

# Herbicide Plant Back Restrictions and Potential Residual Problems

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## Herbicide Persistence: Plantback Restriction

- **Persistence of herbicides depend upon**
  - **Rate**
  - **1/2 Life**
  - **Repeated use**
  - **Herbicide availability**
- **Plantback restriction depends upon above plus**
  - **Sensitivity of the crop**

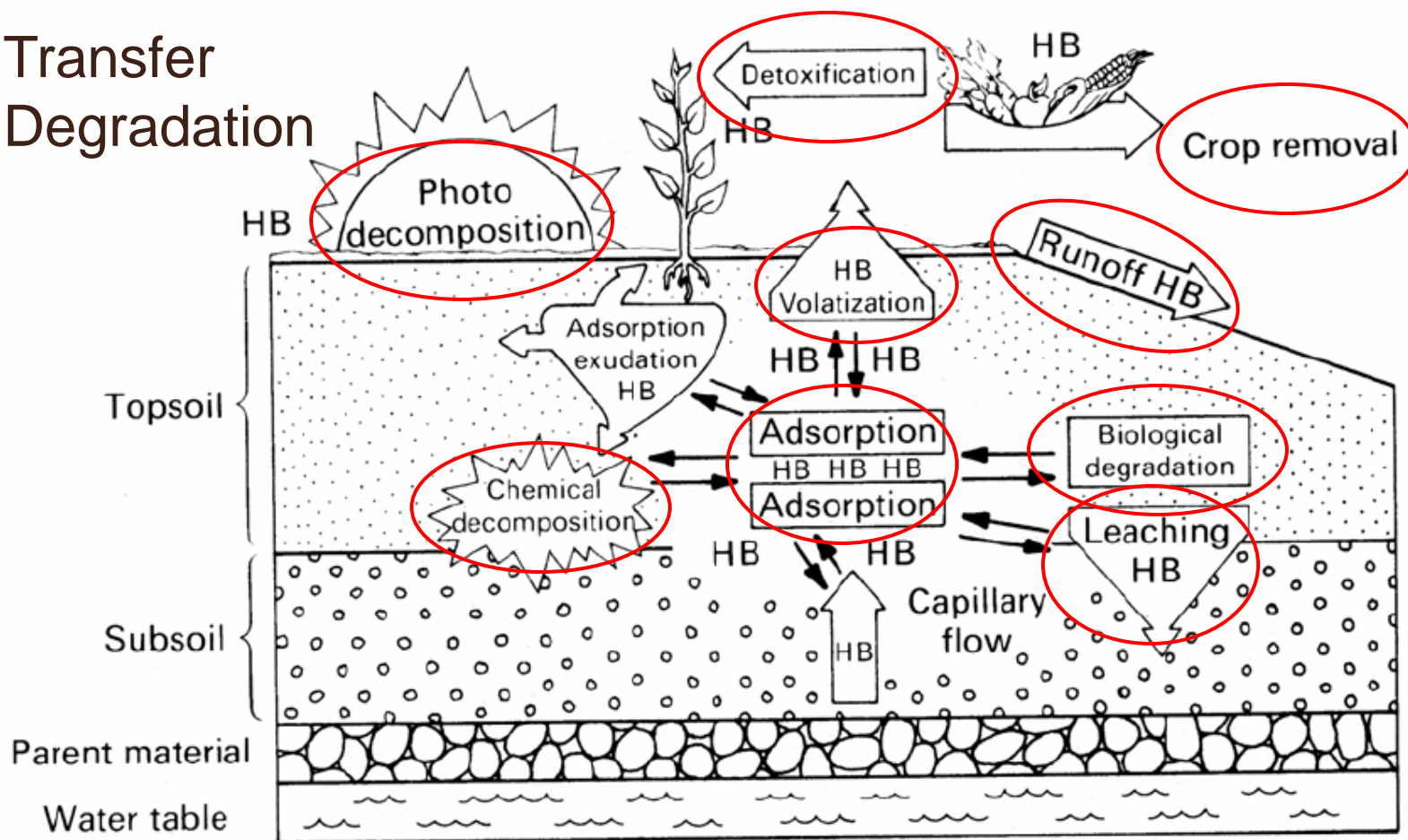
## Herbicide Half-life

- **Length of time required for one half of the original herbicide application to dissipate**
- **Determined by herbicide physical characters and environmental factors**
  - **Moisture**
  - **pH**
  - **Soil texture**
  - **Soil organic matter**

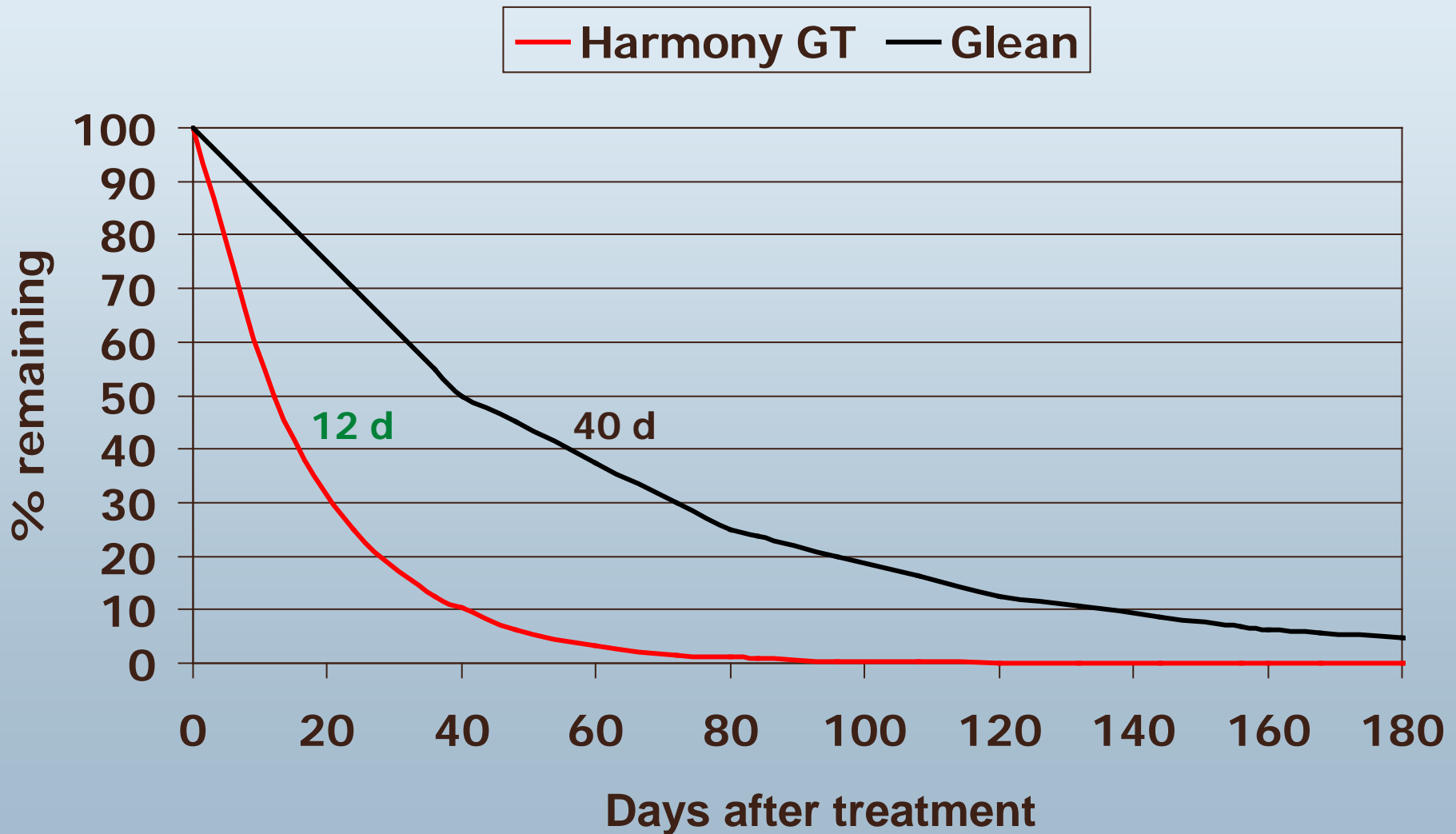


# Herbicide Fate

- 1. Transfer
- 2. Degradation



## Half-life of two sulfonylurea herbicides



Properties	Maverick	Powerflex	Olympus	Osprey	Everest
<b>AI</b>	<b>Sulfosulfuron</b>	<b>Pyroxsulam</b>	<b>Propoxy-carbazon</b>	<b>Mesosulfuron</b>	<b>Flucarbazone</b>
<b>Safener?</b>	<b>No</b>	<b>Yes – cloquintocet-mexyl</b>	<b>No</b>	<b>Yes – mefenpyr-diethyl</b>	<b>No</b>
<b>Soil half life (d)</b>	<b>14-75</b>	<b>5-23</b>	<b>4-54</b>	<b>13-21</b>	<b>8-22 (8 in WA)</b>
<b>Rotation Restrictions (months):</b>					
<b>Canola</b>	<b>22</b>	<b>9?</b>	<b>22</b>	<b>9</b>	<b>9</b>
<b>Peas</b>			<b>12</b>	<b>3</b>	<b>11</b>
<b>Lentil</b>			<b>18</b>	<b>3</b>	<b>24</b>

## Imazethapyr Degradation

Pullman, 2007-2008

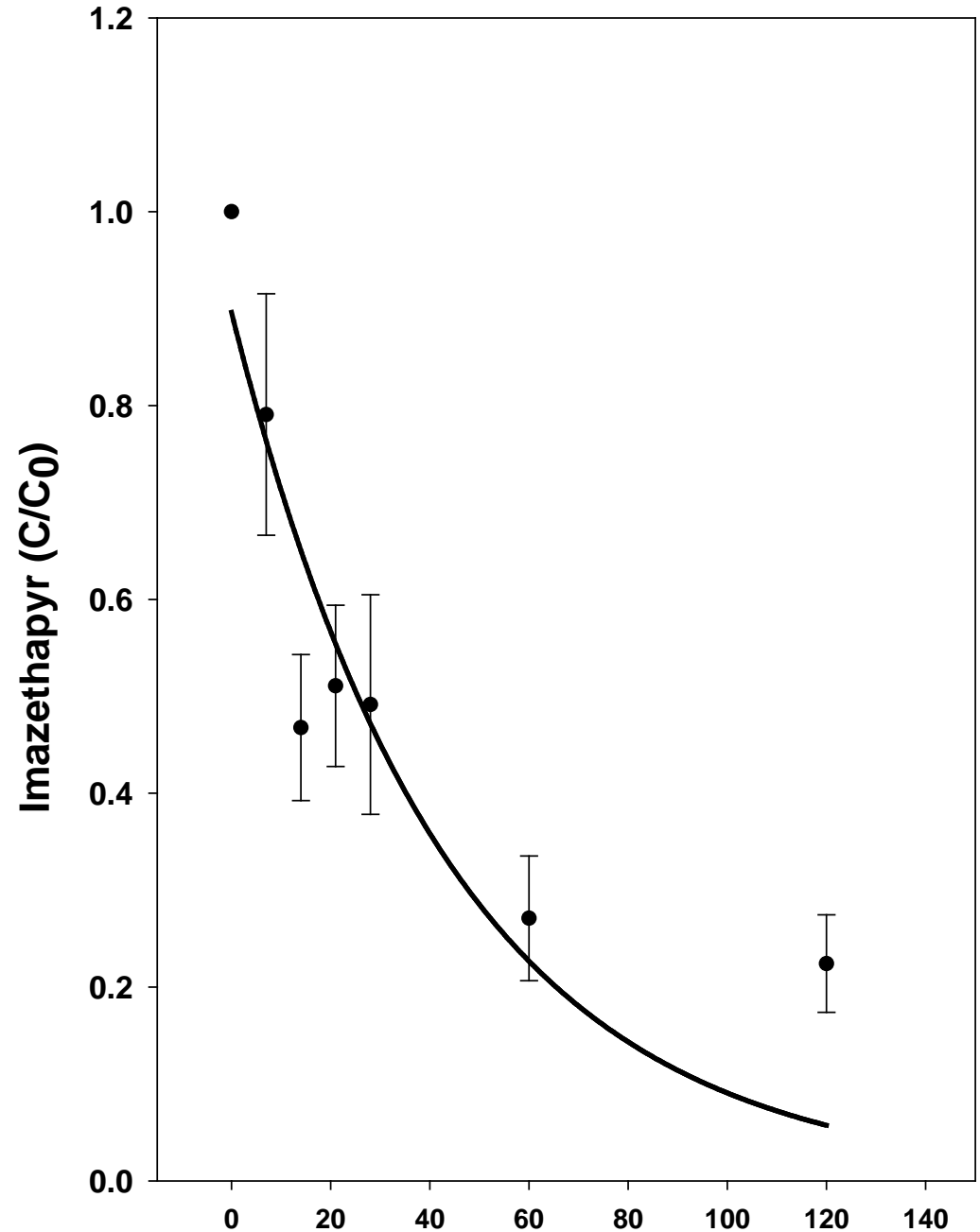
pH=5.4 OM=2.8%

$$C=0.8962e^{-0.0229t}$$

$$R^2=0.83$$

Calculated half-life: 30 days

No injury



## Imazethapyr Degradation

Pullman, 2008-2009

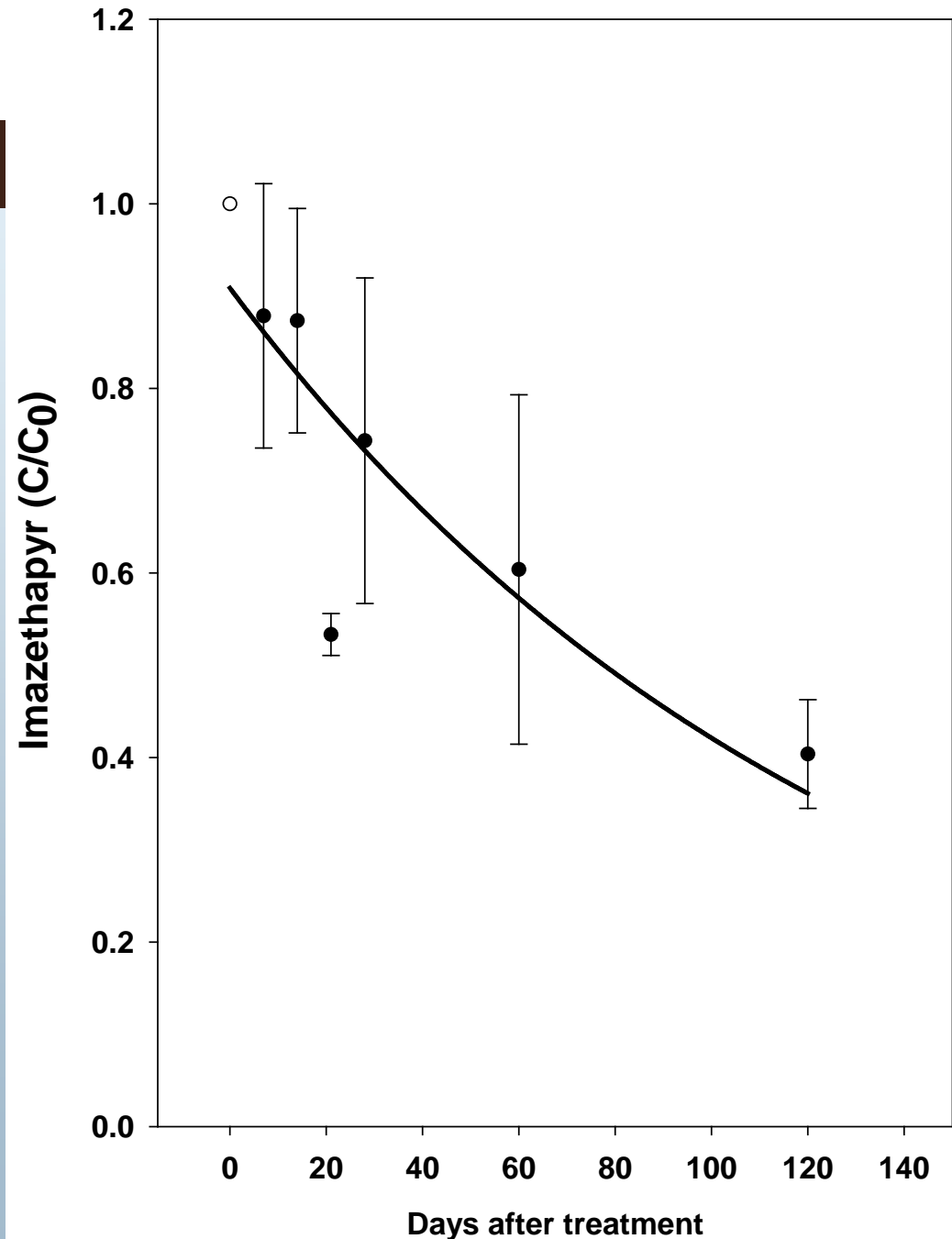
pH=5.3 OM=4.1%

$$C=0.9087e^{-0.0077t}$$

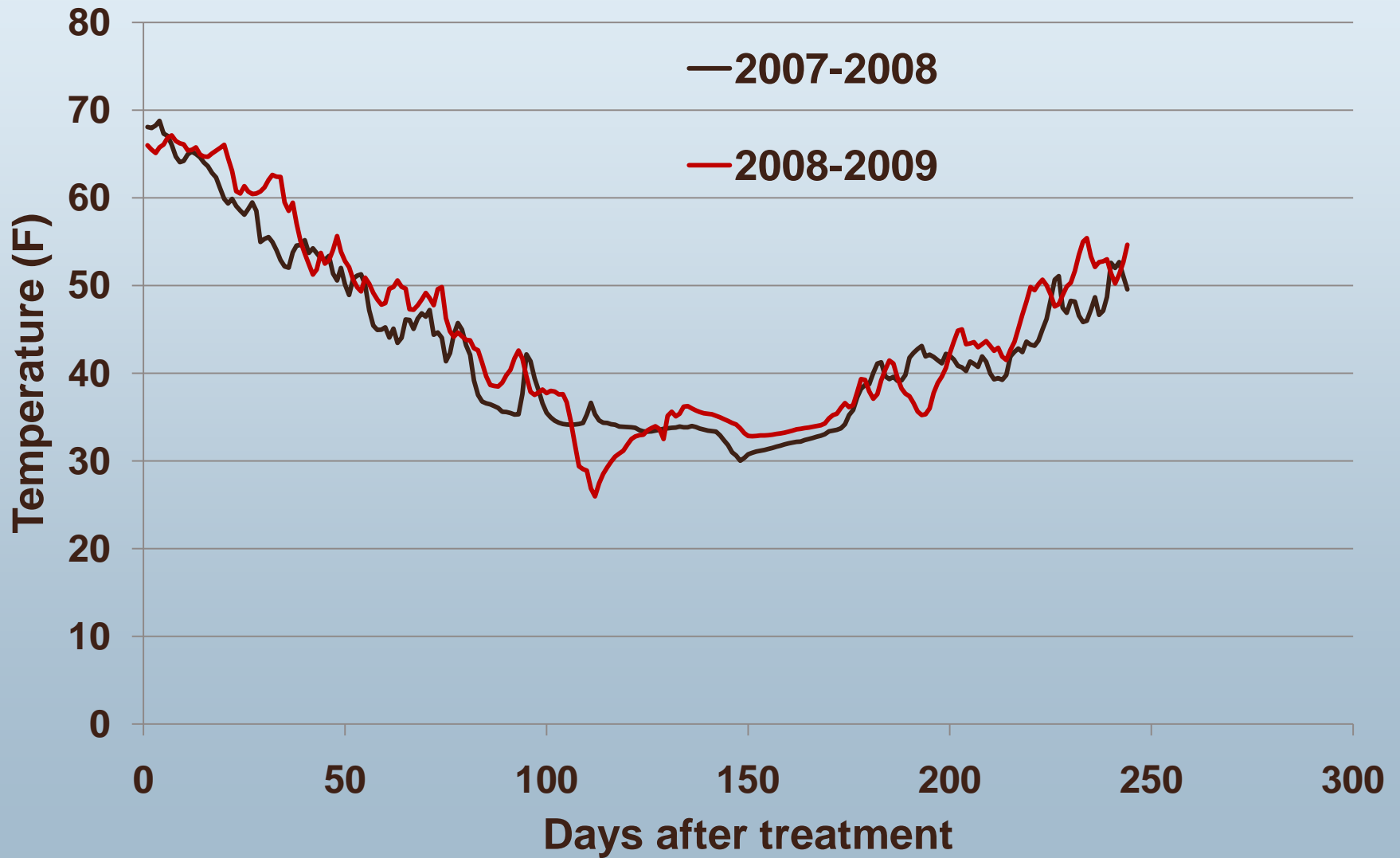
$$R^2=0.74$$

Calculated half-life: 90 days

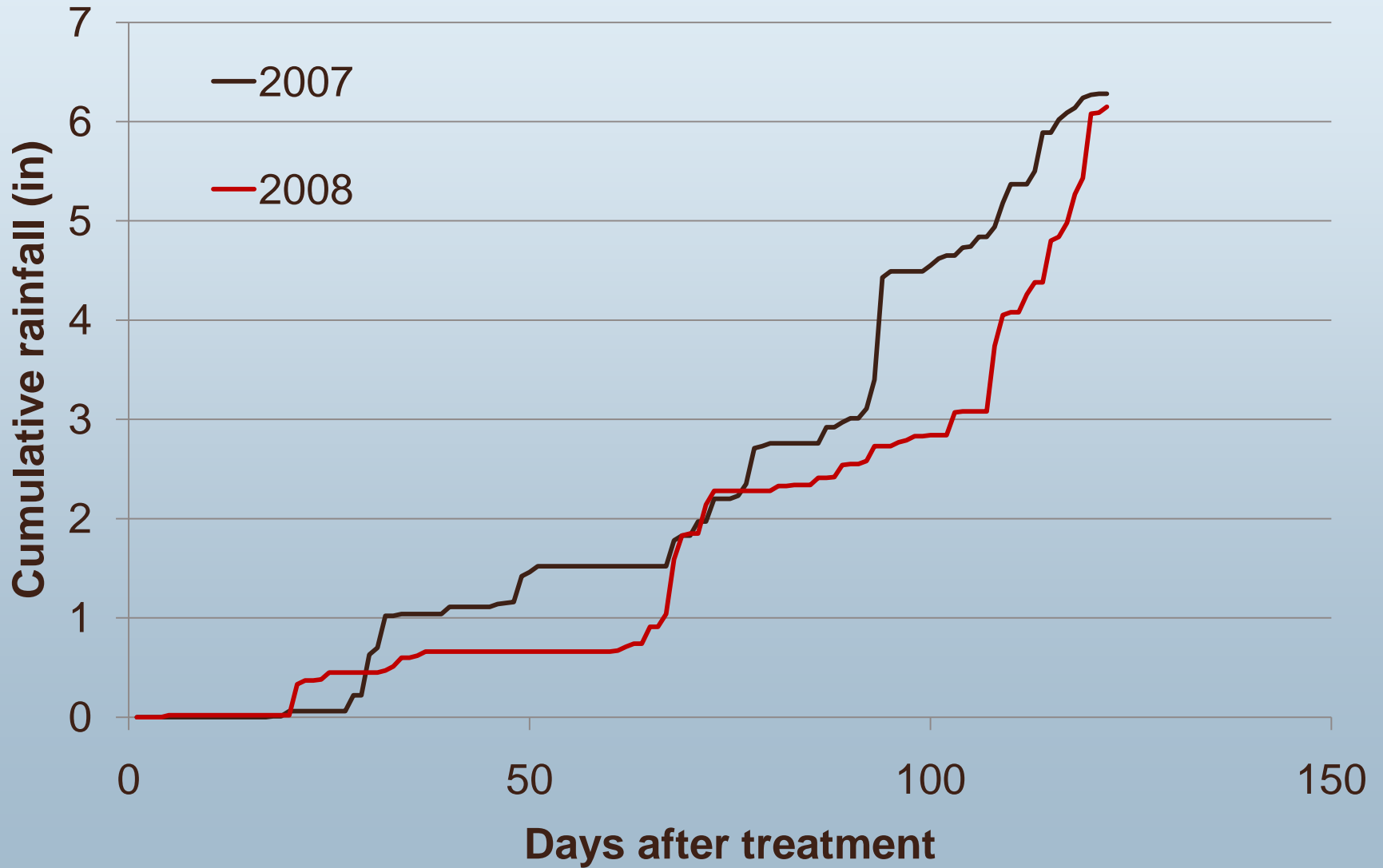
Time to reach a  
concentration equivalent to  
2.6 g/ha ~ 317 days



## 24 h Soil Temperature



# Cumulative Rainfall



# Conclusions: Herbicide Carryover

- **When rotating to canola**
  - Herbicide families of primary concern (ALS Inhibitors – Group 2)
    - Imidazolinones (IMI's)
      - Assert, Pursuit, Beyond
    - Sulfonylurea (SU's)
      - Ally, Amber, Express, Glean, Harmony GT, Maverick, Osprey, Peak
    - Sulfonylaminocarbonyltriazolinones
      - Everest, Olympus
- **Check your records and read labels**

# Questions

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## **Extension Bulletins**

**PNW 0437**

**Herb. Res. Weeds & Their Mgmt.**

**PNW 0571**

**Plantback Restrictions...**

**PNW 0572**

**Mgmt. Strategies for Prev. Herb.  
Resist. Grass Weeds in Clearfield  
Wheat Systems**

**<http://ext.wsu.edu/>**

**<http://www.uidaho.edu/extension/>**