Mechanical harvesting being used in valley
- ❑ Most onion varieties unsuitable for mechanical harvesting
- ❑ New varieties and modified cultural practices needed





# Higher nutritional content - quercetin

- ❑ High lycopene tomatoes, high beta-carotene carrots
- ❑ Increased demand, higher returns
- ❑ Onions - high quercetin levels - excellent source
- ❑ Quercetin - anti-oxidant, prevents cancer
- ❑ High quercetin variety development



# Fusarium basal rot resistance

- ❑ Severe onion disease in NM
- ❑ No FBR resistance in short-day varieties
- ❑ Screening onion germplasm for resistance levels
- ❑ Incorporate resistance into new varieties
- ❑ Select and develop resistant varieties



# Hybrid variety development

- ❑ Have developed inbred lines
- ❑ Evaluating hybrid lines
- ❑ Will release hybrid onion varieties



# Thanks for your support!

- ❑ New Mexico Dry Onion Commission
- ❑ New Mexico onion growers
- ❑ New Mexico Agricultural Experiment Station
- ❑ New Mexico Crop Improvement Association



# Fabian Garcia Research Center





# Ray Muhyi - Onion Senior Research Specialist



# Onion Program Graduate Students





# Onion Program Undergraduate Students





# Dr. Joe Corgan





