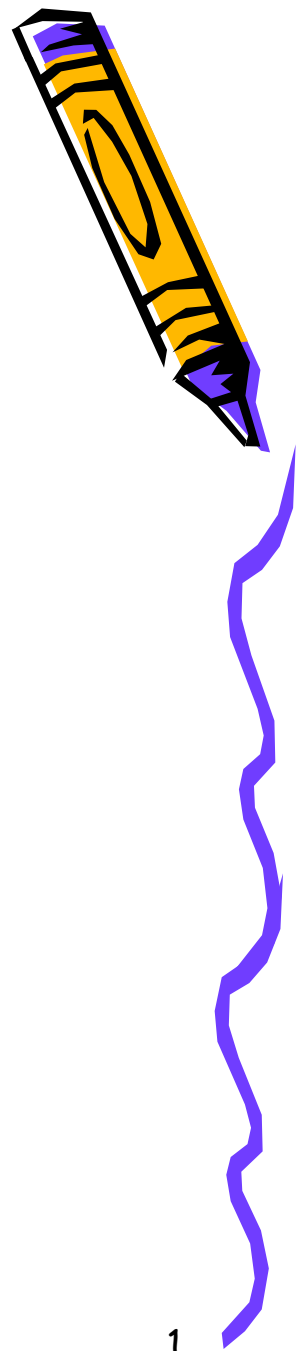


# Onion Production

- IDEA-NEW, May, 2010



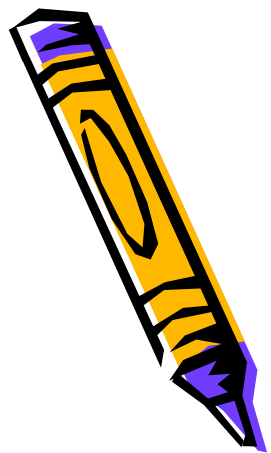
# Onion Production

- 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
  - For 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.



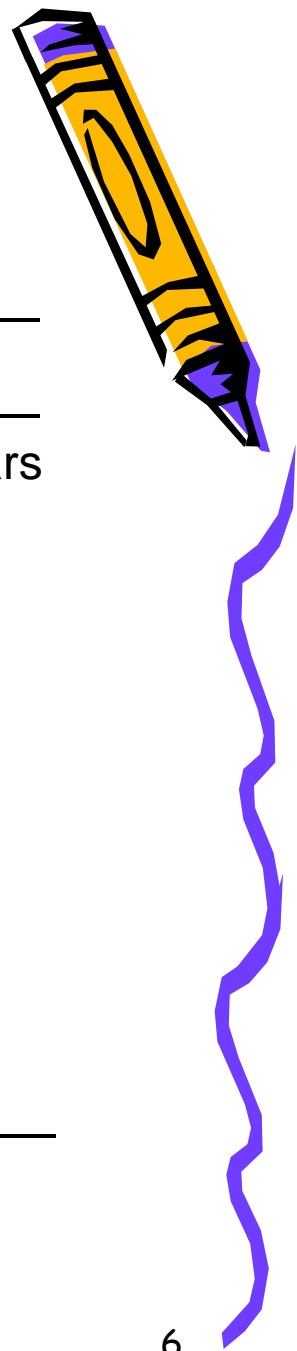
# Cultivars



- 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



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Types of onion cultivars (open-pollinated cultivars are underlined)

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Day length	Color	Pungency	Representative cultivars
Short	Brown	Sweet	<u>Awahia</u>
	Red	Sweet	Red Granex
	Red	Pungent	<u>Red Creole</u>
	White	Sweet	White Granex, <u>Crystal Wax</u>
	Yellow	Sweet	<u>Grano</u> , Granex
	Yellow	Pungent	<u>Yellow Creole</u>

---



# 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



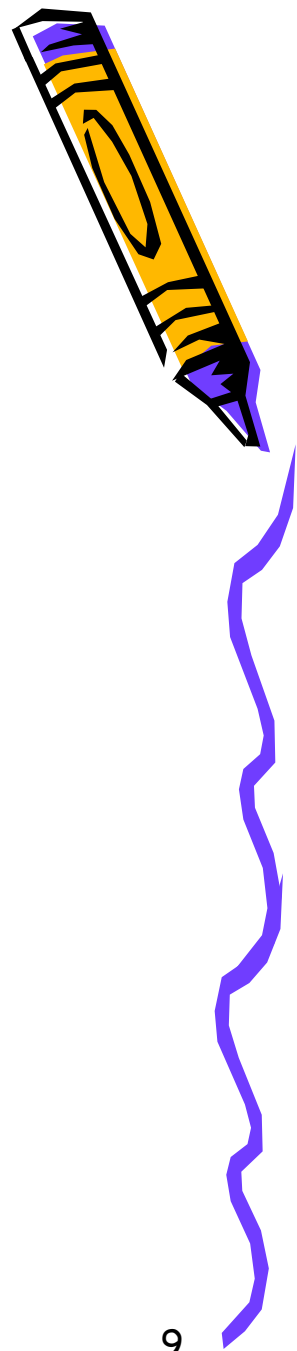
- For direct seeding, 5 kg per Jerib, plants are thinned
- Transplant common method used in ER
  - 1.2 kg per Jerib for transplanting
  - Transplants have 3 - 5 leaves well formed for the time of transplant
  - Transplants leaves are pruned during growth prior to field setting





# 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

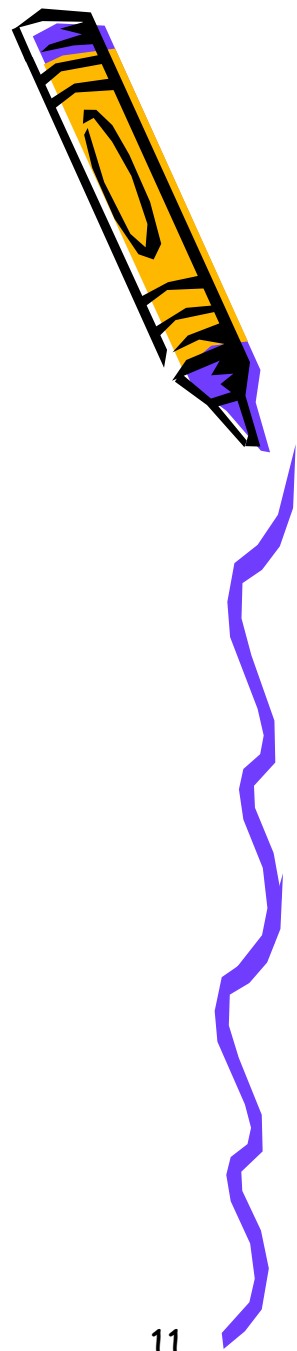


Recommended

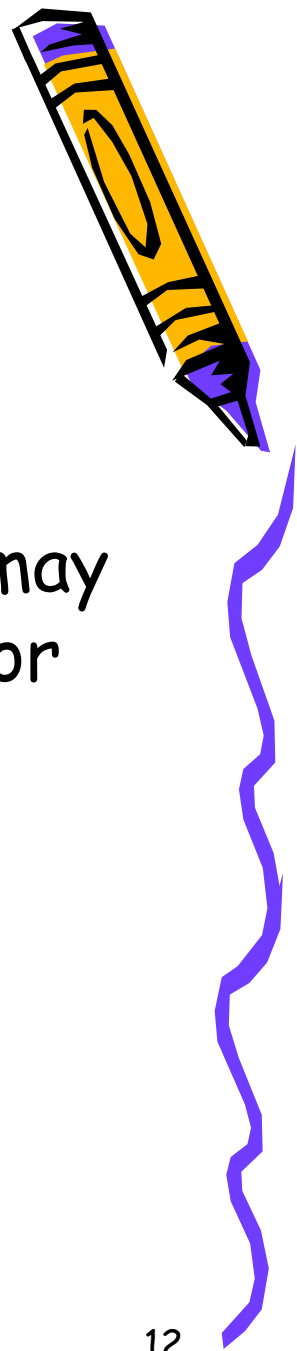




# RECOMMENDED METHOD



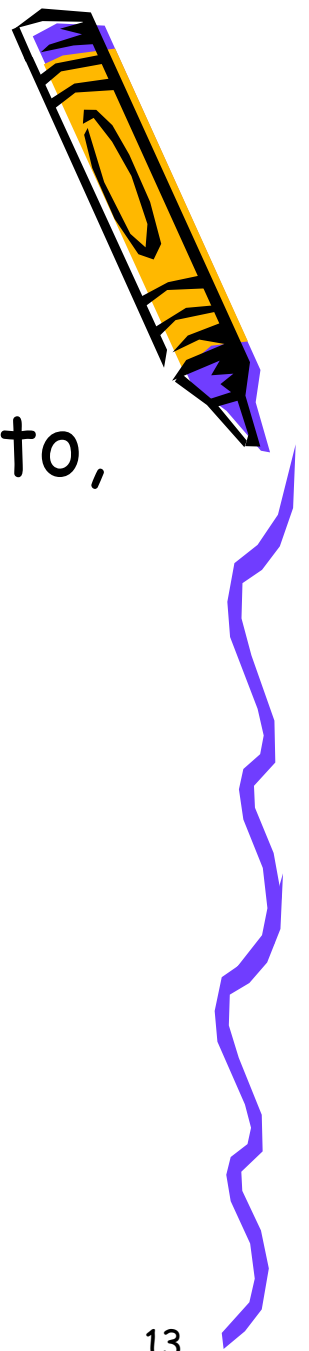
# Water Management



- 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

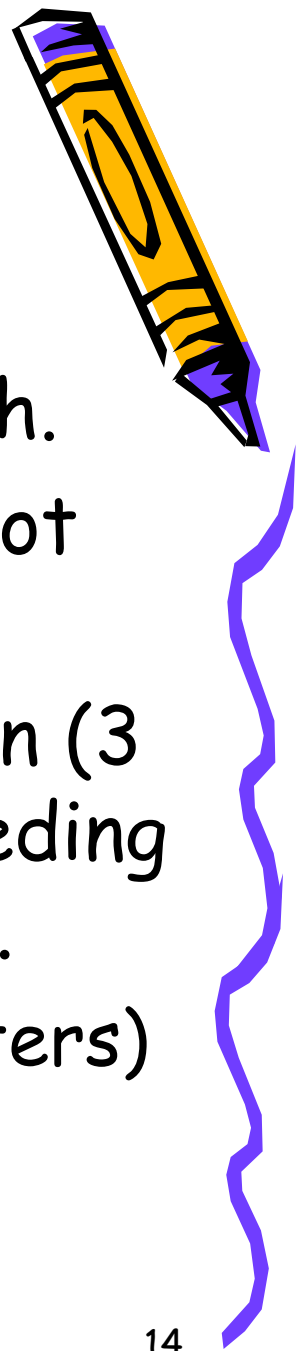


- Fertilizer requirements according to,
  - soil type
  - previous fertilizer application
- 5 - 8 tons of FYM/jerib
- 45 Kg Urea/jerib
- 40 Kg DAP/jerib
- 20-25 Kg Potassium Sulfite/jerib

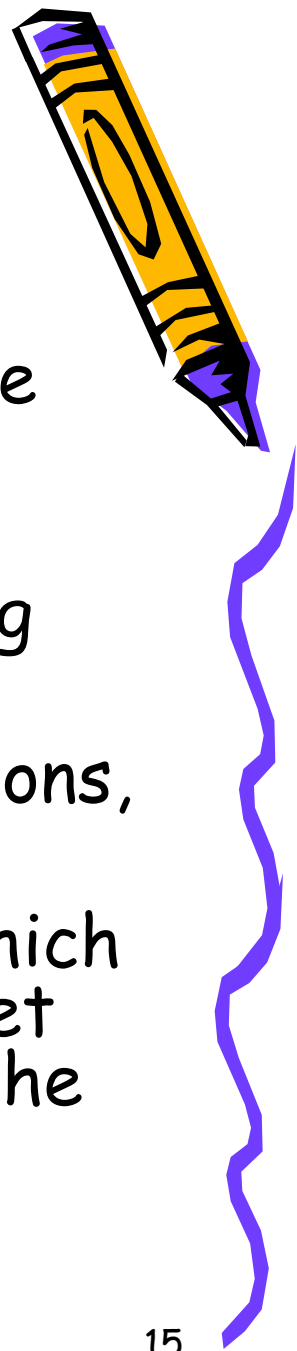


# Weed Control

- 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





# Thrips



UC Statewide IPM Project  
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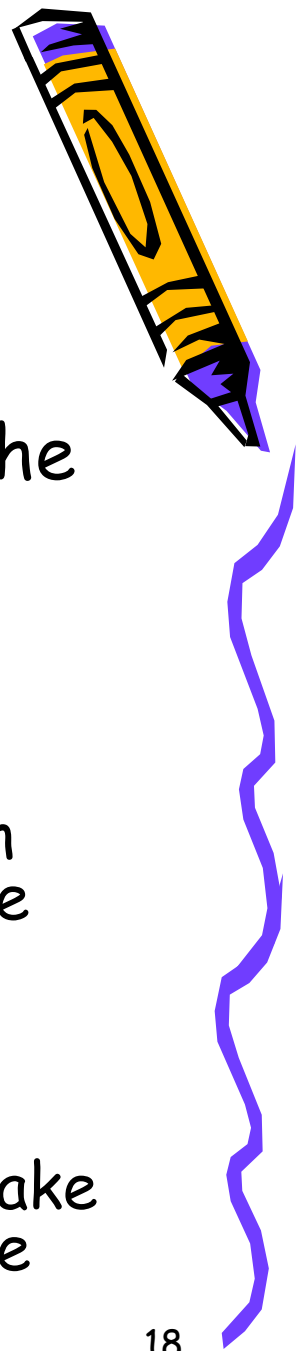
# Onion Maggot



- 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 disorders



- 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





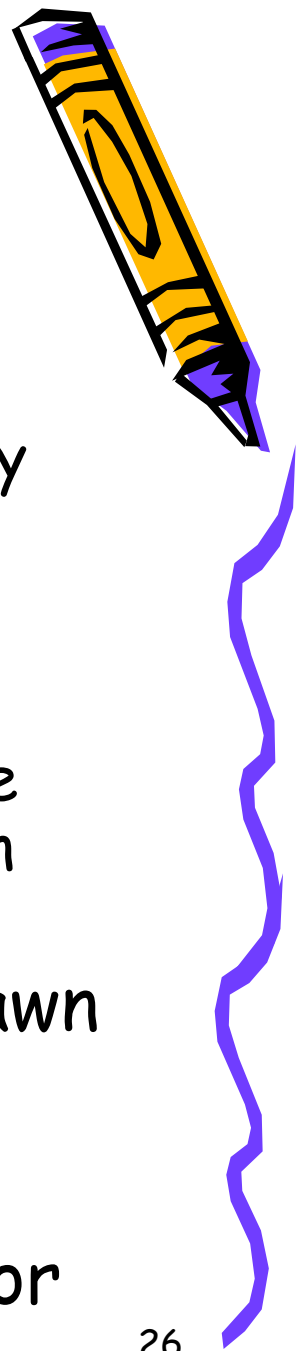
# Physiological Disorders



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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.

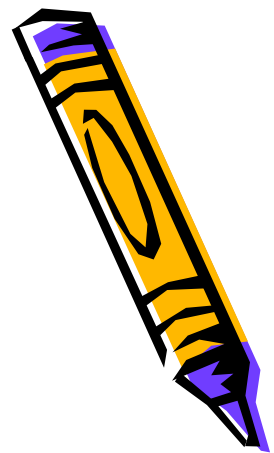
# Harvest and Handling



- 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

