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Identifying and controlling diseases in forage crops

Theme: What to watch for and efficacy of products available for control.

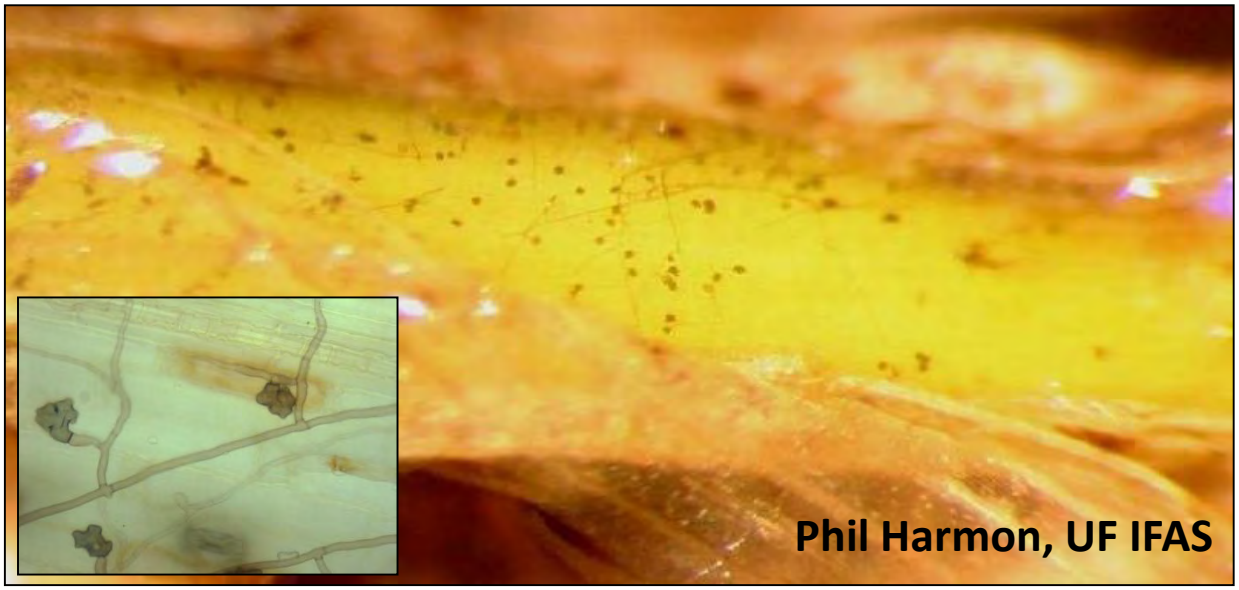
Dr. Nicholas S. Dufault
May 29, 2014
Corn Silage and Forage Field Day
Plant Pathology Department - IFAS
University of Florida, Gainesville

Disease management if often limited for forage and pasture crops.

- Resistance
  - Check with breeder
  - Environment can be important
- Fungicides
  - Limits for feeding (read label)
  - Better as preventive
- Rotation
- Irrigation/Fertilization

Take-all root rot (Bermudagrass decline)

- Fungal disease caused by *Gaeumannomyces graminis* var. *graminis*
- Key diagnostics are yellow symptoms in spring and lobed hyphopodia on stolons



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Reduced root mass
Lack of root hairs
Dark lesions on stolon/stem
Phil Harmon, UF IFAS

It can look like or be associated with cold/freeze damage.

Phil Harmon, UF IFAS

Take-all can be found with other diseases and pests (i.e. stem maggot).

So, it is important to consider these problems in your management strategies

Best management plan is to avoid stressing the plants.

- Minimal herbicide use is important
- Use acidified fertilizers & do not
- Do not over fertilize
- Mow & regrow to manage this pest
- Fungicides minimal impact

When it is cold and dry, expect this pathogen to appear. No resistant varieties available.

Phil Harmon, UF IFAS

There are many foliar disease that can occur on forage crops.

These diseases can be a problem, but often no extra management is needed.

Pictures from A. Blount, NFREC.

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Bipolaris is a common problem on oats, & can cause significant reductions.

Can move to roots under right conditions.

Often found on debris and dying leaves.

Crown rust on oats, an old disease but re-emerging problem in Florida.

Favored under cool (50 to 75 F) and wet (dew & rain) conditions.

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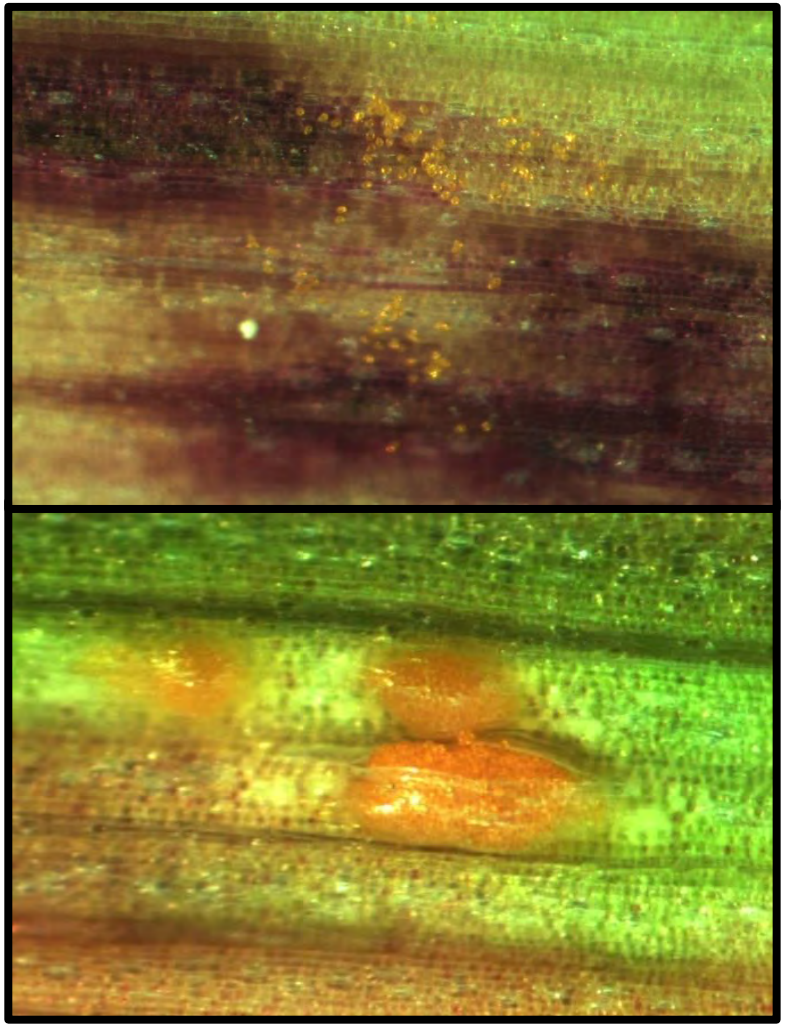
Both Bipolaris and Rust can be found at the same time!



Questions: Do I need a fungicide on my oats (forage)? How many & when should I spray?

- **Answer: Maybe, and don't miss the opportunity if the environment is right.**

- **Fungicides can reduce disease**, especially when applied early.
  - Severity can be reduced by 50%
  - Consider only 2 sprays in a season
  - LABEL RESTRICTIONS

There are multiple available options for disease control, but watch label restrictions.

Product	FRAC #	Active	Rate per Acre[a]	Max amount per year	Crown Rust[b]	Leaf Rust[c]	Stem Rust[c]	**Label Remarks** (Always consult label for proper directions and restrictions)
Headline SC	11	pyraclostrobin	6 - 9 fl oz	18 fl oz/A	Very Good	Excellent	Good	**DO NOT** harvest oat hay or feed green-chopped oats within 14 days of last application. Apply no later than the beginning of Flowering.
Quadris	11	azoxystrobin	6 - 12 fl oz	24 fl oz/A	Fair	--	--	**DO NOT** apply within 7 days of harvest (7-day PHI) for forage and hay. 2 applications per season. Do not apply after Feekes 10.54
Stratego	11+3	trifloxystrobin + propiconazole	7 fl oz	14 fl oz/A	Very Good	--	--	Grazing Restrictions: a.) If 1 application or total of 7 fl. oz of Stratego per year are applied do not allow live stock to graze within the treated area within 30 days after application, and do not harvest the treated area for within 30 days after application or for hay within 45 days after application. b.) **Do not harvest for forage or hay if 14 fl oz are applied**. Do not apply after Feekes stage 8 (the ligule of the flag leaf emerges).
Tilt 3.6 EC	3	propiconazole	4 fl oz	8 fl oz/A	Very Good	Very Good	Very Good	**DO NOT** apply more than 4 fl oz/A per season of Tilt if forage or hay will be harvested. Do not apply within 7 days of harvest (7-day PHI) for forage and hay. Limit 2 applications per season.
Proline 480 SC	3	prothioconazole	5.0 - 5.7 fl oz	5.7 fl oz/A	--	Very Good	Very Good	**DO NOT** apply within 30 days of harvest. 7 day grazing restriction. **Only 1 application per year.**
Quilt 200 SC	11 + 3	propiconazole + azoxystrobin	10.5 - 14.0 fl oz	28 fl oz/A	Very Good	Excellent	Very Good	**DO NOT** apply within 7 days of harvest (7-day PHI) for forage and hay. No more than 2 applications per season. Do not apply after full head emergence (Feekes 10.5)
Twinline	11 + 3	metaconazole + pyraclostrobin	7 - 9 fl oz	18 fl oz/A	--	Excellent	Very Good	Only 2 applications per season. Barley hay harvest restriction of 14 days. Appy no later than the beginning of flowering (Feekes 10.5). Minimum retreatment is 6 to 8 days after first application.

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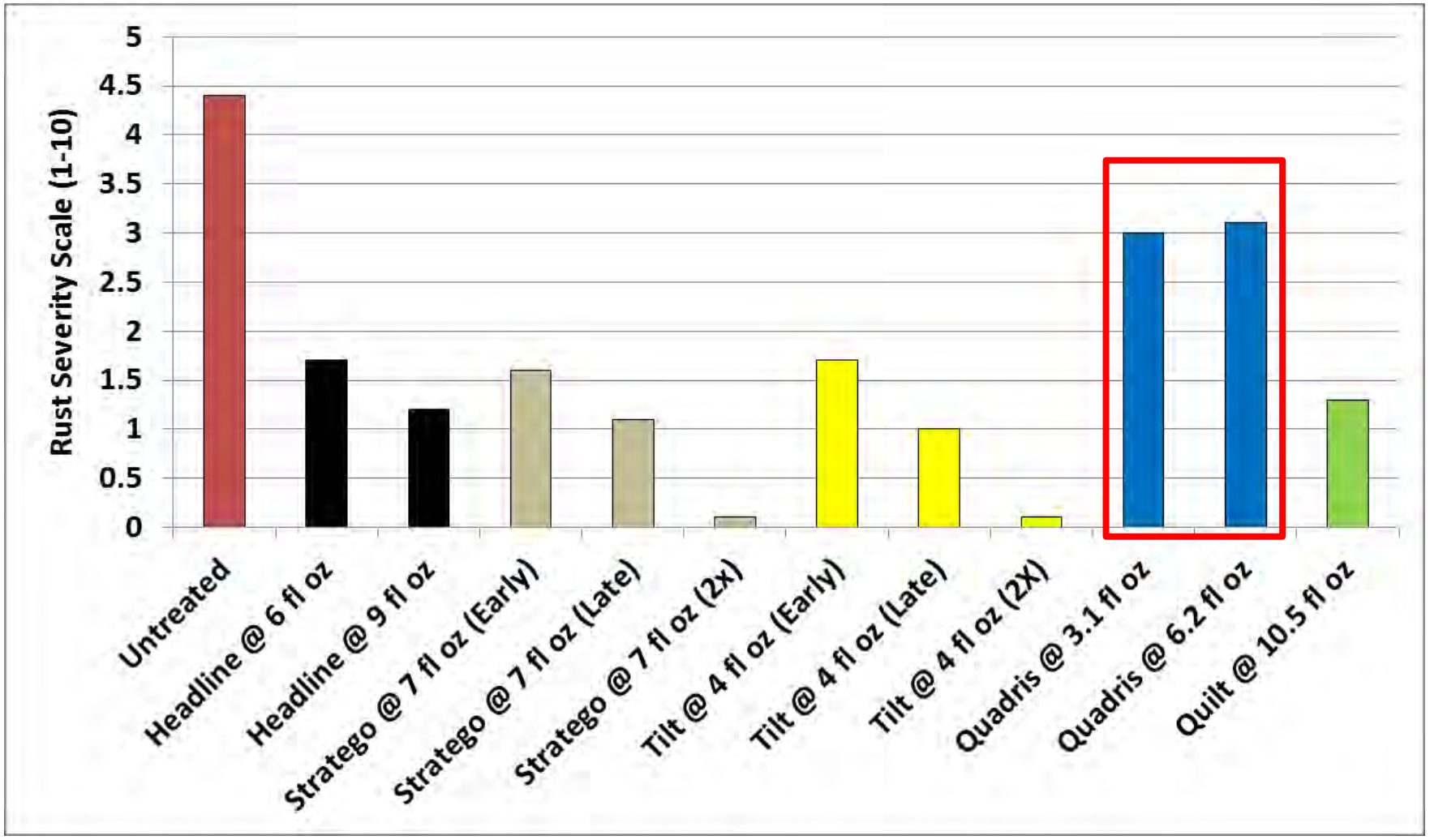
Fungicides can manage crown rust effectively, but can vary in their efficacy.



Coker 227, 2008 in Alabama; Hagan et al. 2013. PDMR

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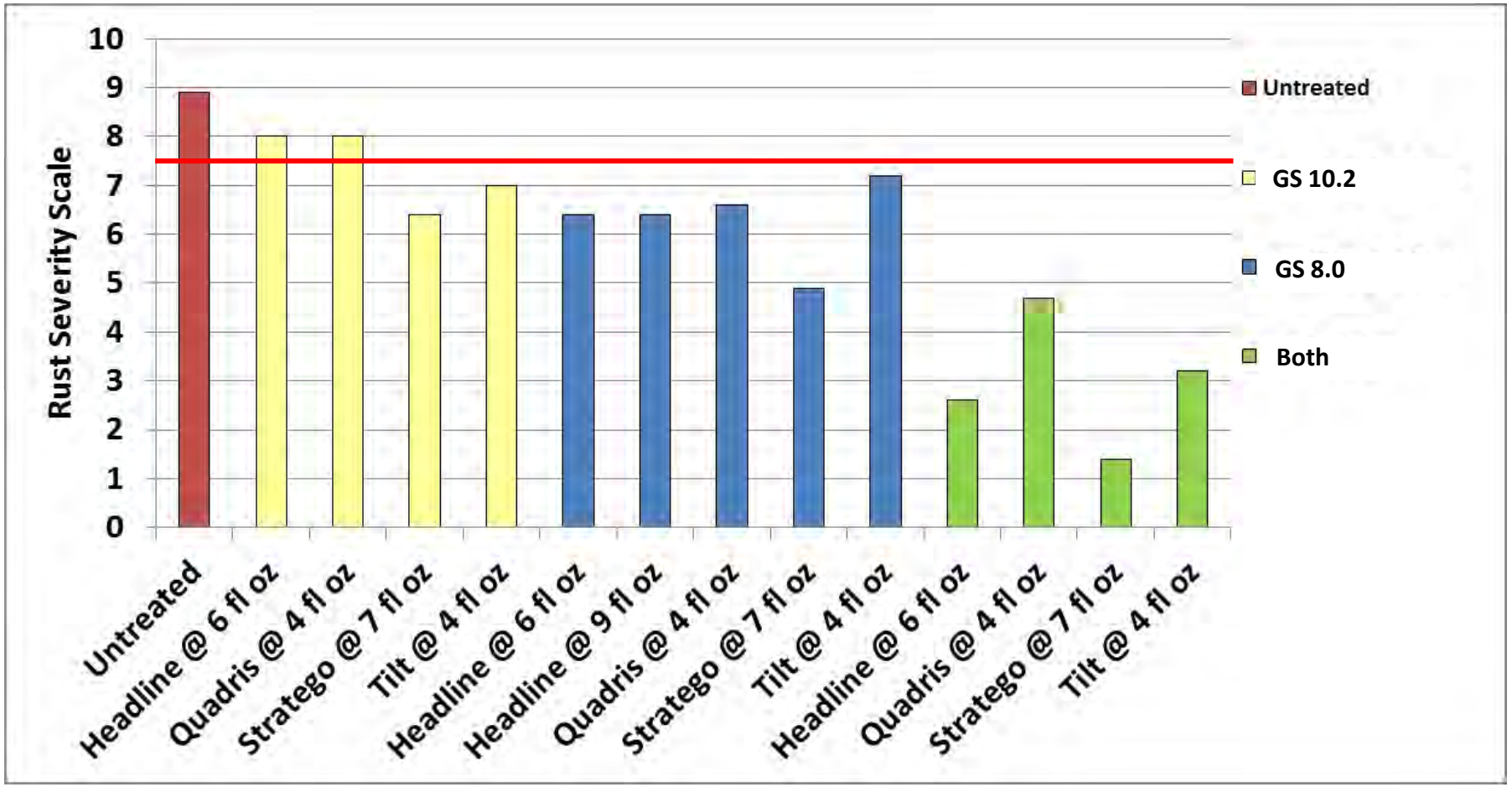
Timing is critical to effective disease control with early sprays more effective.



Harrison Oats, 2012 in Alabama; Hagan et al. 2013. PDMR

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Not all systemic fungicides are the same.

Oat Rust Fungicides

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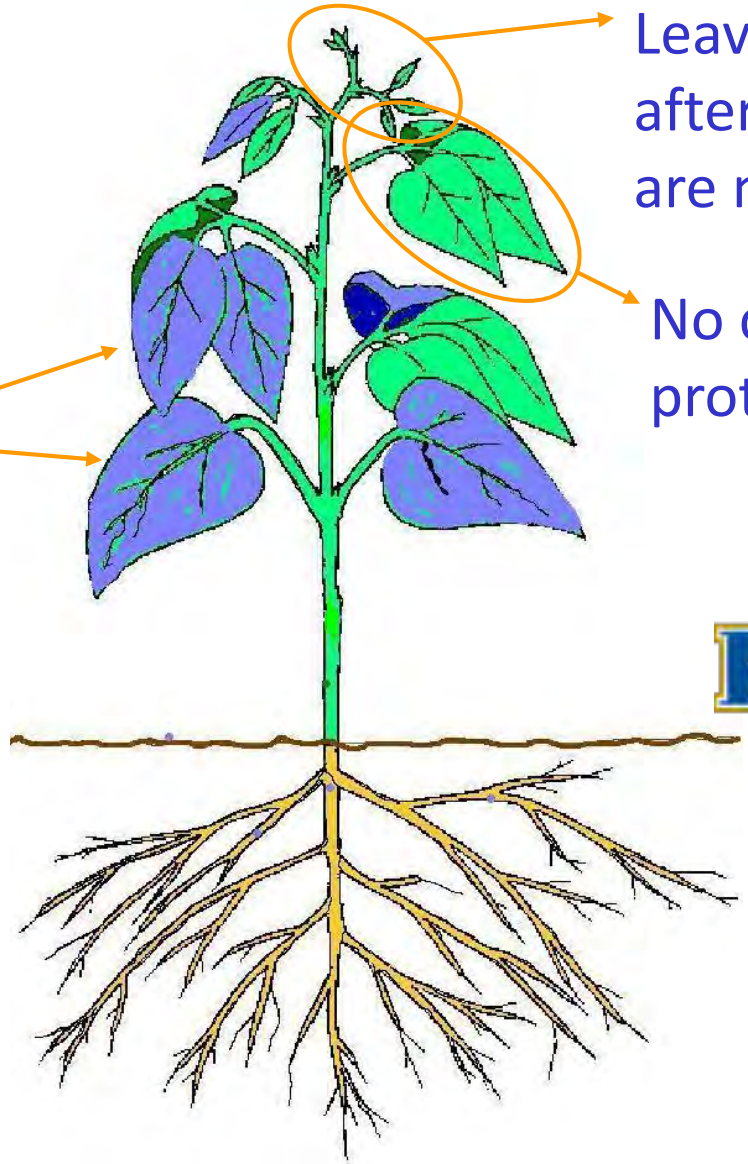
Some are locally systemic (transliminar) and only move cross the leaf.

Locally (translaminar)



Leaves produced after the application are not protected

No chemical = no protection

Droplets spread out and are absorbed by plant tissue

Headline® fungicide

D. Mueller, Iowa State Univ.

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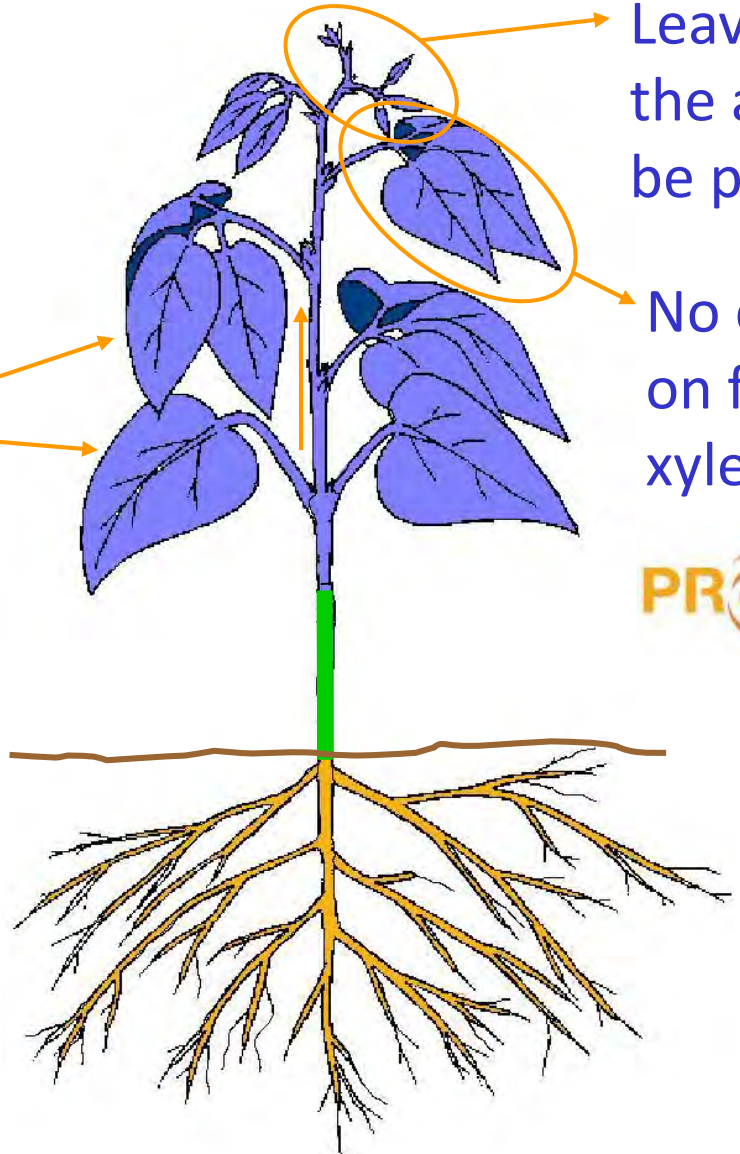
Some can move up the plant (acropetal movement)

Systemic:

(ii) acropetal

Droplets spread out and are absorbed by leaf tissue. Fungicide moves upwards in the xylem to edge of leaves and new growth



Leaves produced after the application MAY be protected

No chemical = rely on fungicide via xylem

PROLINE

TILT Fungicide

Quadris Flowable Fungicide

Broad spectrum fungicide for control of plant diseases

GROUP 11 FUNGICIDES

D. Mueller, Iowa State Univ.

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It is critical to maintain proper fungicide rotations.

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FRAC group 3 fungicides include:

PROLINE

STRATEGO®

TILT Fungicide

GROUP 3 11 FUNGICIDES PULL HERE TO OPEN

Quilt® Fungicide

Quadris

Flowable Fungicide

Broad spectrum fungicide for control of plant diseases

GROUP 11 FUNGICIDES

TWINLINE™ FUNGICIDE

Headline fungicide

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FRAC group 11 fungicides include:

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Premix fungicides (3 and 11) include:

PROLINE

STRATEGO®

TILT Fungicide

GROUP 3 11 FUNGICIDES PULL HERE TO OPEN

Quilt® Fungicide

Quadris

Flowable Fungicide

Broad spectrum fungicide for control of plant diseases

GROUP 11 FUNGICIDES

TWINLINE™ FUNGICIDE

Headline fungicide

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Pay attention to FRAC groupings when selecting fungicide products

- Patent expires for azoxystrobin in 2014.
- Azoxystrobin off-patent in China since 2010.
- The strobilurin class (FRAC 11) is among most important.
- Resistance to this class **develops fairly easily**.

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If resistance develops to FRAC 11 group, we will rely on group 3 fungicides.

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What is the best management options we have for forage diseases?

- Host resistance will be key!

- If resistance is not present:
  - Rotate away from previous crop
  - Intercrop (e.g. rye)
  - Use fungicides sparingly

Disease will appear every year, avoid stressing plants to minimize impact.


Questions?