Wheat Scab Identification and Control

MELVIN NEWMAN, Professor

Plant Pathologist

Entomology and Plant Pathology Department

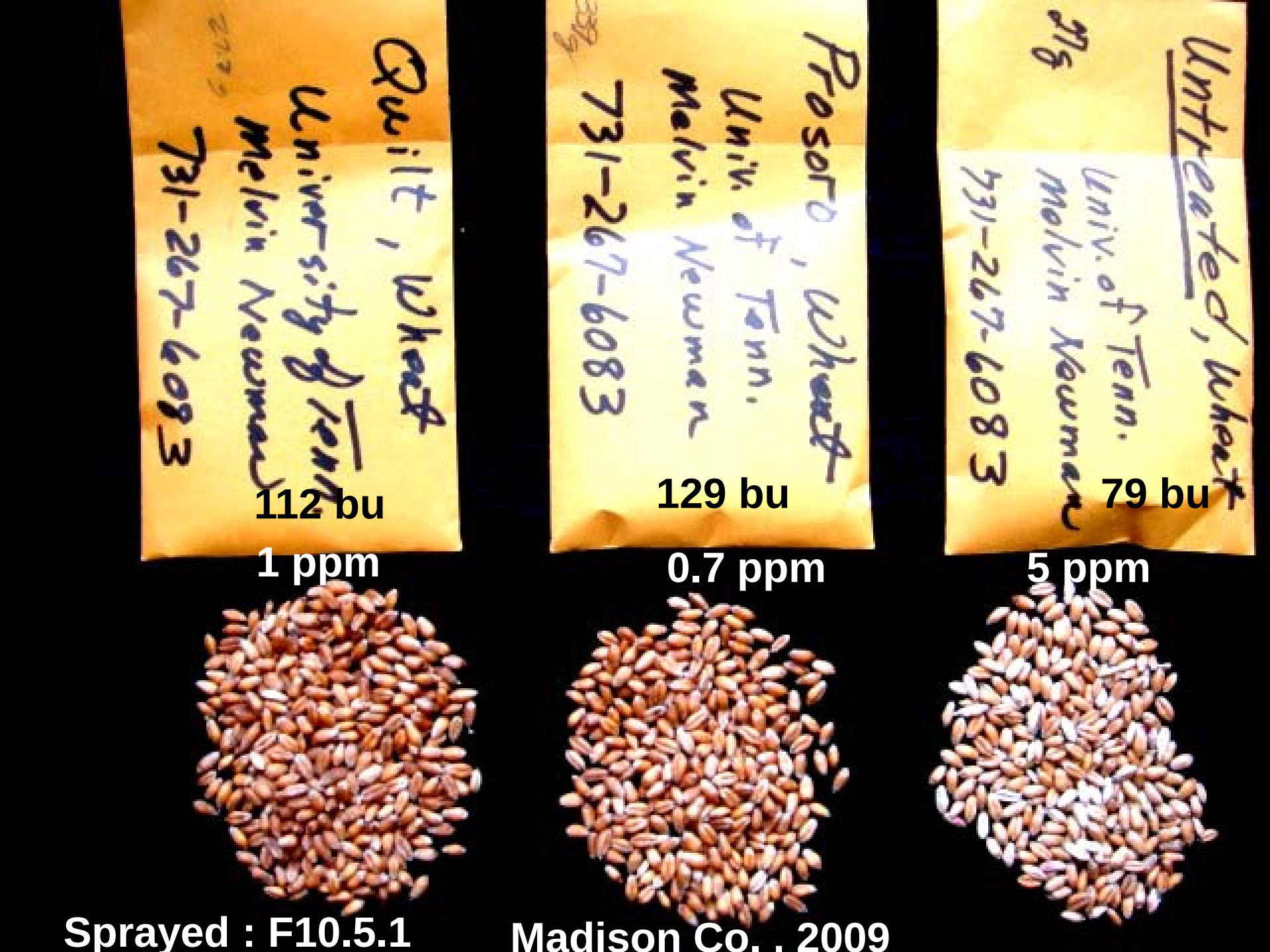
UNIVERSITY OF TENNESSEE

Scab (head blight)
Fusarium graminearum

- **Favored by warm, wet weather during and after flowering.**
- **Bleached heads or individual spikelets**
- **Superficial pink/orange mycelium/spores**
- **Bleached heads contain scabby seed (tombstones).**
- **Black lesions may be present at the base of the head.**

Head Scab caused by the fungus *Fusarium* spp.


Scab


Quilt, wheat
Univ. of Tenn.
Melvin Newman
731-267-6083
112 bu
1 ppm
Prosaro, wheat
Univ. of Tenn.
Melvin Newman
731-267-6083
129 bu
0.7 ppm
Untreated, wheat
Univ. of Tenn.
Melvin Newman
731-267-6083
79 bu
5 ppm
Sprayed : F10.5.1
Madison Co. , 2009

Scabby Wheat and Healthy Wheat


Scab on wheat


Fusarium leaf spot

Wheat Scab Control is Difficult

- No resistant varieties
- Plant varieties that differ in flowering times
- Bury crop residue (corn or wheat)
- Chopping corn stalks down helps
- Crop rotation (not corn or grain sorghum)
- Some Foliar fungicides containing (triazoles: such as Prosaro or Caramba) are effective if sprayed at the right time (10.5.1) = mid-bloom. Maybe too late for other diseases but will help some.

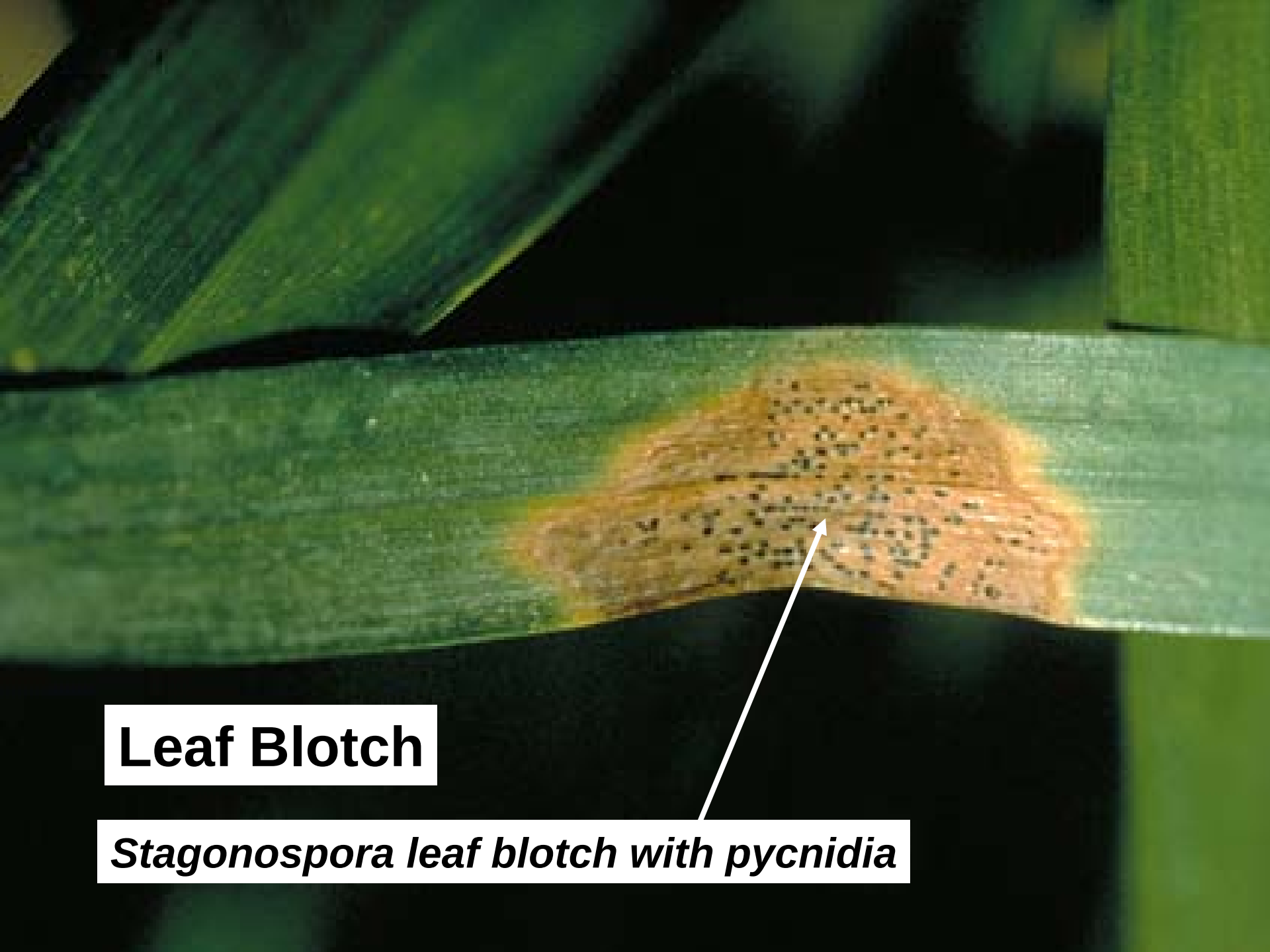
Foliar and Head Diseases

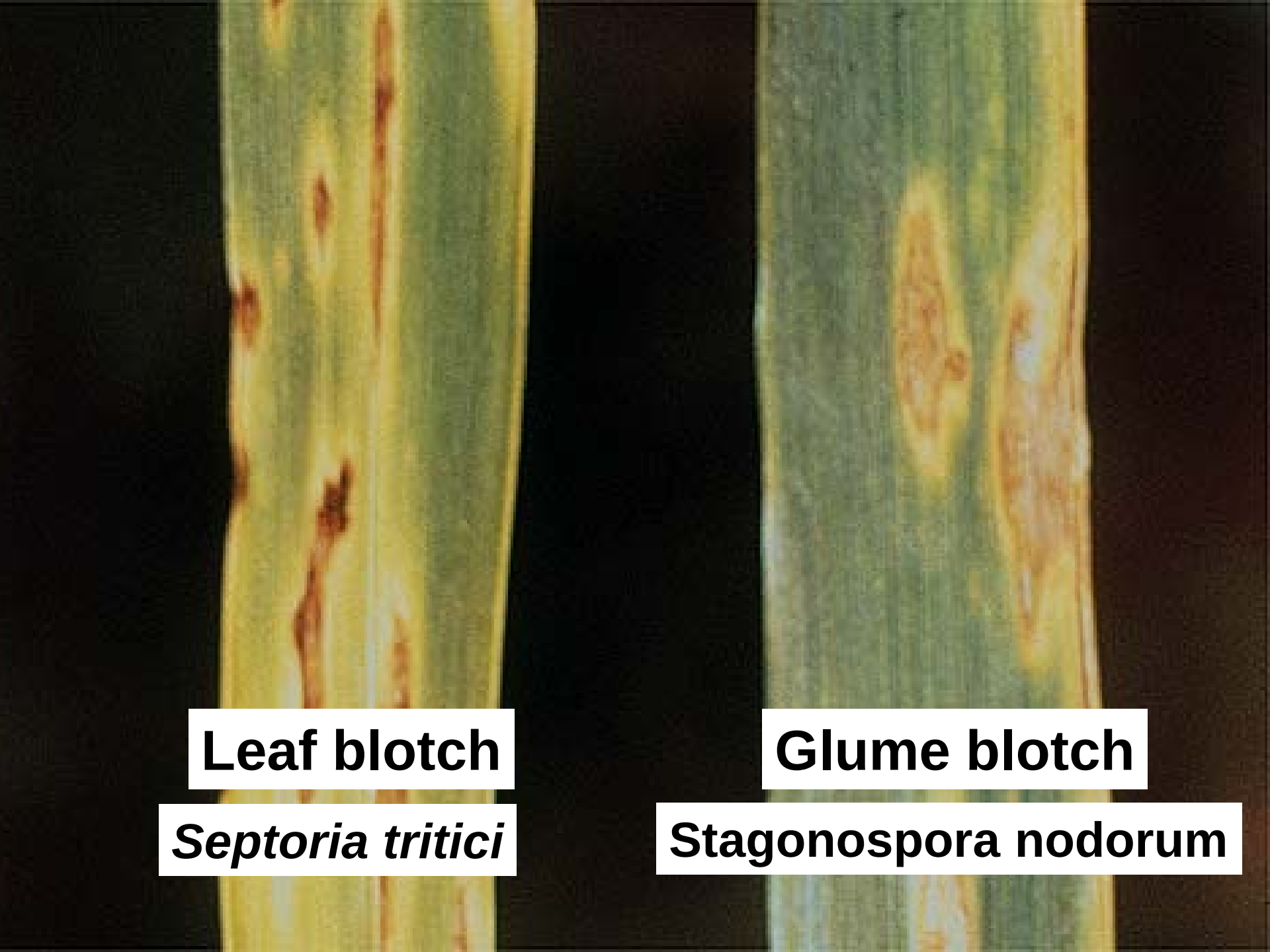
- **Glume Blotch – *Stagonospora (Septoria*) *nodorum*. Found mostly on the lower leaves and then on the heads. Hard to scout for and fungus becomes more aggressive as heading occurs. Favored by frequent rains and mid-70s.**
- **Symptoms – On glume are chocolate-brown, with small, black pycnidia and are diagnostic as seed become mature. Grain may be extremely shriveled.**

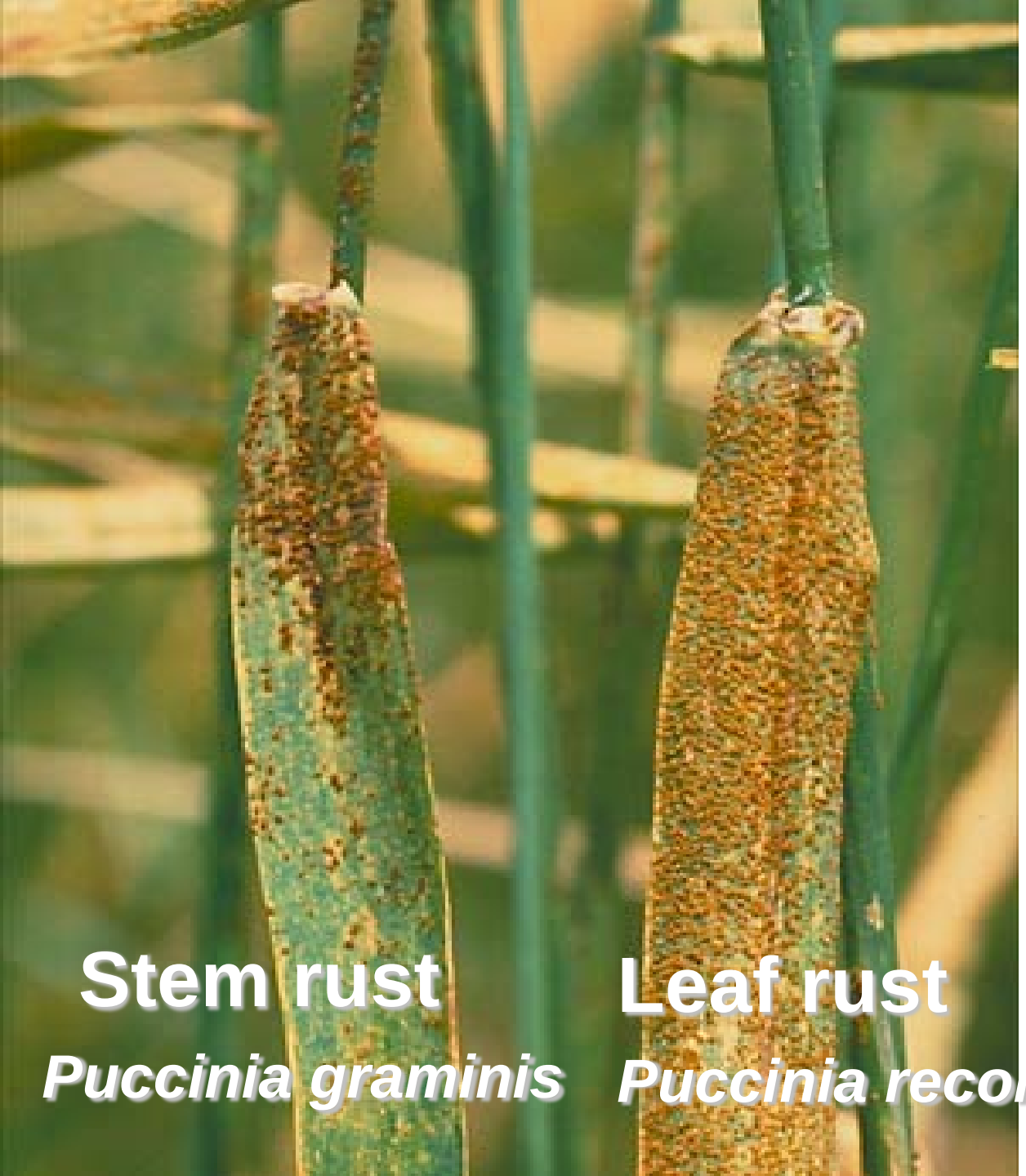

Glume Blotch

Glume blotch caused by the fungus *Stagonospora (Septoria) nodorum*

Chocolate brown symptoms on the glumes


Leaf Blotch
Stagonospora leaf blotch with pycnidia


Leaf blotch
Septoria tritici
Glume blotch
Stagonospora nodorum

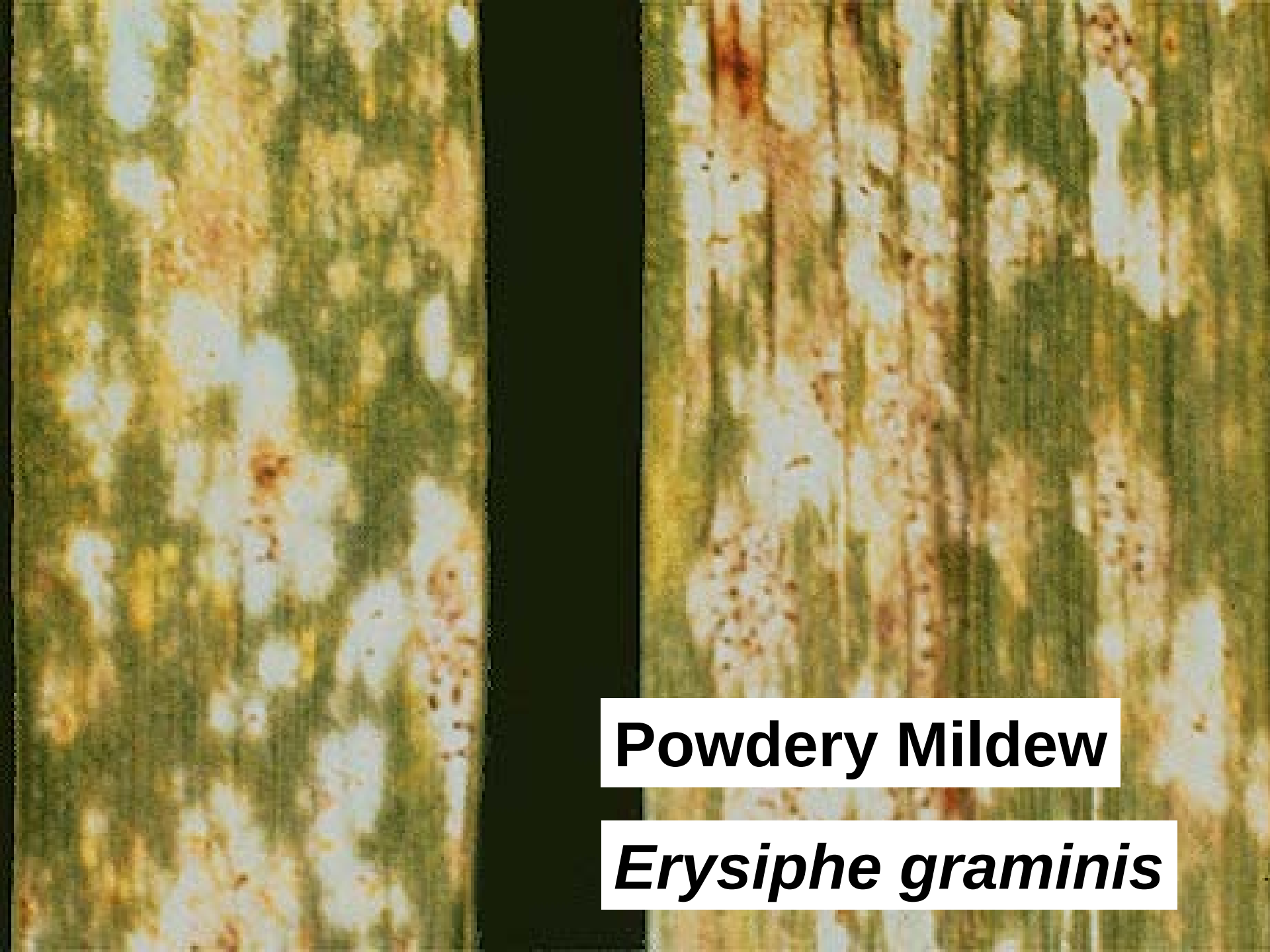


Use Resistant Varieties for Control of Leaf Rust and/or foliar fungicides


Stripe Rust of Wheat

Stripe Rust

- **Caused by <u>Puccinia striiformis</u>**
- **Symptoms appear early in the spring.**
- **Rust pustules are yellow and arranged into long conspicuous stripes.**
- **Spores are blown in from warmer areas.**
- **Disease development is most rapid under cool, wet weather.**
- **Varieties differ widely in susceptible.**
- **Fungicides (triazoles) are effective if applied before disease infects upper leaves.**


Powdery Mildew
Erysiphe graminis

Foliar Disease Control in Wheat

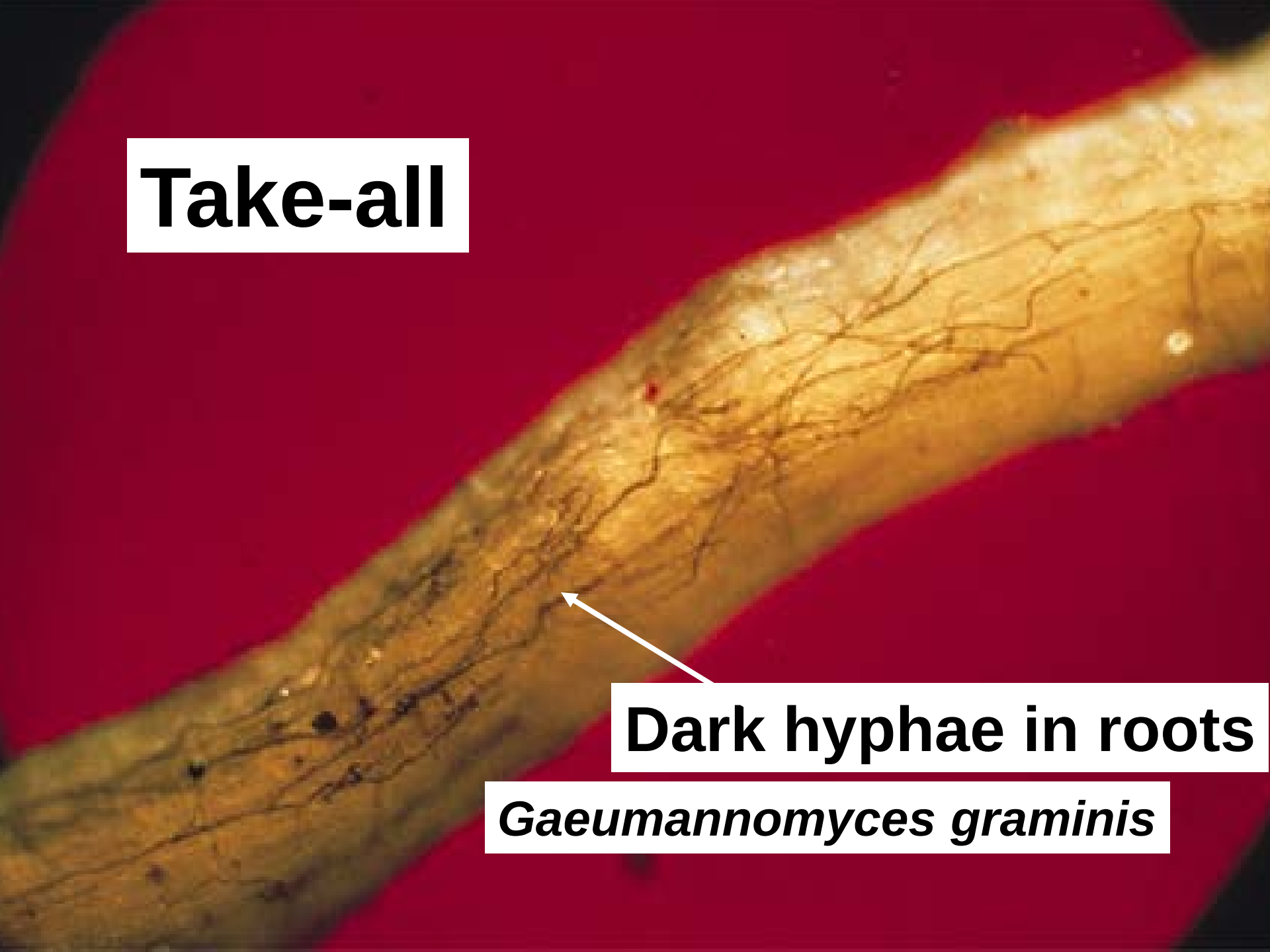
- Use foliar fungicides if appropriate
- Rotate crops
- Plow under old crop residue if appropriate
- Treat seed with fungicides
- Use tolerant varieties if available

Take-all showing the white head symptom

This can be confused with head scab

Take-all fungus in young wheat roots showing the black root rot Symptom.
Caused by: *Gaeumannomyces graminis*


Take-all
Rotted stems & roots


Take-all
Dark hyphae in roots
Gaeumannomyces graminis

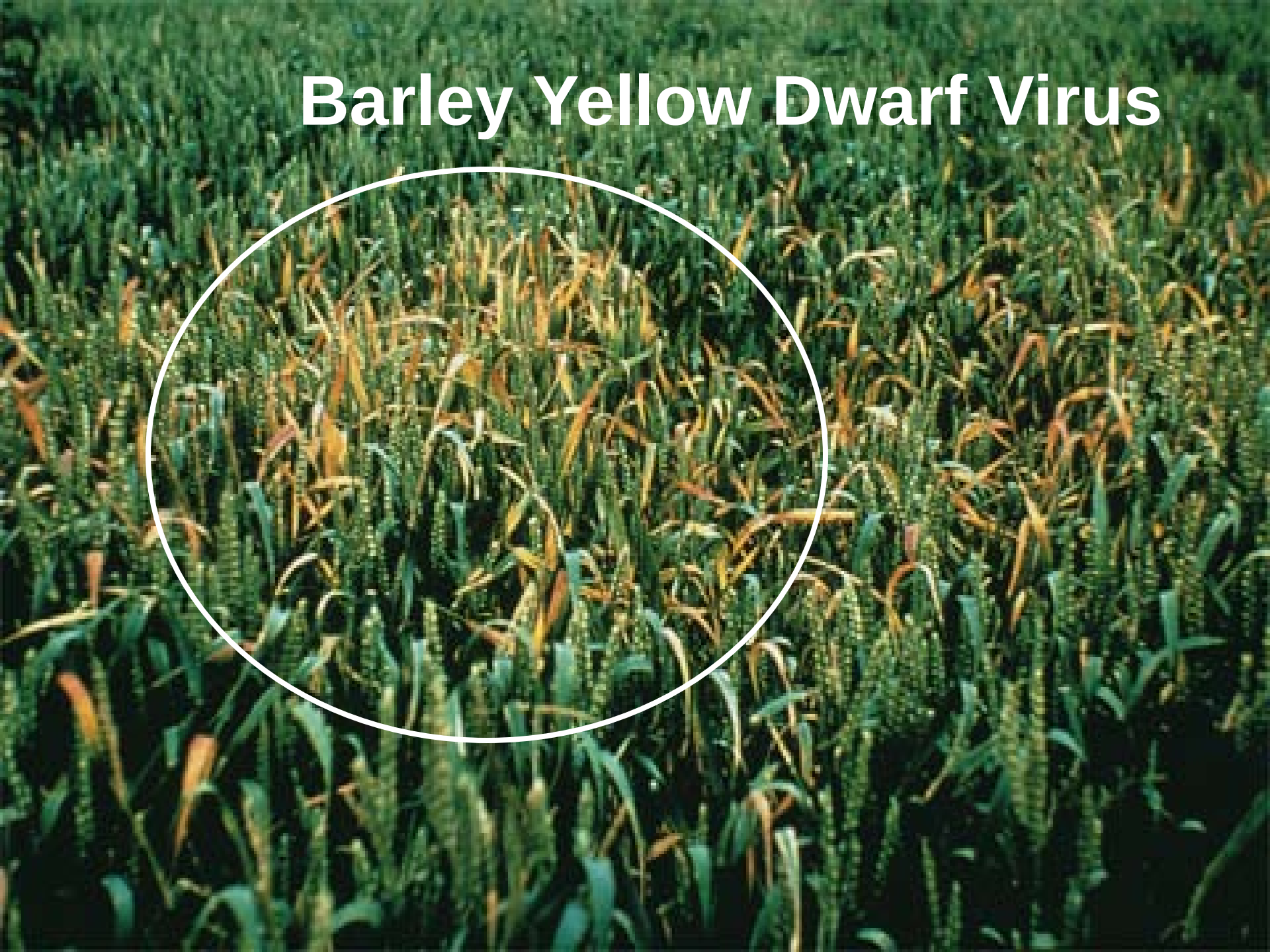
Take-All Disease Control

- Later plantings are better
- Use Ammonium Nitrate
- Fertilize early
- Use higher rates of fertilizer
- Do not lime take-all infested soil
- Rotate with other crops, corn may produce scab in wheat

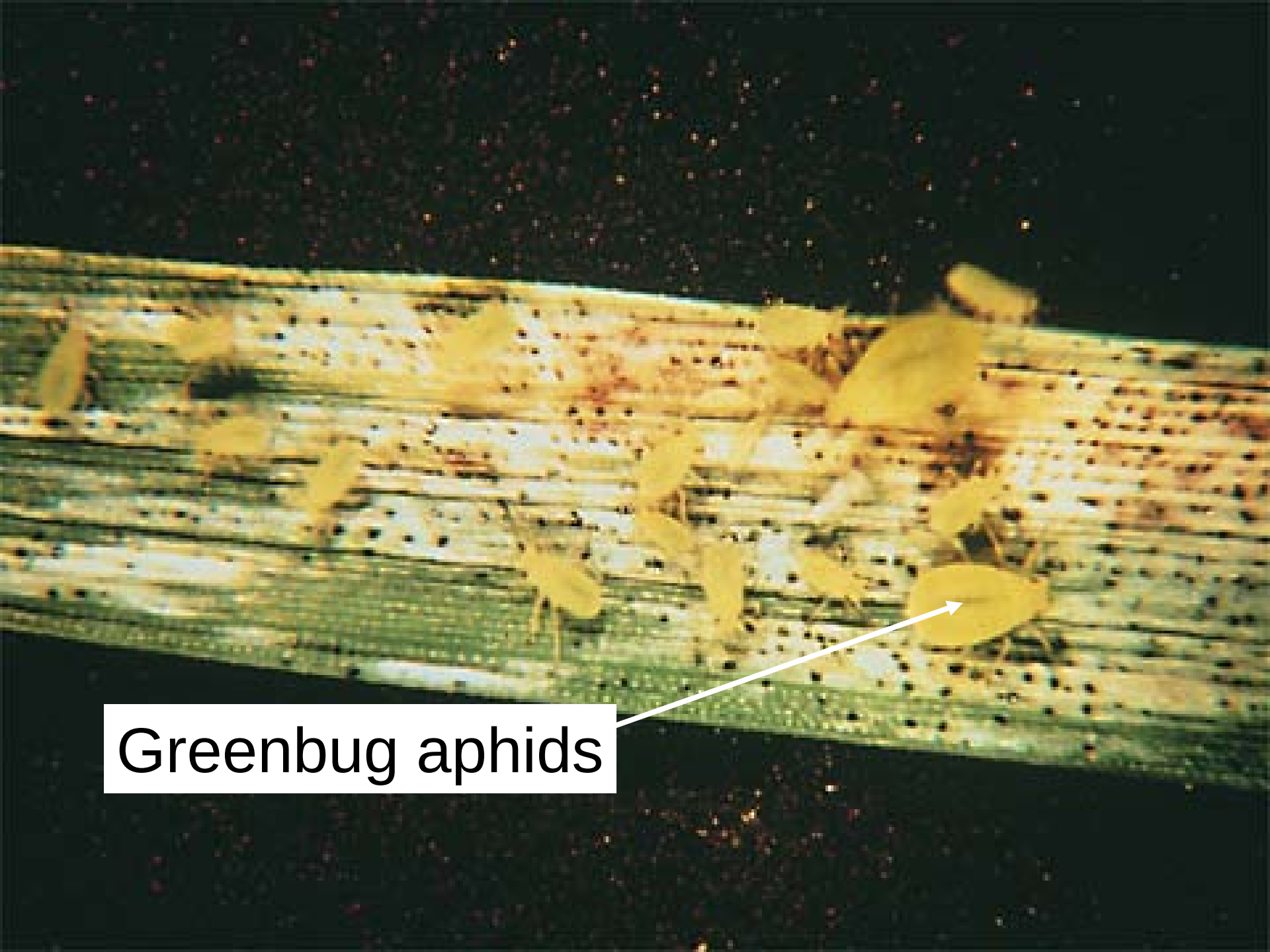
Barley Yellow Dwarf Virus

- Transmitted by several species of aphids
- Fall infection causes the greater yield loss.
- Symptoms usually do not show up until spring.
- Symptoms: Stunted, poorly tillered across a field. Yellow, red or purple coloration of leaves after extended warm weather in April

Barley Yellow Dwarf Virus




Barley Yellow Dwarf Virus


Greenbug aphids

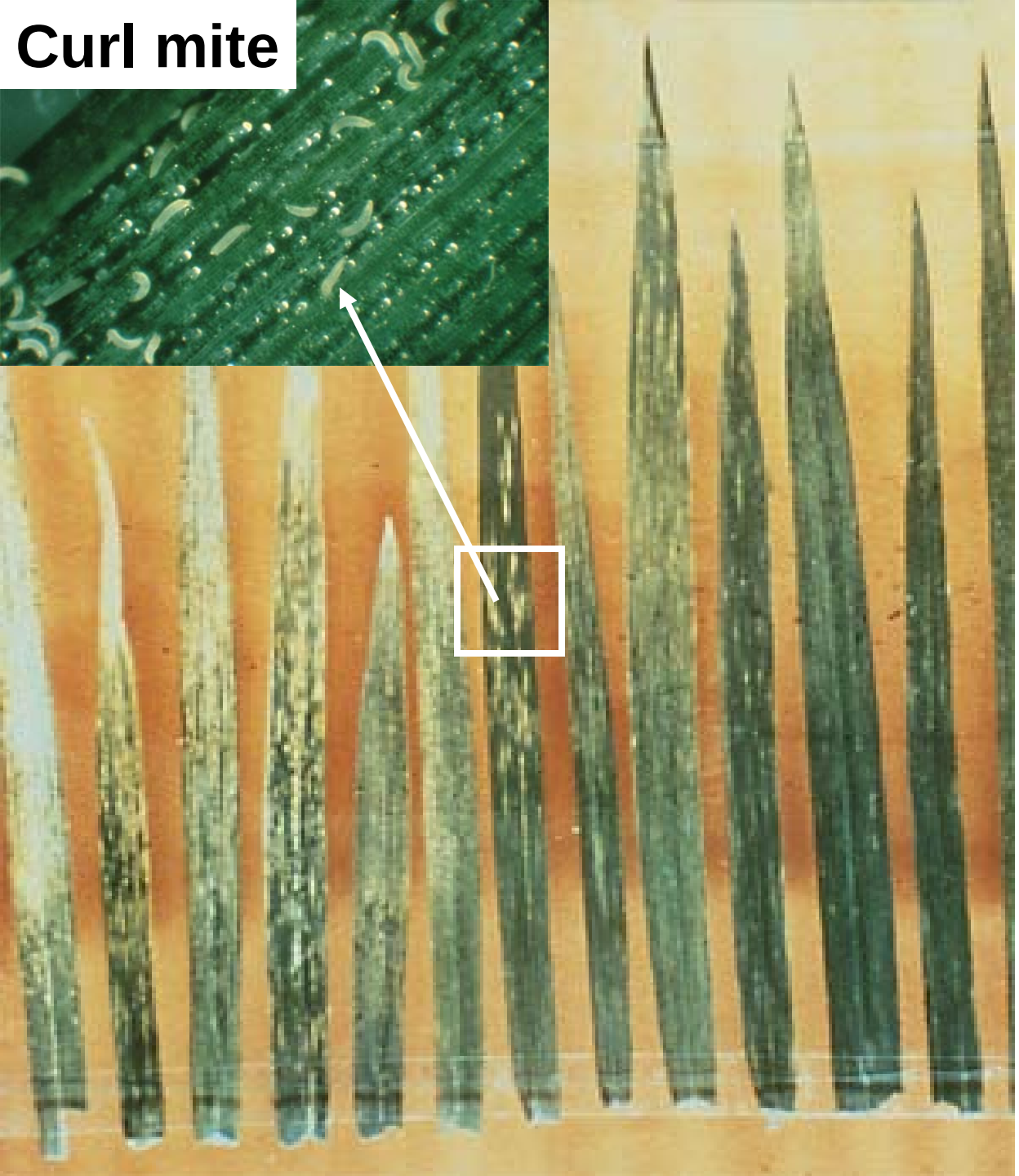
BYDV CONTROL IN WHEAT

With seed treatments of Imidacloprid insecticide
WTES, Jackson, TN 1993-2001
Yields in bushels/acre

Gaucho 480 F	1993	1994	1995	1996	1997	1998	1999	2000	2001
Untreated	62	96	40	69	65	48	78	72	73
1.0 oz	66	99	44	68	59	60	78	75	80
1.5 oz	67	103	50	63	62	58	78	76	76
Increase 1.0 oz	4	3	4	0	0	12	0	3	7
Increase 1.5 oz	6	7	10	0	0	10	0	4	3

BYDV Control

- Avoid early planting
- There are no resistant varieties
- Use insecticide to control fall aphids



Wheat Streak Mosaic Virus Spread by the Wheat leaf curl mite

Wheat curl mite, vector of Wheat Streak Mosaic Virus

Control of WSMV

- Control the Wheat Curl mite
- Break the “green bridge”
- Destroy volunteer wheat
- Burn down any grasses 2 weeks before planting wheat.

Wheat Spindle Streak Virus (WSSV)
Spread by the soil-borne Fungus *Polymyxa graminis*

Control

Use resistant varieties. Damage is usually not severe, especially when temperatures stay above 65 F.

Summary of Wheat Disease Control Practices

- Plant after Oct. 15.
- Use recommended resistant varieties.
- Treat seed with fungicide and insecticide to control aphids in the fall.
- Wheat after corn may provide inoculum for scab
- Do not lime Take-All infected fields, acid soils have less Take-All.
- Burn down any “green bridge” 2 weeks before planting.
- Treat with foliar fungicides when wheat prices and disease conditions warrant their use.