

Breeding for resistance and quality in desert lettuce

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Recent Research Projects

Focus is on disease resistance

- **Powdery mildew**
- **Big vein**
- **Downy mildew**
- **Tipburn**

Powdery mildew resistance

Screening trials to identify resistant sources

- **Yuma- Winter 1999, Winter 2000**
- **Salinas- Fall 2000**

Identified 24 cultivars as resistant-

Crisphead- Imperial 850

**Butterhead- Big Boston, Cindy, Clarion, Corelli, Sabine, Bremex,
Dark Green Boston, White Boston, Margarita, Arctic King,
Soraya, Amanda Plus, Dynamite, Waldmann's Green**

Leaf- Salad Bowl, Prizehead, Two Star, Big Red, Red Oakleaf,

Romaine- Darkland, Parris Island

Other- Balady Aswan Red, Balady Aswan Green

Powdery mildew resistance

Progress in breeding

- Crosses made with Winterhaven and Darkland
- Planted F2 populations in Yuma 2001
 - Winterhaven x Big Boston
 - Winterhaven x Clarion
 - BAR x Winterhaven
 - (Darkland x Clarion, Soraya, BAR)
- Planted F3 families in Yuma 2002
 - Will make selections in F3 families
- Backcross to Winterhaven for improved heading type

Big vein resistance

Big vein is a midwinter problem in the desert, spring problem on the coast

- **Tested big vein resistant materials from Salinas in desert; they are also resistant in Yuma**
- **Crossed Winterhaven (sus) x Pacific (res)**
 - **Grew F2 population in Yuma, 2001-2**
 - **Selected 26 big vein free plants with Winterhaven type**
 - **Planted F3 families 2002 in Yuma**

Tipburn resistance

Tipburn primarily a problem March and April

- Tiber was released in 1995
 - Highly resistant to tipburn but has open head characteristic of coastal types
- Went back to original cross, Vanguard 75 x Salinas F3 families
 - Planted Yuma 2001
 - Identified four families with desert head type and high level of tipburn resistance
 - Replanted Yuma 2002 for re-evaluation and selection
 - Tested for LMV resistance- one line is resistant, one segregating