



# Vegetable Gardens Augusta Forestry Center

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South River Science Team

June 15, 2004



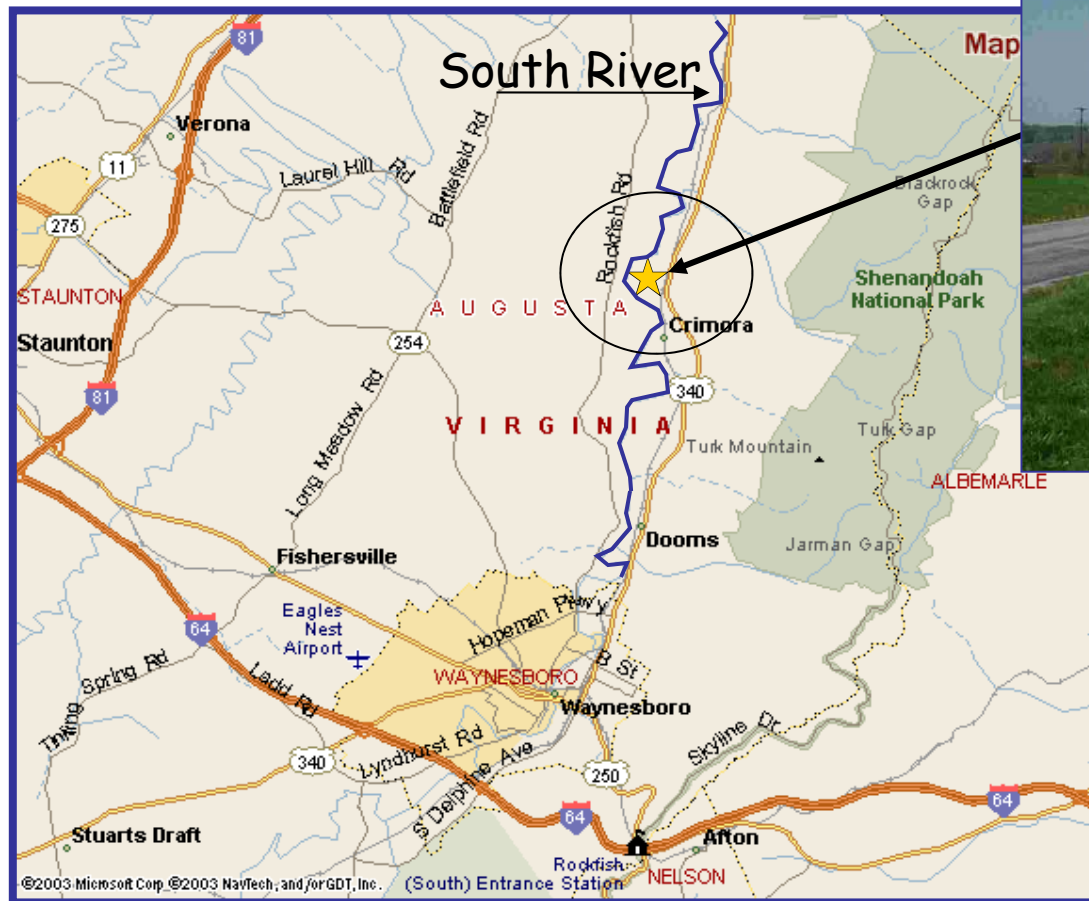
# Vegetable Garden Study

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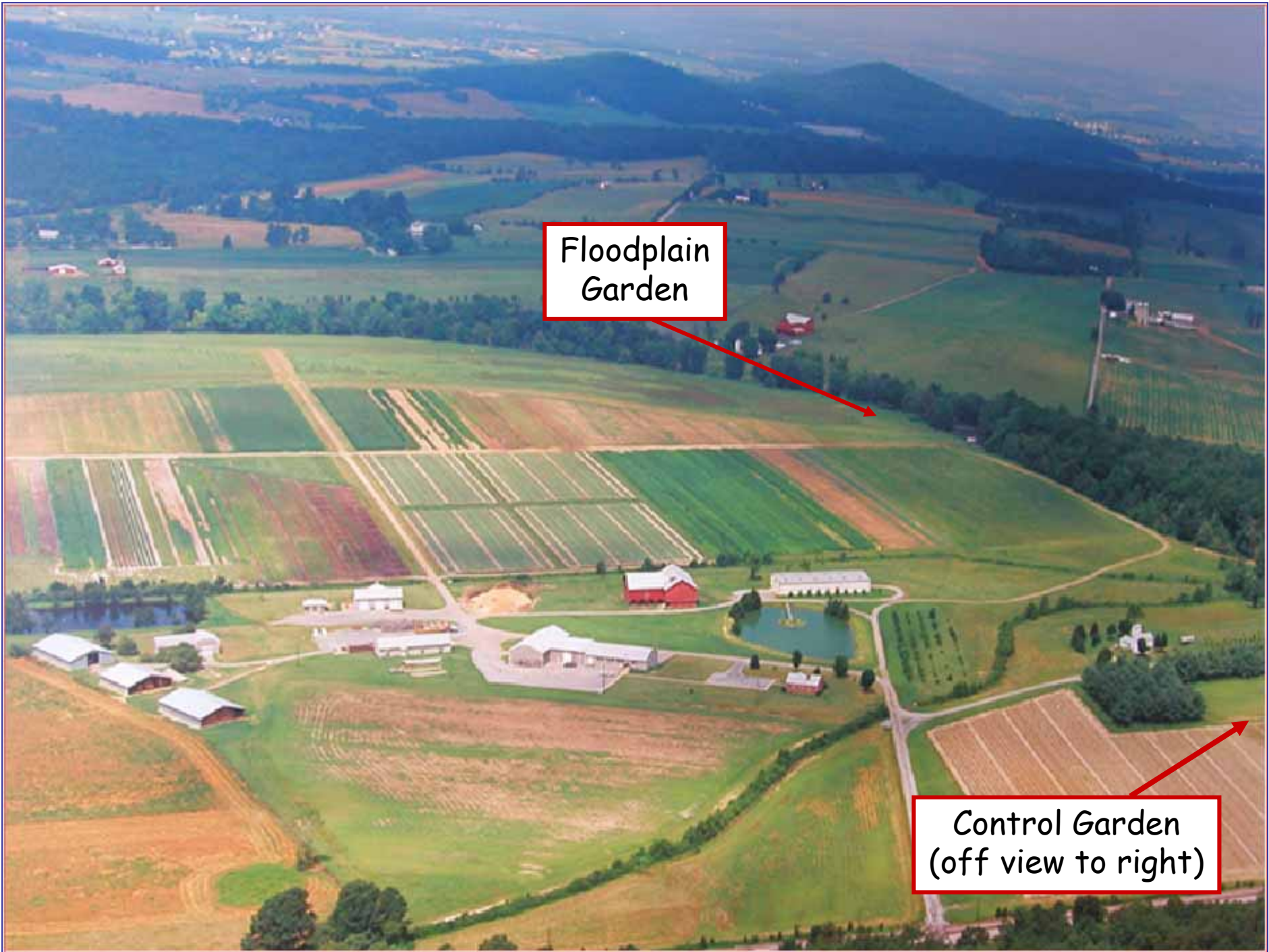
Objective –

Determine if soil-Hg is taken-up by vegetables at concentrations sufficient to be a health risk

# Augusta Forestry Center – Crimora, VA



June 15, 2004

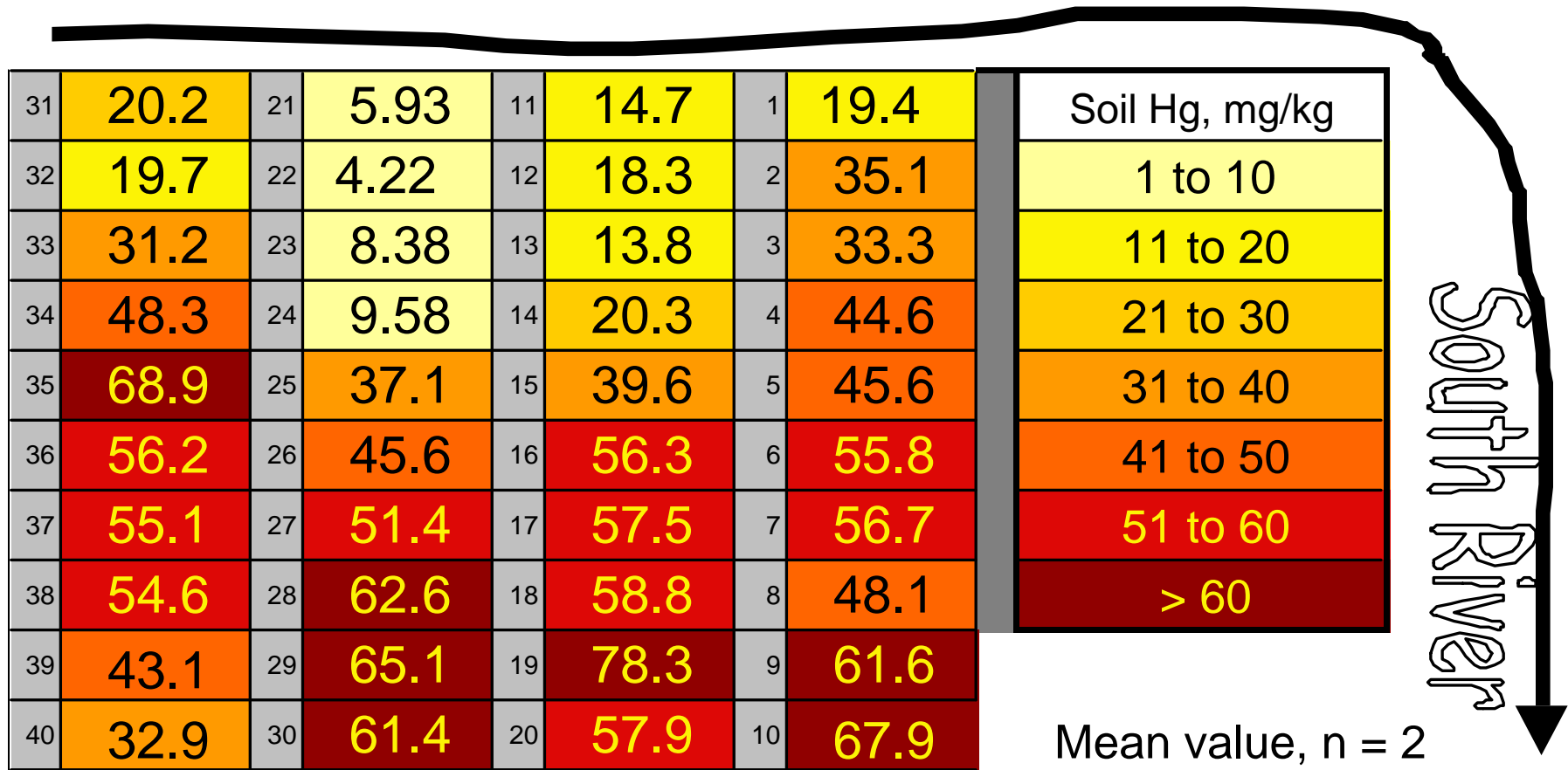


Floodplain  
Garden

Control Garden  
(off view to right)

# Floodplain garden soil samples Nov 23, 2003

mg Hg/kg soil, dry weight basis

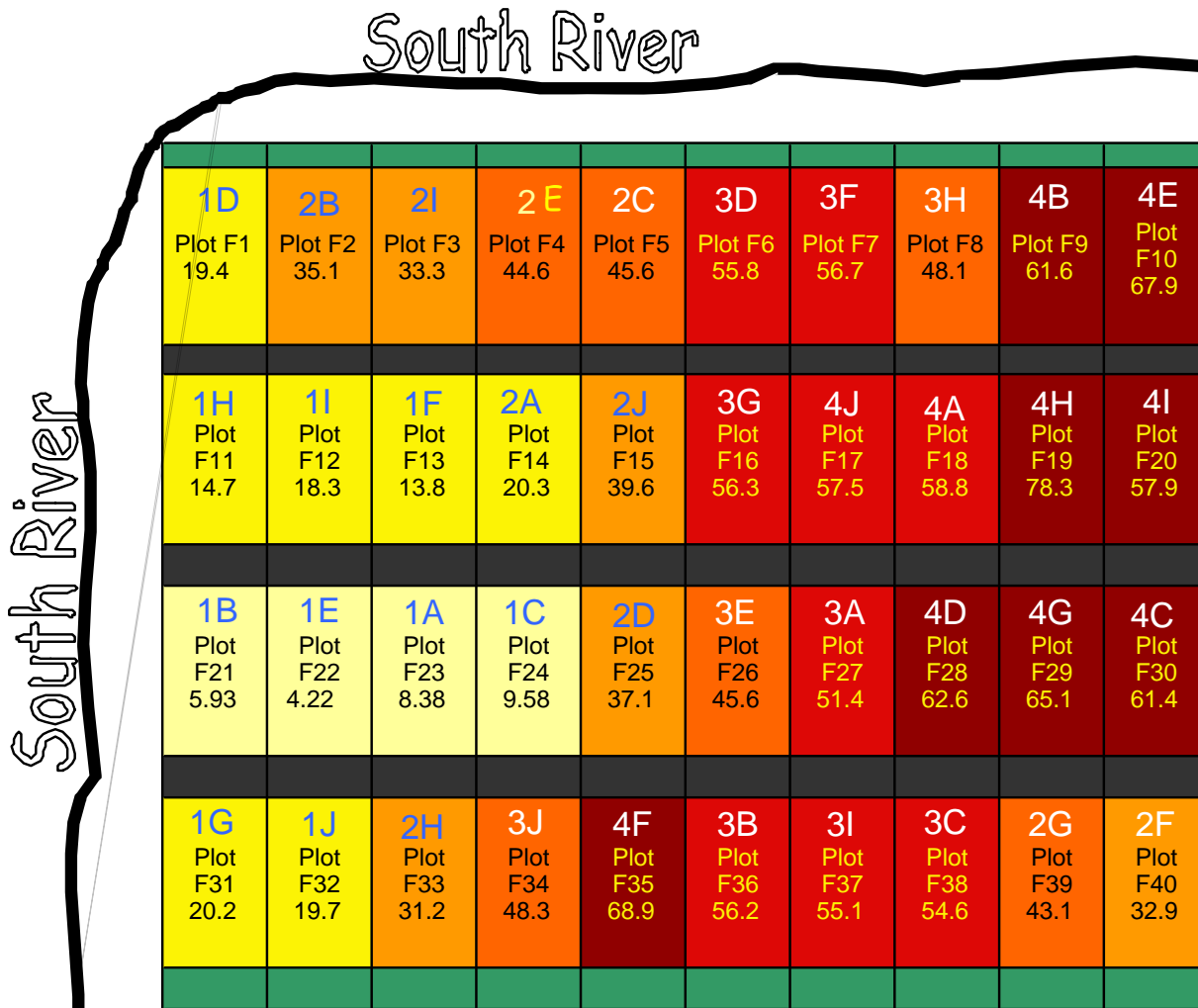


50 ft

June 15, 2004

# Floodplain garden was blocked (1,2,3 & 4) according to soil [Hg]

Note: Figure rotated 90° counterclockwise



- A Potato
- B Turnips and Beets
- C Peppers and cauliflower
- D Cabbage
- E Onions
- F Squash
- G Radish and carrots
- H Tomato
- I Spinach and lettuce
- J Bush Peas and Bush Beans

Plots in 4 x 10  
Randomized  
Complete Block  
design with some  
plots containing  
two species



## Floodplain Garden 6 -June - 2004



June 15, 2004

# Control garden soil samples

Nov 23, 2003

µg Hg/g soil, dry weight basis

1	0.162†	Soil Hg, ug/g
2		< 1
3		Not Sampled
4		
5		
6		
7	0.054‡	
8		
9		
10	0.038‡	

Office  
↓

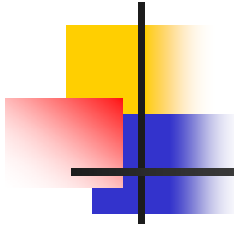
Control moved  
for 2004



† Mean value, n = 2

‡ Estimated value; results fall between MDL and LOQ





## 2004 Control plot is adjacent to (up-hill and North of) the 2003 control plot

IG Plot C1	IB Plot C2	IE Plot C3	I-I Plot C4	ID Plot C5
IA Plot C6	IJ Plot C7	IH Plot C8	IC Plot C9	IF Plot C10
II-I Plot C11	II-E Plot C12	II-D Plot C13	II-C Plot C14	II-H Plot C15
II-J Plot C16	II-A Plot C17	II-B Plot C18	II-F Plot C19	II-G Plot C20

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June 15, 2004



# Control Garden 6 - June - 2004



June 15, 2004



# Crops were planted much earlier in 2004 than in 2003

<b>2004 Crop list</b>	<b>Planted as:</b>	<b>Date 2003</b>	<b>Date 2004</b>
Beet	Seed	-----	11 - May
Radish	Seed	30 - Sept	11 - May
Carrot	Seed	25 - June	11 - May
Turnip	Seed	-----	11 - May
Potato	Cut seed potatoes	-----	24 - April
Red Onion	Onion sets	25 - June	24 - April
Scallions (onion)	Seed	-----	14 - May
Lettuce	Seed	30 - Sept	11 - May
Spinach	Seed	30 - Sept	11 - May
Cabbage	Transplanted	25 - June	24 - April
Cauliflower	Transplanted	-----	11 - May
Bush pea	Seed	-----	11 - May
Bush bean	Seed	-----	11 - May
Bell Pepper	Transplanted	25 - June	11 - May
Tomato	Transplanted	25 - June	11 - May
Squash	Transplanted	25 - June	11 - May

2003 species omitted in 2004 study: Sweet corn



And introducing this year's crops. . .

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# Beets and Turnips



June 15, 2004

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# Tomatoes, Squash and Cabbage



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# Spinach and Lettuce



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# Radish and Carrots

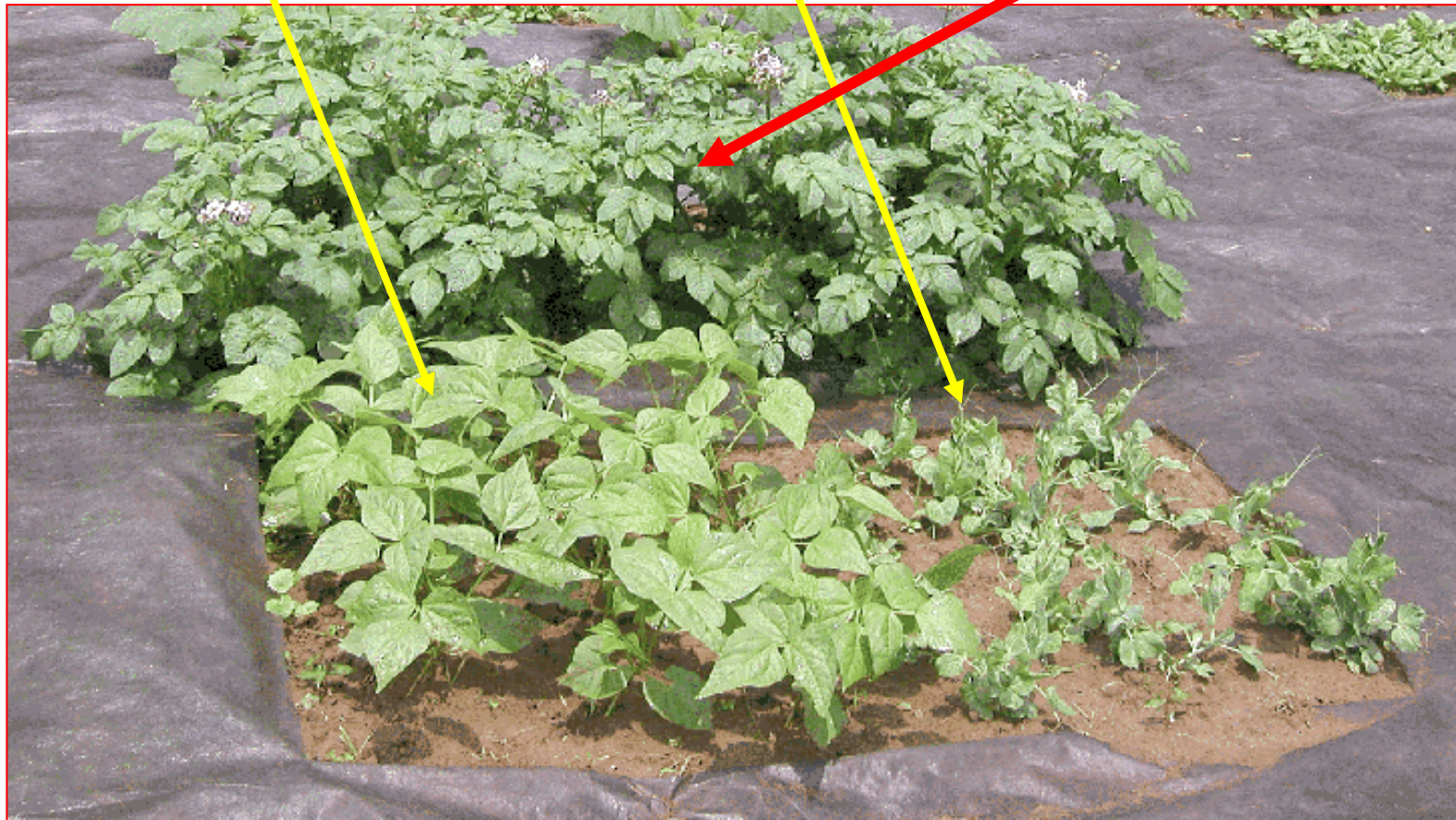


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# Bush Beans, Bush Peas and Potatoes



June 15, 2004



# Path Forward

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- Harvest 2004 crops as they mature and analyze for total Hg
  - Compare plant Hg analysis results at Lancaster and Frontier Laboratories for selected samples
- Collect floodplain and control garden soils in the fall for Hg analysis
- Complete SETAC posters w/ 2003 data and as much from 2004 as possible
- Evaluate 2004 results and plan for the future
- Begin work on publications



# Acknowledgements

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- Lydia Cubbage
- Mike Shifflett
- Don Kain
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  - Larry Estes
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# Questions???

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