


Advanced Grazing School:


Increasing Yields by 15-20% with Plant Growth Regulators?

**Increasing Yields by
15-20% with Plant Growth
Regulators?**




Dr. Dennis Hancock
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**Bakanae (“Foolish Seedling”)
Disease in Rice**



**Gibberellins are Derived from
Gibberella fujikuroi fungus**



Use of GAs in Agriculture


- Increase sugar yield in sugarcane
- Stimulate barley-malting process in beer-brewing industry
- Increase size of seedless grapes
- Increase fruit set and size in apples/pears
- Delay fruit ripening
- **Increase foliage and forage yield?**






**Use of GAs for Forage
Management is NOT New.**

Review by Matthew et al., 2009 (NZ J. Ag Res.):

- 13 studies around the world
- Yield responses generally 8-20% inc. in yield
- These studies included rates of 0.6 – 10 oz. GA₃/acre
 - Current product recommended rate range: 0.3 – 1.0 oz./acre
- Cost of producing GA₃ is much lower now.



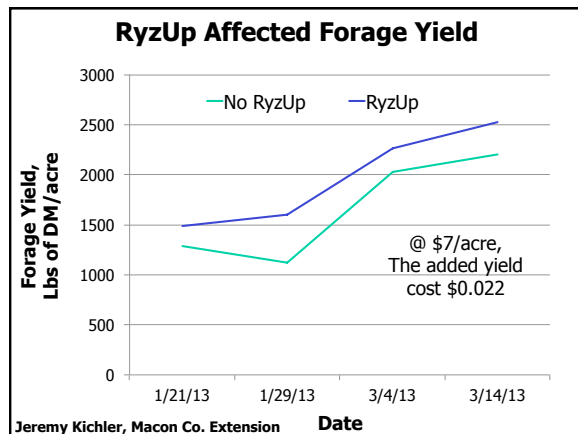
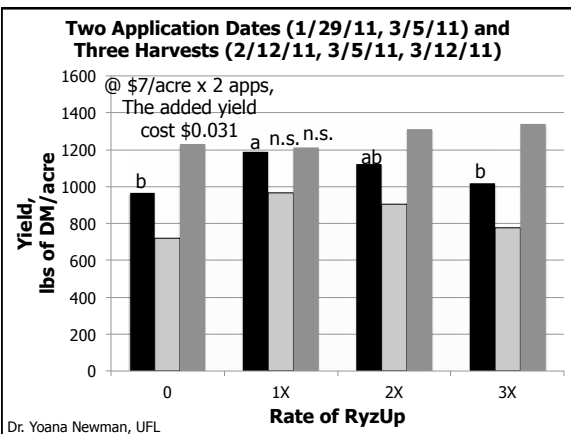
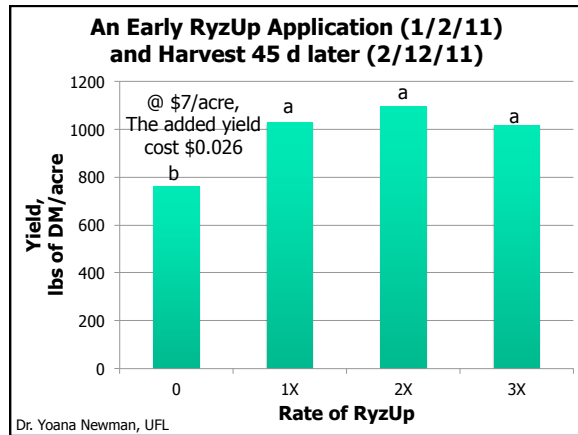
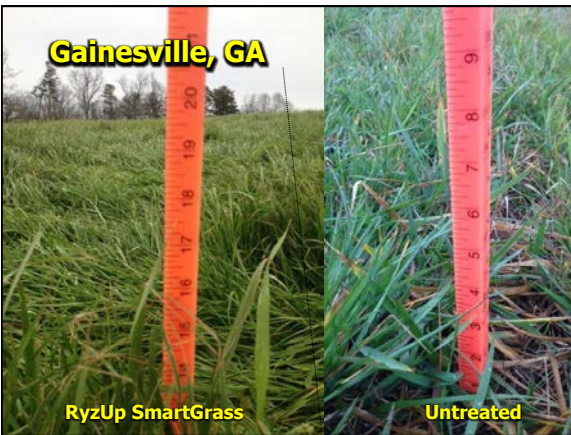
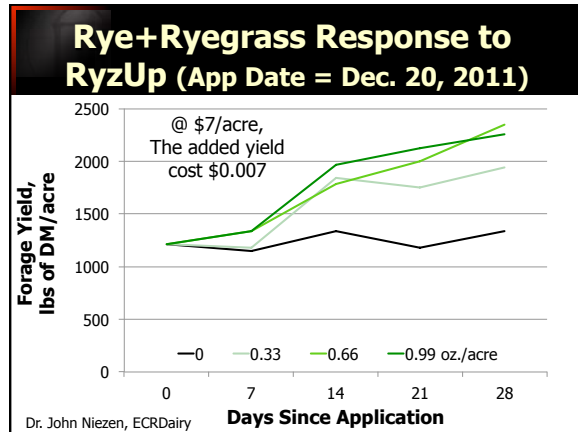
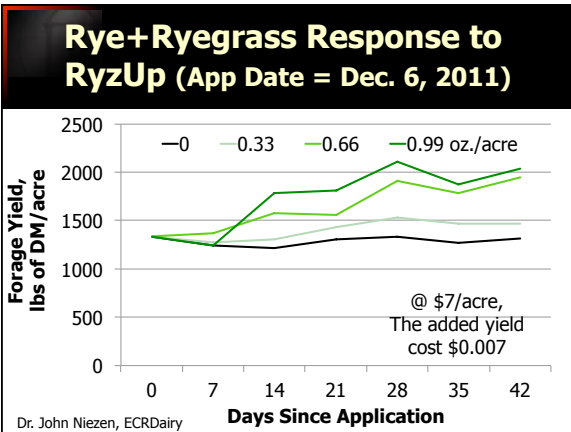
GA₃ Available As:



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Response of Winter Annual Grass* to Early Season Application of RyZup Smartgrass®

Harvest	Early Season Application**		
	RyZup (lbs/acre)	None	Diff. (%)
Feb. 17, 2012	1429	1120	21.60%
Feb. 29, 2012	-	-	-
Mar. 15, 2012	2143	1984	n.s.
Apr. 25, 2012	2090	1961	n.s.
Season Total	5186	4691	9.50%

* Averaged over rye, ann. ryegrass, and rye+ARG plots.
** Fall application made on Nov. 4, 2012 (plants were at 2-4 leaf stage).



Response of Winter Annual Grass* to Mid-Season Application of RyZup Smartgrass®

Harvest	Mid-Season Application**		
	RyZup (lbs/acre)	None	Diff. (%)
Feb. 17, 2012	-	-	-
Feb. 29, 2012	2038	1990	n.s.
Mar. 15, 2012	2366	2286	n.s.
Apr. 25, 2012	2684	2366	11.80%
Season Total	4831	4454	n.s.

* Averaged over rye, ann. ryegrass, and rye+ARG plots.
** Winter application made on Feb. 29, 2012.



Response of Winter Annual Grass* to Early and Mid-Season Application of RyZup Smartgrass®

Harvest	Early + Mid-Season Application**		
	RyZup (lbs/acre)	None	Diff. (%)
Feb. 17, 2012	1390	1006	27.6%
Feb. 29, 2012	-	-	-
Mar. 15, 2012	2217	1890	n.s.
Apr. 25, 2012	2300	1796	21.9%
Season Total	5445	4357	20.0%

* Averaged over rye, ann. ryegrass, and rye+ARG plots.
** Fall application made on Nov. 4, 2012 (plants were at 2-4 leaf stage), winter application made on Feb. 29, 2012.



Possible Negatives to Using GAs for Forage Management

Matthew et al., 2009 (NZ J. Ag Res.):

- Really only works if inducing the plant to grow when it wouldn't ordinarily (e.g., winter, late fall)
 - No benefit to adding if plant is already growing at max growth rate.
- Not all grass species respond similarly
 - Small grains > ann. ryegrass > tall fescue
- Reduces nodulation in legumes



Possible Negatives to Using GAs for Forage Management

Matthew et al., 2009 (NZ J. Ag Res.):

- Yield lag in later cuttings (at very high rates)
- Reduction in root mass (at very high rates)
- Reduction in tiller number (at very high rates)
- No significant change in forage quality observed, but possible?
- Could increase need for moisture and N.



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