

Stalk Boring Insects: Glyphosate Efficacy on Infested Giant Ragweed

Glyphosate occasionally fails to control giant ragweed at commercially acceptable levels.



Giant ragweed 21 days after it was sprayed with 22 oz/A of Roundup WeatherMAX™.

Possible reasons for control failures with glyphosate:

- Inadequate rates based on plant size
- Poor coverage due to dense population stands
- Additional emergence cohorts

Recently it has been thought that stalk boring insects may be responsible for reduced control since stalk boring insects can be found in large escaped plants.

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Giant ragweed 21 days after it was sprayed with 22 oz/A of Roundup WeatherMAX™, split open with the presence of stalk boring insects.

In 2002, Purdue University entomologists identified four different stalk boring insect species found in escaped giant ragweed plants.



Stalk borer



European corn borer



Celery leaf tier



Cocklebur weevil

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Greenhouse trials (2003)

- Giant ragweed plants were collected from the field and brought into the greenhouse.
- Half of the plants were infested with 2- to- 4 European corn borer larva (ECB) per plant when plants were 4" tall.
- Half of the plants were sprayed at 6" and the other half at 18" with four different rates: 0, 16, 22, and 44 oz/A of Roundup WeatherMAX™ at a 20 GPA carrier volume.
- 21 days after treatment, length of insect tunneling and dry weights of giant ragweed plants were recorded.

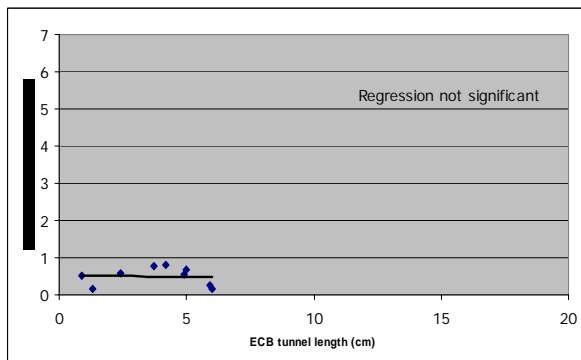
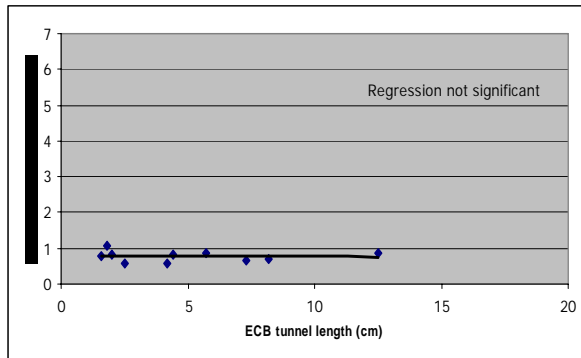


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Results

6" giant ragweed

Rate oz/A	Dry weight (% of control)	
	ECB Present	ECB Not present
0	100	100
16	55	59
22	58	46
44	44	55

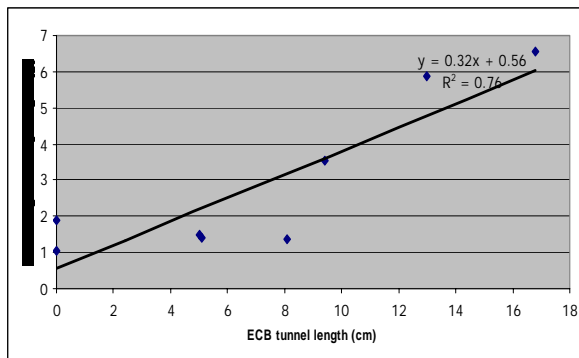


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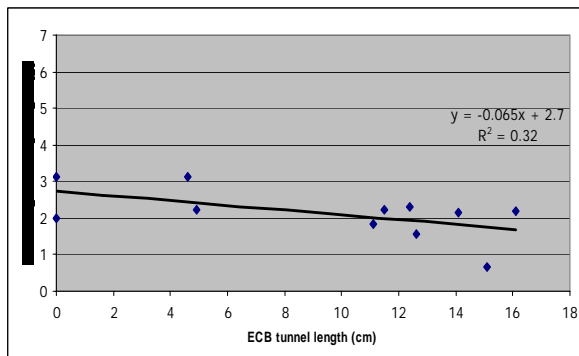
Results

18" giant ragweed

Rate oz/A	Dry weight (% of control)	
	ECB Present	ECB Not present
0	100	100
16	100	79
22	81	86
44	62	69



ECB infested 18" giant ragweed treated with 16 oz/A Roundup WeatherMAX™.



ECB infested 18" giant ragweed treated with 22 oz/A Roundup WeatherMAX™.

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Conclusions

- No overall reduction in control of 6" ECB infested giant ragweed plants when compared to non-infested plants at all rates.
- Overall control of 18" giant ragweed plants sprayed with 16 oz/A of Roundup WeatherMAX™ was reduced by 21% with the presence of ECB larval tunneling.
- Control of infested 18" giant ragweed plants increased with higher rates of Roundup WeatherMAX™.
- Spray plants when they are small, or use a higher rate of glyphosate when the plants are bigger to overcome the influence of stalk boring insects.

Current research

- Glyphosate rate by carrier volume interactions
- Identify insects in giant ragweed collected from Purdue Agricultural Centers

Future research

- Field studies