Onion Production

- IDEA-NEW, May, 2010
Onion Production

• Onion is cool season crop
• The main production areas in ER are Surkrod, Kama and Rhodat districts
• Onions are planted in ER during the Fall-winter season
  - September - Mid-October
Climate

• Bolting
  - Length of day
  - Temperature

• High temperatures and long photoperiod are essential for bulb formation
  - Bulbing is accelerated with increasing temperatures
  - High temperature affect bulb shape

• Onion needs two types of temperature
  vegetative growth (13 – 24 °C)
  For bulb formation (16 – 21 °C )
Soils

- Onion can be cultivated in wide range of soils
  - Sandy-loam or a silt-loam is the best.
- The soil should be rich in humus,
- Onions are sensitive to high acidity,
- The optimum pH is 5.8-6.5.
Cultivars

- **Onion cultivar are grouped on:**
  - **Short,**
    - 12 – 13 h, mild, soft-fleshed and suitable for storage
    - Include Grano-Granex type
  - **Intermediate,**
    - 13.5 – 14.5 h, soft-fleshed and used for fresh trade
  - **Long-day type**
    - Over 14.5 h, yellow, white and red globes cultivar
## Cultivars

<table>
<thead>
<tr>
<th>Day length</th>
<th>Color</th>
<th>Pungency</th>
<th>Representative cultivars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>Brown</td>
<td>Sweet</td>
<td>Awahia</td>
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<tr>
<td></td>
<td>Red</td>
<td>Sweet</td>
<td>Red Granex</td>
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<tr>
<td></td>
<td>Red</td>
<td>Pungent</td>
<td>Red Creole</td>
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<tr>
<td></td>
<td>White</td>
<td>Sweet</td>
<td>White Granex, Crystal Wax</td>
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<tr>
<td></td>
<td>Yellow</td>
<td>Sweet</td>
<td>Grano, Granex</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Pungent</td>
<td>Yellow Creole</td>
</tr>
</tbody>
</table>
Cultivars

• For Afghanistan, short day Onion varieties are recommended
• Onions varieties planted in ER
  - OP
    • Mazina red,
    • Super Swat
    • Swat - 1
    • Super stone
    • Red Creole
    • Yellow Spanish Grano
  - Hybrid
    • Red Crown
    • Red Coral
Planting Techniques

• For direct seeding, 5 kg per Jerib, plants are thinned
• Transplant common method used in ER
  - 1.2 kg per Jerib for transplanting
  - Transplants have 3 - 5 leaves well formed for the time of transplant
  - Transplants leaves are pruned during growth prior to field setting
Planting Methods

• Raised bed vs. Basin (traditional)
  - Varieties,
    • Texas Early Grano
    • Red onion (Nascred – Red magic)

• Results:
  - Texas Early Grano
    • Average yield on raised bed, 11,600 kg/jerib
    • Average yield on basin, 9,000 kg
    • Balance 2.6 MT
  - Red onion (Nascred – Red Magic)
    • Average yield on raised bed: 8,000 kg/jerib
    • Average yield on basin: 6,200 kg/jerib
    • Balance 1.8 MT
Planting Methods Compared

Traditional

Recommended
RECOMMENDED METHOD
Water Management

• Onions require uniform moisture throughout the growing season.
• Fields that suffer growth retardation may produce excessive numbers of doubles or splits, reducing the number of Grade 1 bulbs.
• Furrow irrigation is generally used.
• Onions at the bulbing stage utilizing substantial amounts of water
Fertilization

- Fertilizer requirements according to,
  - soil type
  - previous fertilizer application
- 5 - 8 tons of FYM/jerib
- 45 Kg Urea/jerib
- 40 Kg DAP/jerib
- 20-25 Kg Potassium Sulfite/jerib
Weed Control

- The field should be kept weed-free, especially in the initial stages of growth.
- Cultivation, must be shallow to avoid root damage
- A combination of a herbicide application (3 days after transplanting) and hand-weeding 45 days later keep the crop weed-free.
  - Fluchloralin or Oxyfluorfen (15ml/10 liters)
Thrips

• Minute insects that cut or "rasp" the epidermis of leaves or stems and suck the plant sap resulting in white blotches on leaves.
• Severe infestations result in leaf blasting and collapse.
• Infestations are more severe in dry seasons, and entire fields may be destroyed.
• Affected leaves show silvery blotches which later turn a brownish color. The leaves get distorted from the tips downwards and the plant ultimately wilts and dries out.

Spray Diazinon, 7 - 10 days interval
Onion Maggot

- The flies lay their eggs on old leaves or on the soil and the larvae enter the soil and damage the onion bulb.
- Infested plants turn yellowish brown and finally dry up.
- Control
  - Follow a regular crop rotation
  - Thimet should be applied to the soil before transplanting.
Damping-off

• High soil moisture and moderate temperatures along with high humidity especially in the rainy season leads to the development of the disease.

• Two types of symptoms are observed:
  - *Pre-emergence damping-off*: seed and seedlings rot before they emerge;
  - *Post-emergence damping-off*: The pathogen attacks the collar region of seedlings on the surface of soil.

• Control:
  - Use seed treated with fungicides (Thiram), change field nursery location every year, make fungicide drench application (Thiram) to the nursery top soil.
Purple Blotch

- Attack onions, garlic, shallot and other Allium crops
- Small white sunken spots develop on leaves, under moist conditions the spots enlarge and turn purple
- Control
  - Long rotation with non related crops, good drainage, lowering densities, spray Mancozeb and Chlorothalonil
Downy Mildew

• Attacks young plants, appearing as white powder, usually confined to the oldest leaves of young plants.
• A white mold develops rapidly in cool damp weather and progresses down the sheath, and plants eventually fall over and dry up
• Mancozeb, weekly interval until bulbins begin
Neck rot

- Infection takes place in the field, but become evident during storage
- Moist conditions before and during harvest, while onions are cured in the field = more severe infection
- Softening of the scales, which appears water soaked
- Control:
  - Dry onions in the field for 2 days
  - Bulbs should be further dried in shade for 10-15 days before storage
Neck Rot
Bacterial Soft Rot

- Problem in many vegetables during storage
- Develop in Onions after a heavy rain or after irrigation with contaminated water
- Control
  - Harvest on time
  - Handling with care
  - Storage on cool dry areas
Physiological isorders

• Greening
  - Bulbs are exposed to sunlight for an extended period of time

• Sunscald
  - Will occur at the shoulder of the bulbs when harvested is delayed

• Translucent scale
  - A disorder similar to freeze injury. High temperatures end of the cycle + harvest delayed + cool storage favor development

• Splitting and doubling of bulbs
  - Adverse climate conditions and nutrients imbalance
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Harvest and Handling

• Onions for bunching
  - Can be harvested from pencil size until they have proper bulb size

• Onions for storage
  - Onions intended for storage should be harvested when 50 to 80% of the tops have fallen over and bulbs are mature with a thin neck.

• To harvest, first a knife or lifter is drawn under a bed or row, cutting roots and loosening the soil.

  Harvested bulbs are kept in the field for 2-3 days before being cured.
Harvest and Handling

• Curing
  - Allow natural dormancy to develop and to dry onion sufficiently
  - A properly cured onion will have a dry shrunken neck and dry outer scales.
  - Fully mature bulbs are harvested and cured by exposure to temperatures up to 35° in low (> 50 %) relative humidity.
Onion Harvesting, Red Creole
Marketing and Storage

• **Marketing**
  - Onions normally are shipped in 22.7-kg mesh bags. The bulbs are graded by size, with jumbo and pearl sizes frequently used by processors. Those intended for international trade are packed in 25-kg bags.

• **Storage**
  - Onions should be mature, cured, dried, and free from injuries and diseases before storage in a well ventilated area.
Onion Marketing in ER