Advanced Horticulture – Pest Management, Soil and Water Management

Onion and Garlic


ONION TEXAS EARLY GRANO 502


CHINESE CA LATE

ONION
Leaf Analysis Guide for Diagnosing Crop Nutrient Status

Sampling time and nutrient	Nutrient Level		
	Deficient	Intermediate	Sufficient
Early season (pre-bulbing)			
Total N, %	<3	3-4	>4
PO4-P, ppm	<1000	1000-2000	>2000
Soluble K, %	<3	3-4	>4
Midseason (bulbing)			
Total N, %	<2.5	2.5-3	>3
PO4-P, ppm	<1000	1000-2000	>2000
Soluble K, %	<.2.5	2.5-4	>4
Late season (post-bulbing)			
Total N, %	<2	2-2.5	>2.5
PO4-P, ppm	1000	1000-2000	>2000
Soluble K, %	<2	2-3	>3

Plant Part to sample is the tallest leaf blade.

ONION
Soil Analysis Guide for Diagnosing Available Nutrient Status

Soil Status	Available Soil Nutrient Levels, ppm		
	Phosphorus	Potassium	Zinc
Very deficient	0-5	<40	<0.3
Deficient	5-9	40-80	0.3-0.5
Intermediate	10-15	80-120	0.5-0.8
Sufficient	>15	>120	>0.8

Analytical methods:

Phosphorus - Olsen bicarbonate

Potassium – Ammonium acetate

Zinc

Onion – Plant Considerations

- Cool Season Vegetable
- Shallow Rooted
- Non-Branching Roots, all from Basal Plate
- Med - High Water Frequency Needs
- Medium Tolerance to Excess Soil Moisture
- Medium Tolerance to Drought
- Med-High N; Medium P, K Needs

Production Principles

- Onions are poor competitors against weeds
- Onions have a shallow root system
- Onions are inefficient users of nutrients
- Onions require frequent irrigation

Garlic – Plant Considerations

- Cool Season Vegetable
- Long Growing Season
- Slow Early Growth
- Shallow to Deep Rooted – Soil Type
- More Extensive Root System than Onion
- Roots Origin all from Basal Plate

Garlic – Plant Considerations

- Medium Water Needs
- Medium Tolerance to Excess Soil Moisture
- Low - Medium Tolerance to Drought
- Medium N, P, K Needs

Onion / Garlic – Soil Management Considerations

- Soil Types – Adaptable to Many

  Sandy – Warm up faster, Better Drained
  Best for early field planting

  Clay Loam – Higher Yields, Higher Water Holding Capacity
  - More Difficult for Bulb Expansion

Onion – Water Management Considerations

- Soil Salinity and Irrigation Water Salinity

- Lower Salinity → Less Frequent Irrigation, More Quantity each Irrigation
- Higher Salinity → More Frequent Irrigation, Less Quantity each Irrigation
- Onion Sensitive to Salinity – More as Seedling
  - EC < 1.2 mmhos/cm (Soil)
  - TDS < 1,000 ppm (Water)

Disease Management Strategies

- Avoidance and Prevention
  - Resistant Varieties
  - Sanitation
  - Crop Rotation
  - Proper Soil Tilth
  - Precise Water Management
  - Correct Nutrient Management

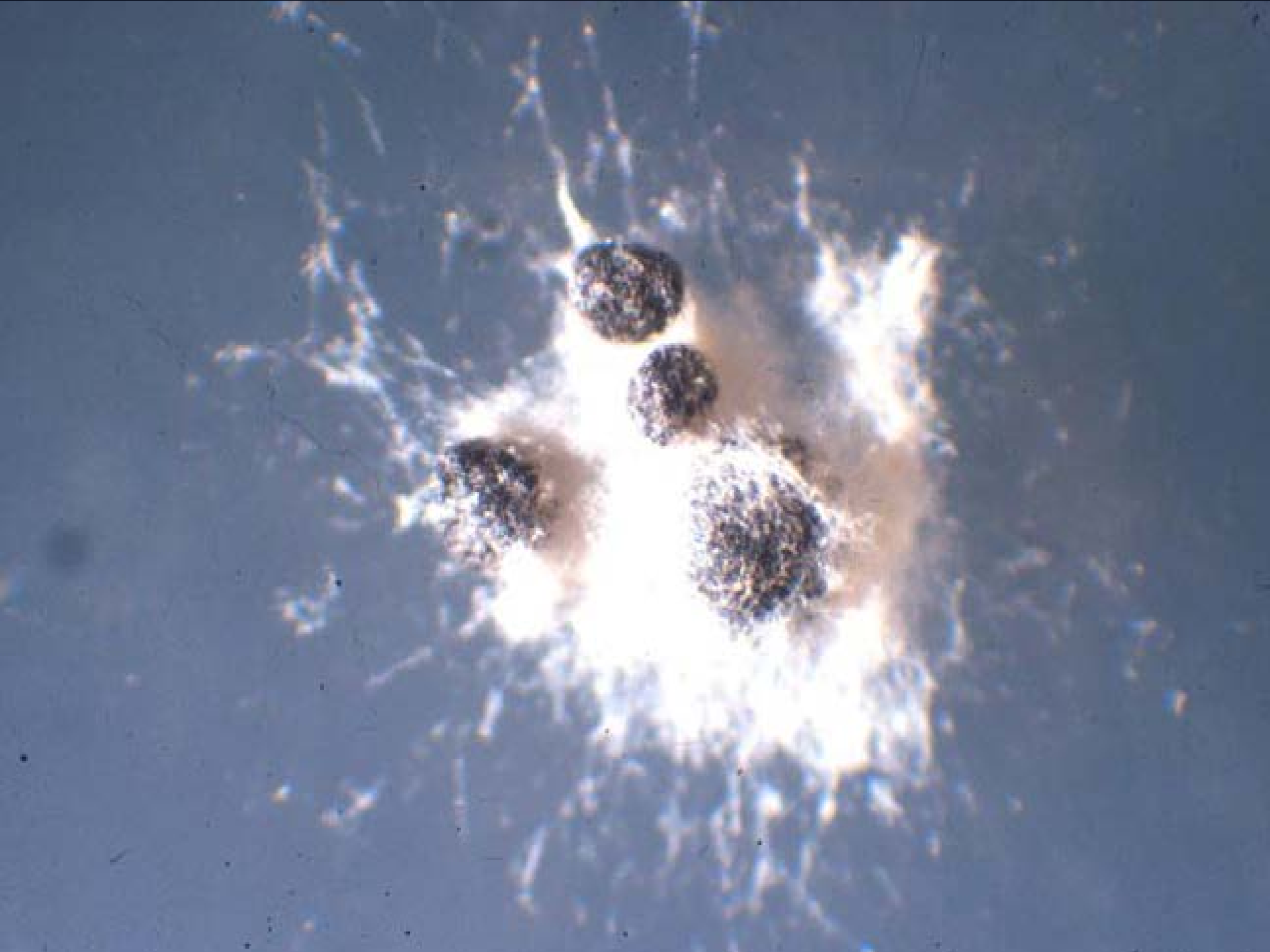
Disease Management Strategies

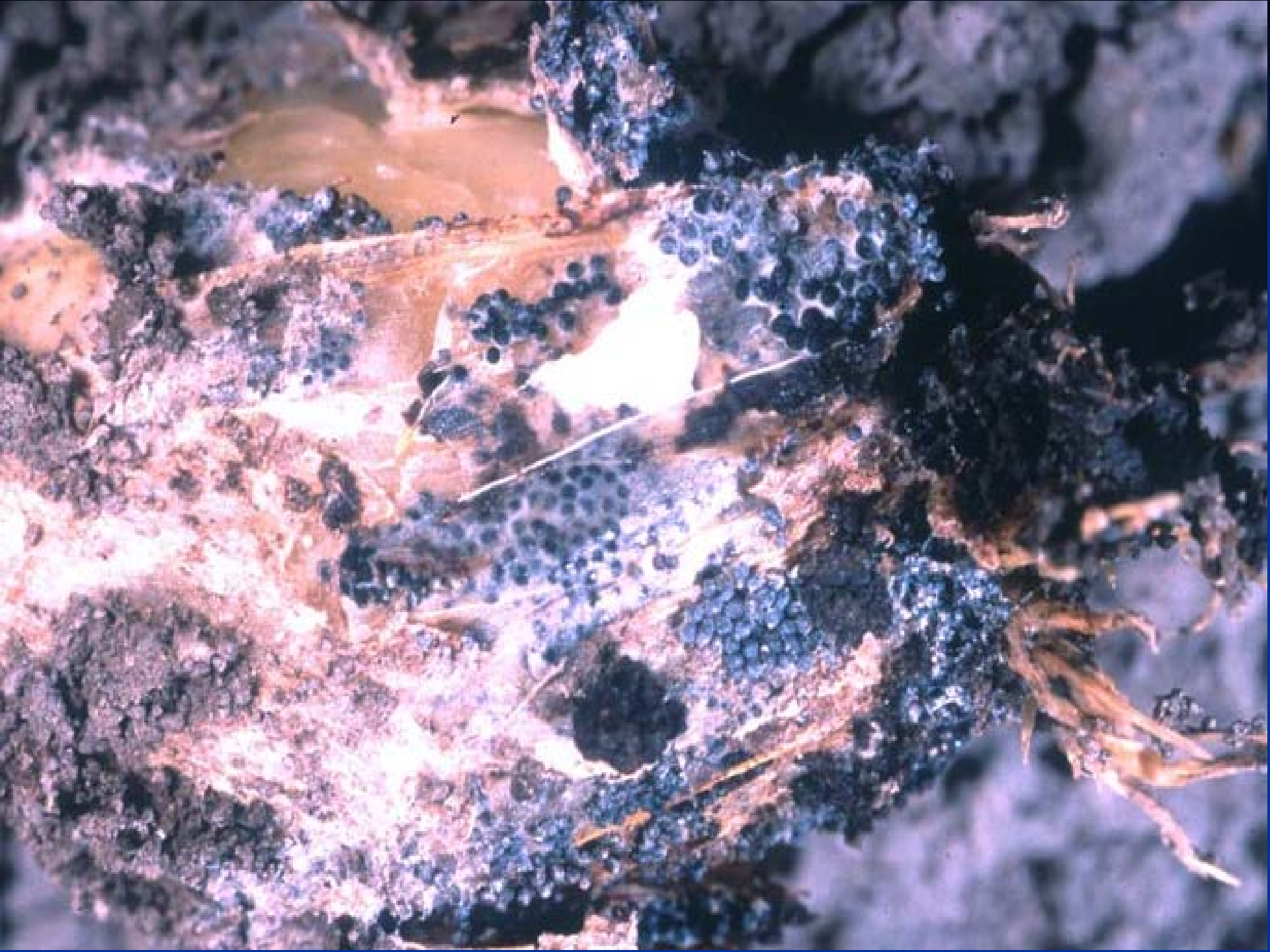
- **Management and Control**
  - Monitor for Diseases Frequently
  - Adjust Environment as Possible
  - Control / Manage Insects
  - Use Pesticides

Seed Treatments and In-Furrow Treatments - Yield

- Benlate
- Folicur
- Maxim
- Topsin
- Serenade
- Quadris
- Moncut
- None

White mycelium and black sclerotia





White Rot Disease Management

- Site Selection
- Sanitation
- Avoidance
- Clean Planting Material

White Rot Disease Management

- Fungicides ??
- Biological Control ??
- Stimulants ??
- Solarization ??
- Flooding ??

Fusarium Basal Rot

Fusarium Basal Rot

Garlic – Stem & Bulb Nematode

Stem and Bulb Nematode

Weed Considerations – Onion and Garlic

- Cool season vegetable planted in winter
- Poor competitors against weeds
- Winter annuals a priority problem

Weed Management Components

- Monitoring - Knowledge of what weeds are present
- Weed Management Before Planting
- Weed Management At Planting
- Weed Management After Planting

Weed Management - Monitoring

- Monitoring - Knowledge of what weeds are present
- Conduct weed surveys on each field at least twice a year
- Note the location of weeds producing seed
- Examine field edges and ditch banks

Weed Management – Pre-Plant

- Crop Rotation
- Field preparation
- Soil solarization
- Herbicides

Weed Management – At Planting

- Planting dates
- Cultivation
- Transplanting

Weed Management – Post-Plant

- Cultural practices
  - keep canal banks free of weeds
  - subsurface drip irrigation
  - maintain deep furrows
- Cultivation and hand-weeding
  - cultivate when weeds are small
  - Eliminate plants that have dodder attached
- Flaming
- Herbicides

Purple Nutsedge

Post-plant, pre-emergence control in Garlic

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LET THERE BE LIGHT

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