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

<table>
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<tr>
<th>Variety</th>
<th>Year released</th>
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<tr>
<td>‘NuMex Arthur’</td>
<td>2000</td>
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<tr>
<td>‘NuMex Chaco’</td>
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<tr>
<td>‘NuMex Freedom’</td>
<td>2000</td>
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<td>‘NuMex Snowball’</td>
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<tr>
<td>‘NuMex Crimson’</td>
<td>2002</td>
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<tr>
<td>‘NuMex Solano’</td>
<td>2002</td>
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‘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
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 - quercitin

- High lycopene tomatoes, high beta-carotene carrots
- Increased demand, higher returns
- Onions - high quercitin levels - excellent source
- Quercitin - anti-oxidant, prevents cancer
- High quercitin 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