Weed Management in Dry Bean

My thoughts after 30 field seasons

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A Career Studying the Science of Weed Management in Dry Bean has been Very Rewarding

Science is a great path to truth precisely because it looks at itself with the strictest of eyes: it examines, tests, and corrects itself

Unknown

Pursuit rate must be adjusted based on market class

Herbicide Rate – Market Class

Adjust Pursuit Rate Depending on Market Class

Crop	mL / acre
Soybean	160
Azuki bean	125
Kidney and cranberry bean	<mark>100</mark>
White and black bean	<mark>75</mark>

The application of Pursuit at below label rates results in reduced weed control which can be partially addressed by adding a tankmix partner

Pursuit

Weed Control is Influenced by Rate



Pursuit

Weed Control is Influenced by Rate



Pursuit vs Treflan + Pursuit



Pursuit vs Treflan + Pursuit



Usually the small-seeded market classes within *Phaseolus vulgaris*, are more sensitive to soil-applied herbicides but sometimes it is the reverse

Bean Tolerance - Market Class

Large-, Medium-, vs Small-Seeded



Bean Tolerance - Market Class

Large-, Medium-, vs Small-Seeded



Dual is more gentle on beans than Frontier

Bean Tolerance - Market Class



Dual and Frontier cause less crop injury applied preplant incorporated than preemergence

Dual

Preplant Incorporated vs Preemergence



Azuki bean has much greater tolerance to the Group 3s (Prowl and Treflan) than the Group 15s (Dual, Frontier, Eptam, and Zidua)

Group 15 Herbicides

Preplant Incorporated



The Group 15 herbicides cause different injury symptoms in dry bean compared to soybean

"The spirit of liberty is the spirit which is <u>not too sure that it is</u> <u>right</u>. We all need to think it possible that we may be mistaken; we all need to be <u>not</u> <u>too sure that we are right</u>."

Judge Learned Hand

Group 15 Herbicides

Soybean



- 1. Leaves are cupped and crinkled
- Drawstring effect (heart-shaped leaves)

Group 15 Herbicides

Soybean



- 1. Leaves are cupped and crinkled
- 2. Drawstring effect (heart-shaped leaves)

Dry bean



- 1. Marginal chlorosis and necrosis of young leaves
- 2. Cotyledon and unifoliate leaves may drop off

Bean tolerance to 2,4-D is affected by application timing

2,4-D

Application/Seeding Interval







2,4-D

Application/Seeding Interval



Treflan + Pursuit applied preplant incorporated is a nice foundation herbicide program in beans

Treflan



Pursuit



Treflan + Pursuit



Select the postemergence broadleaf herbicide based on weed species composition in each field

Basagran vs Reflex



There are some possibilities for multiple herbicide-resistant Canada fleabane control in white bean

Multiple Herbicide-Resistant Canada Fleabane Control



Multiple Herbicide-Resistant Canada Fleabane Control



Trying to find new desiccants is really, really difficult

Desiccants



I think all dry bean growers should plan a two-pass weed control program of a soilapplied tankmix followed by a postemergence herbicide if required

Two-pass Weed Control



The bean plant expends energy to metabolize almost all herbicides The more herbicides in the tank, the greater the potential for crop injury Use the fewest herbicides at the lowest rates that provide acceptable weed control in each individual field

Thank you



Ontario Ministry of Agriculture, Food and Rural Affairs Alliance



Agricultural Products Company – BASF, Belchim, Grand River Bean, Hensall Co-op

Concluding Thought

When society/farmers follow the <u>weight</u> of independent, public science everybody wins

Final Thought

Despite all our accomplishments we owe our existence to a six-inch layer of topsoil, sunshine, and the fact that it rains

Farm Equipment Association of Minnesota and South Dakota

Thank you

