

Evaluation of a Prototype Variable Rate Sprayer for Spot-Specific Application of Agrochemicals in Wild Blueberry

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Nova Scotia
Agricultural
College

Background – Wild Blueberry

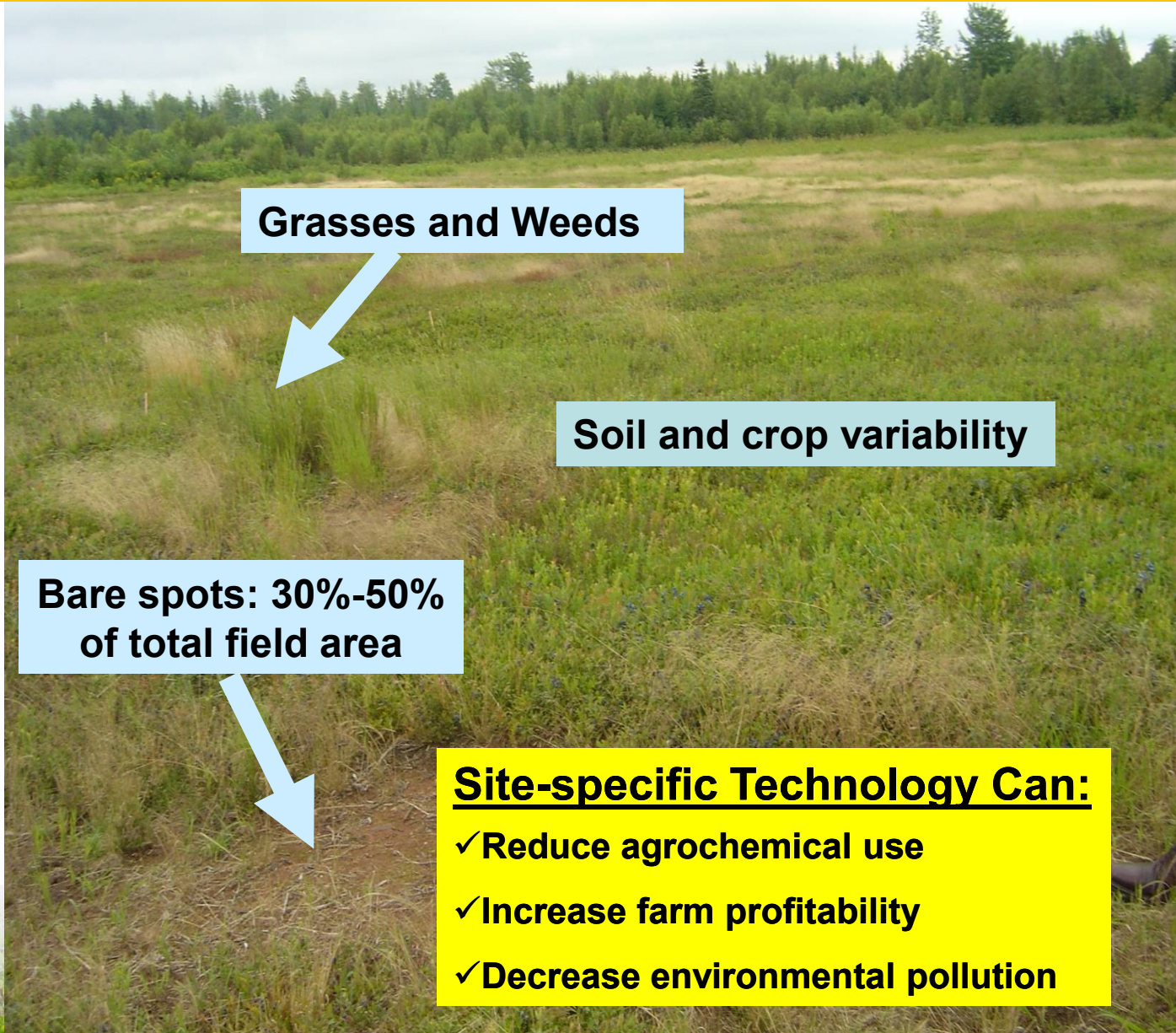
- Only grow in Eastern North America
- Unlike high bush cultivated blueberries, wild blueberries grow naturally.
- Wild blueberries spread by rhizomes under the soil.
- Grow on a two-year cycle. (one vegetative growth, and the other a fruit year)



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Wild Blueberry Fields Need to be Managed Site-Specifically



Grasses and Weeds

Soil and crop variability

**Bare spots: 30%-50%
of total field area**

Site-specific Technology Can:

- ✓ Reduce agrochemical use
- ✓ Increase farm profitability
- ✓ Decrease environmental pollution

Cost-Effective Prototype Variable Rate Sprayer

Boom width = 20ft

Boom sections = 8 @ 2.5ft spacing

Boom height = 30in

Each section = 1 ultrasonic/nozzle

8-channel computerized controller

DJ Land Manager II controller



Determining Mechanical Delay Time



Canon FS100 digital camcorder



Bulb



Delay in Real-Time



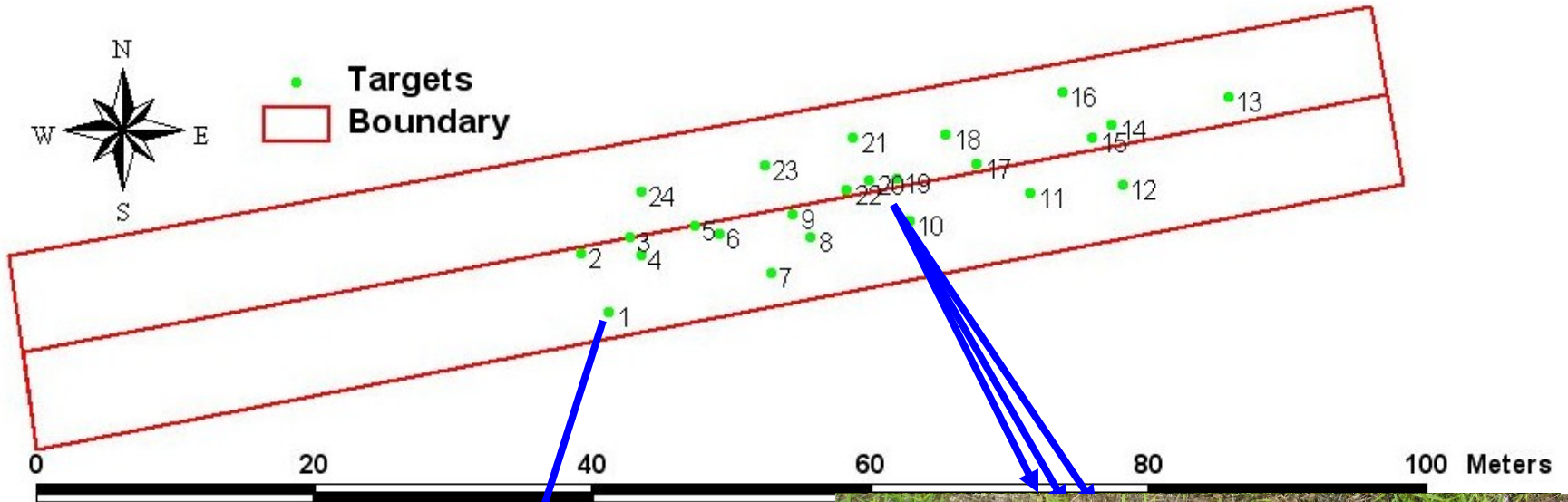
Video Frames Analysis



Video - VR Sprayer Testing in Hay Field



Variable Rate Sprayer Field Test (Goldenrod)



Video Clip - Uniform

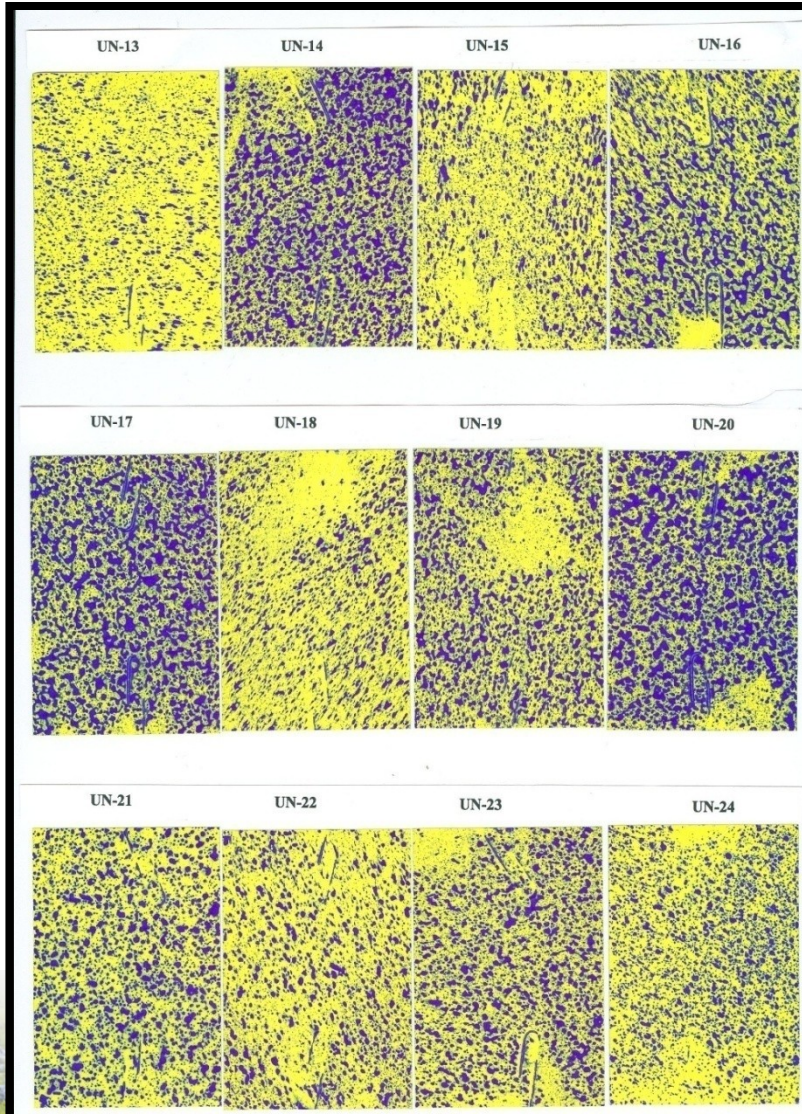


Video Clip - Variable Rate

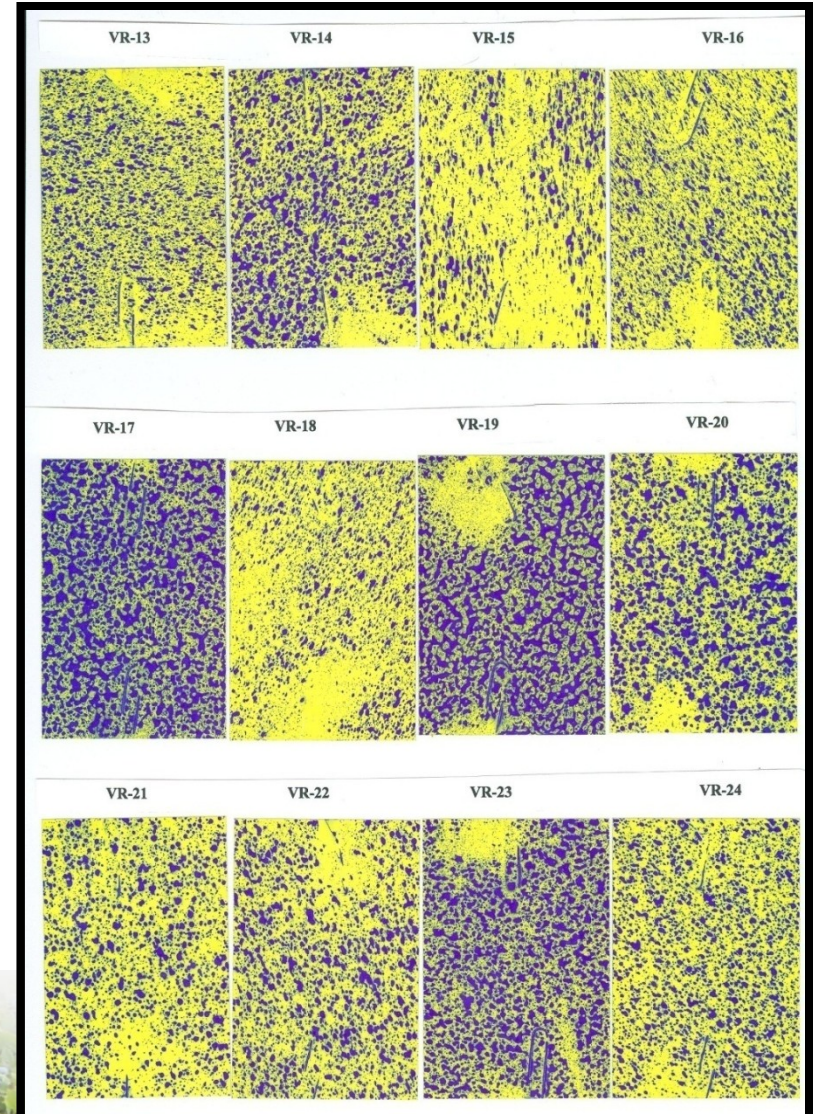


Water Sensitive Papers Coverage Results

Uniform

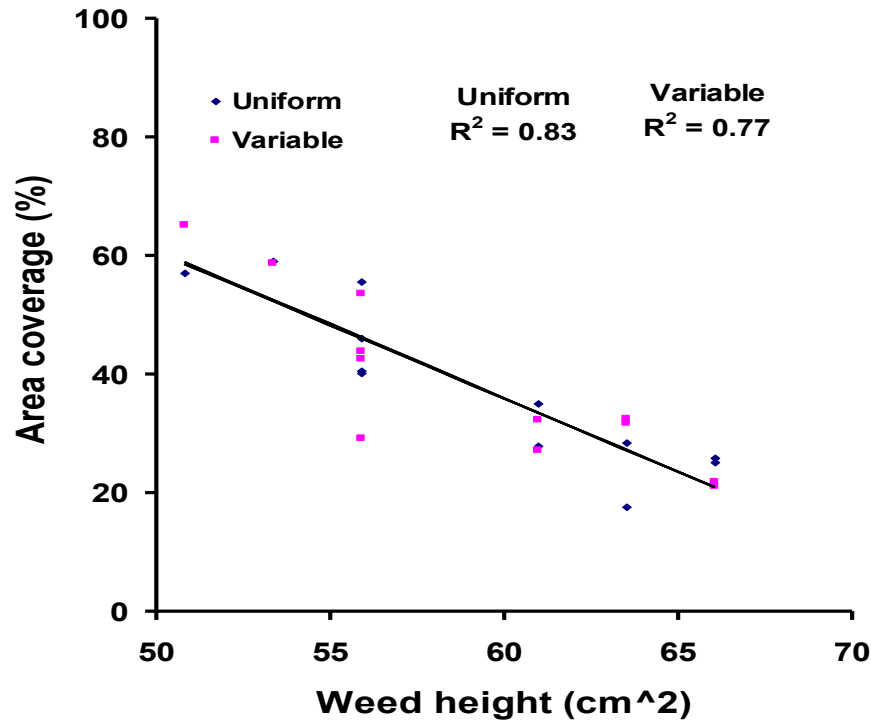


Variable Rate

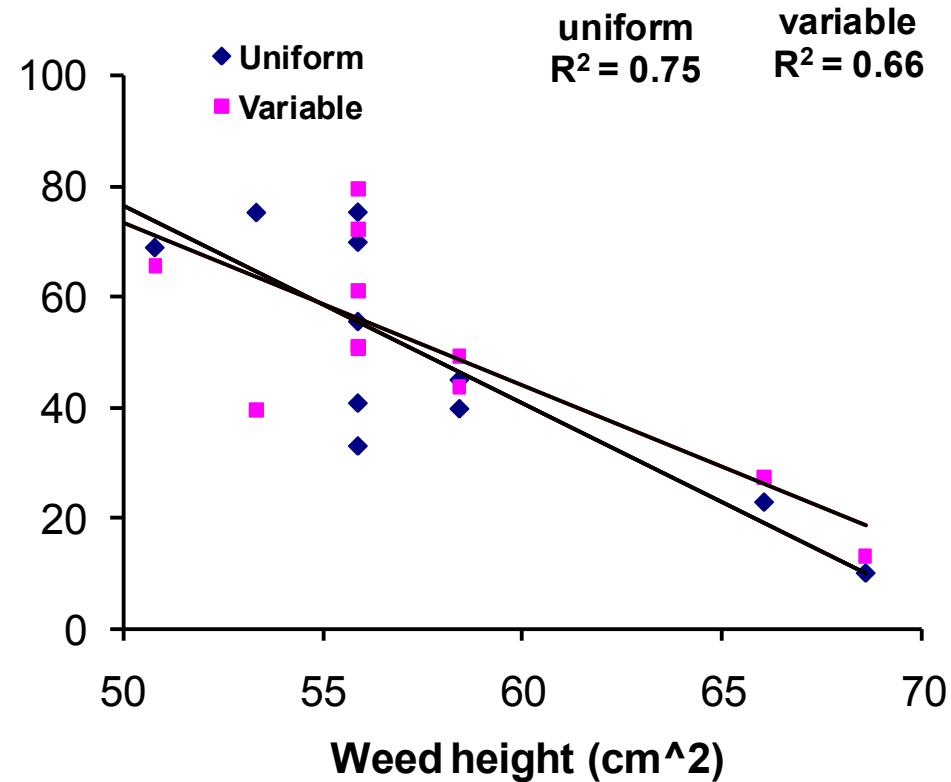


Relationship Between Weed Height and Area Coverage of the Target (Goldenrod)

Track 1



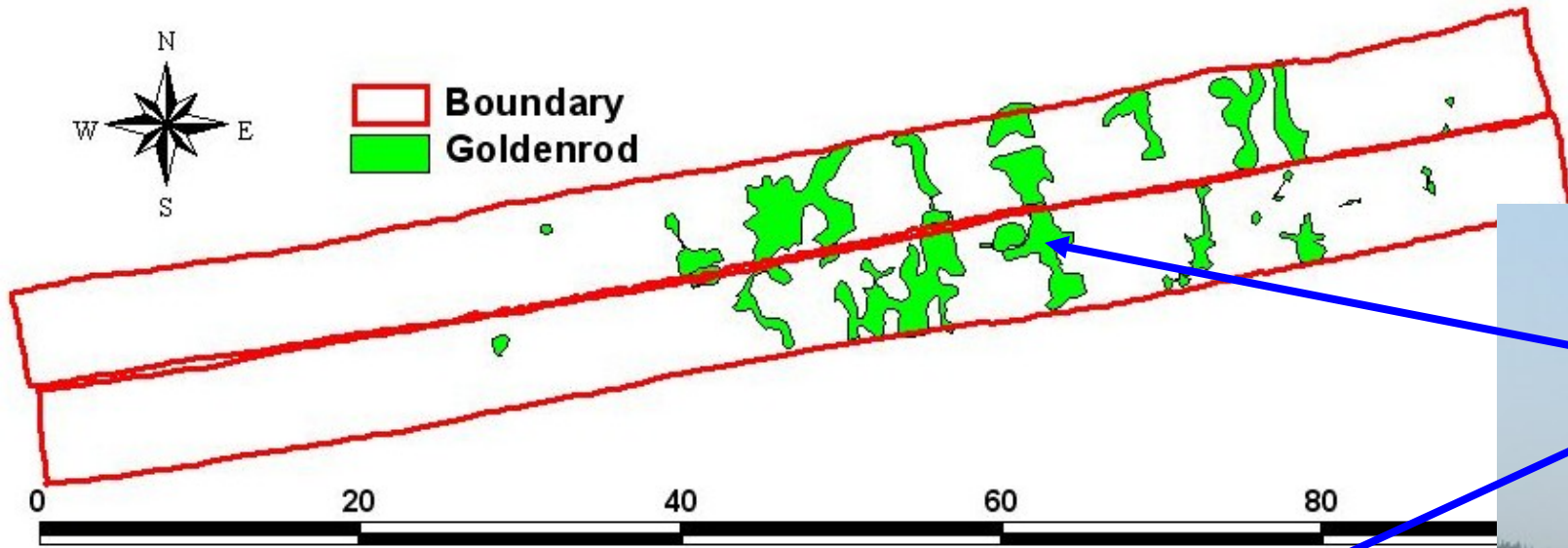
Track 2



Determine Sprayer Accuracy by Mapping Tall Weed Coverage (GPS)

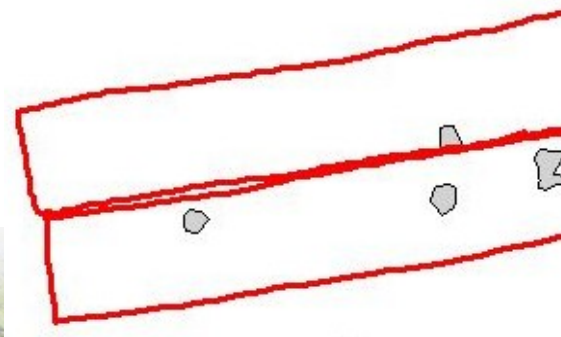


 **Boundary**
 **Goldenrod**

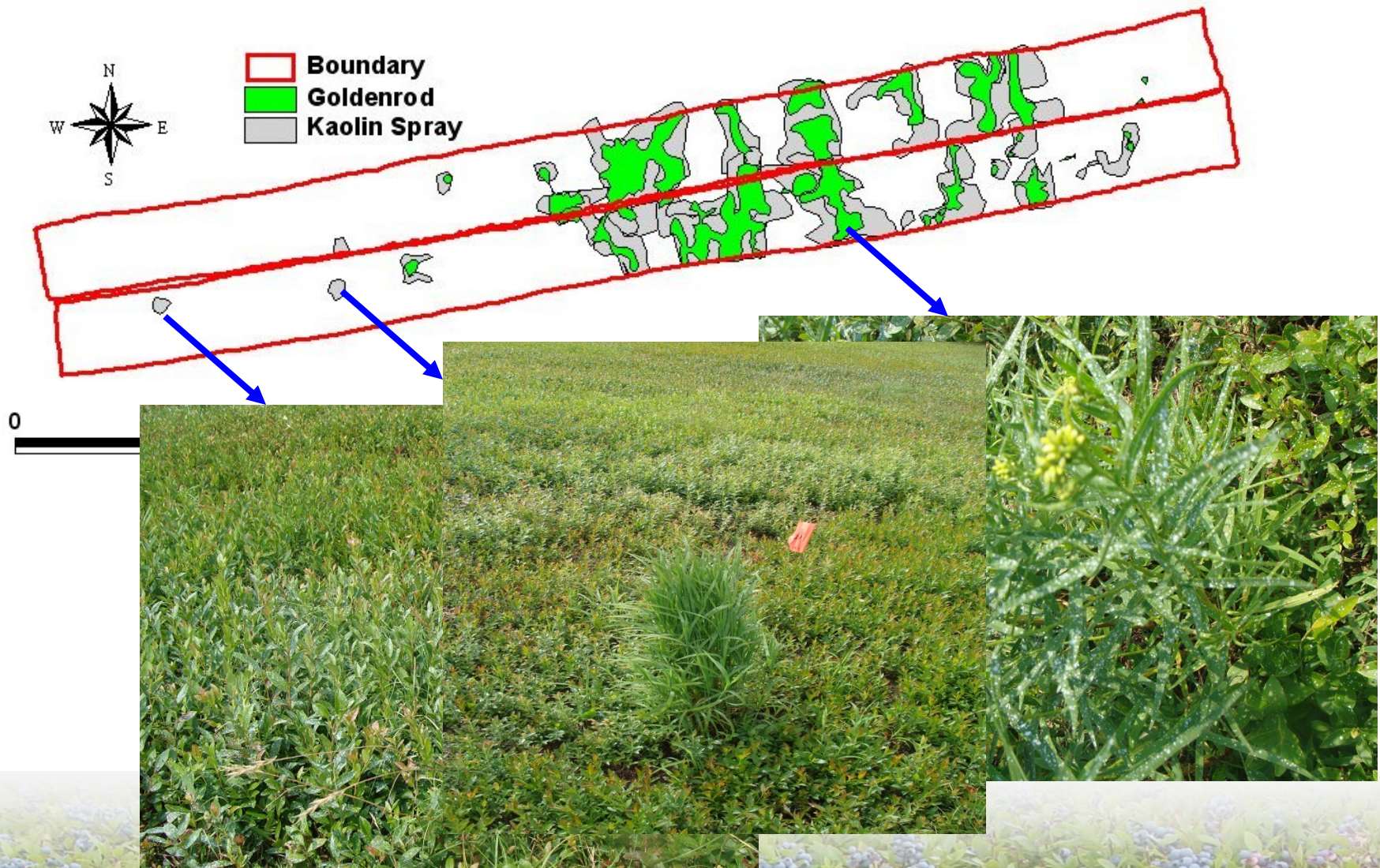


 **Boundary**
 **Kaolin Spray**

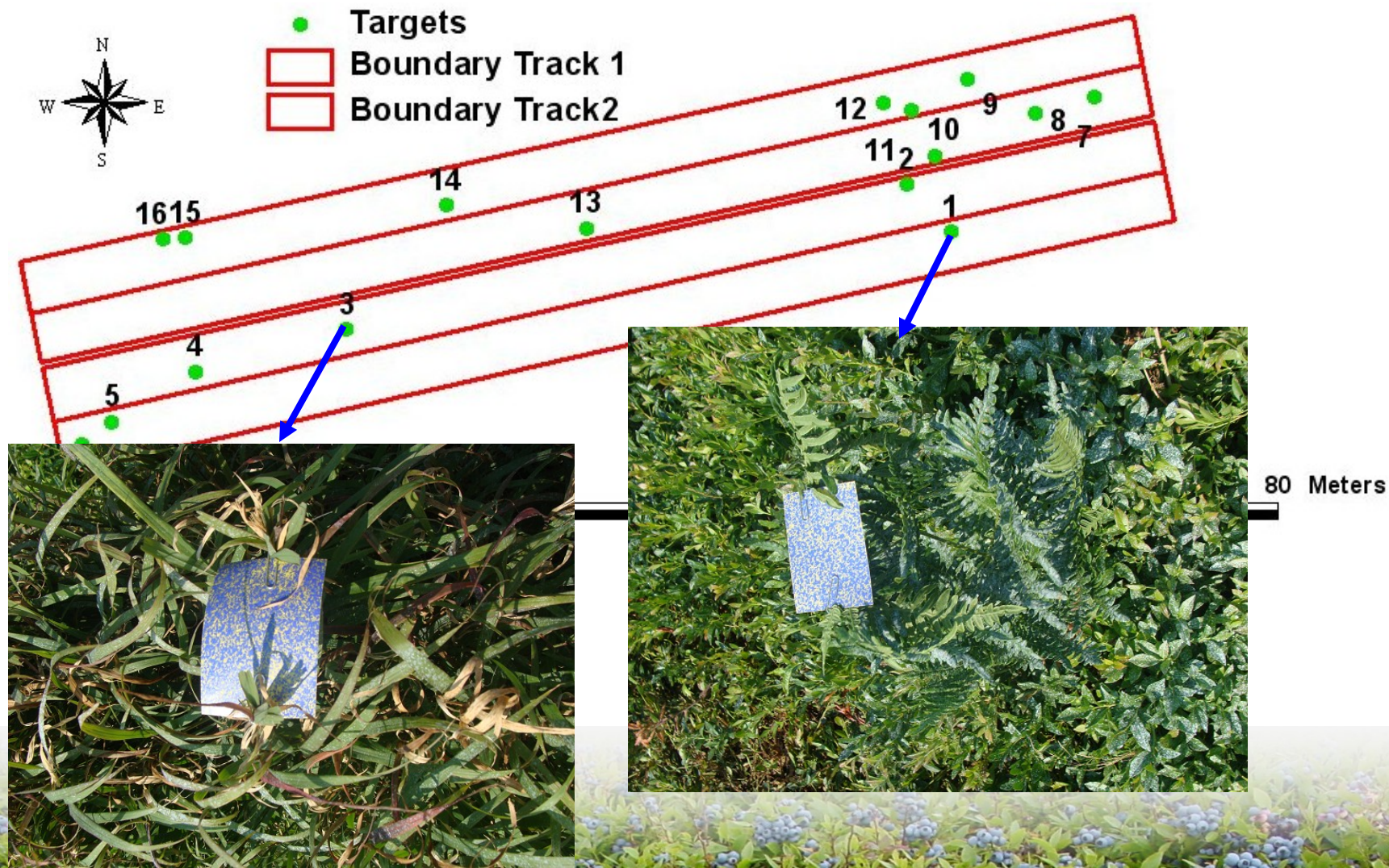
Real-Time Kinematic DGPS Base Station



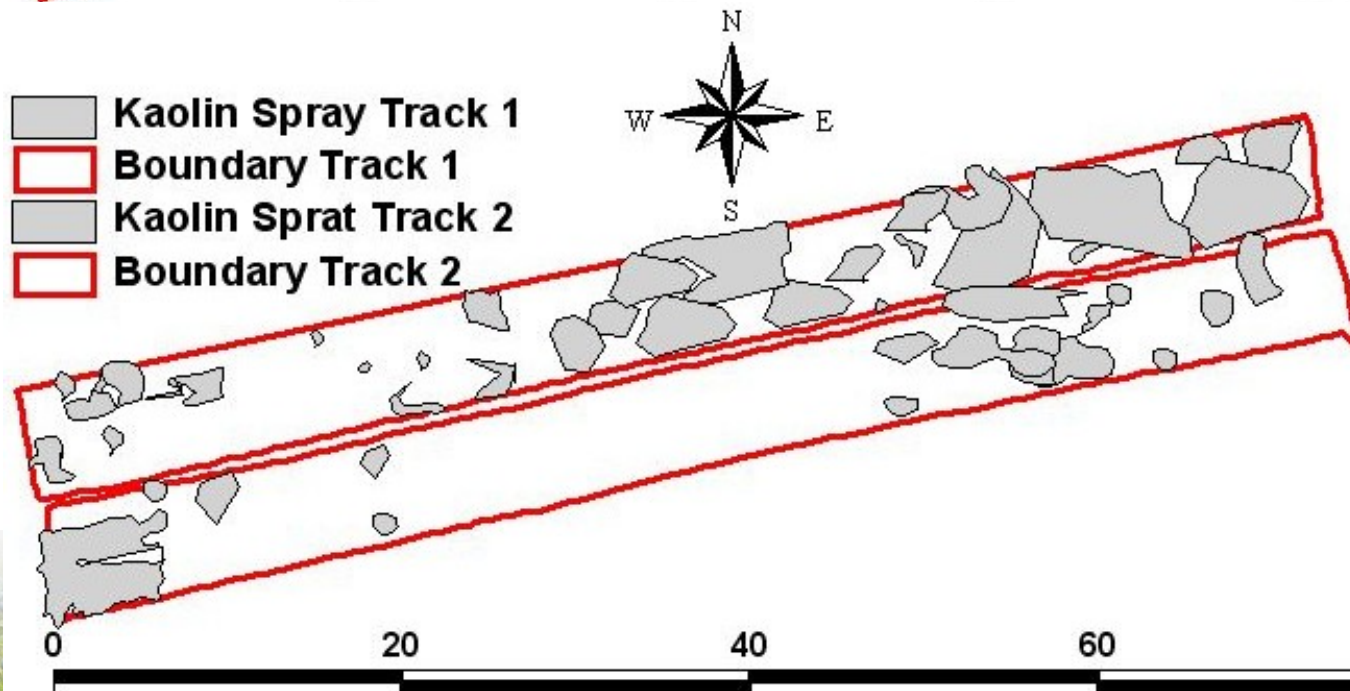
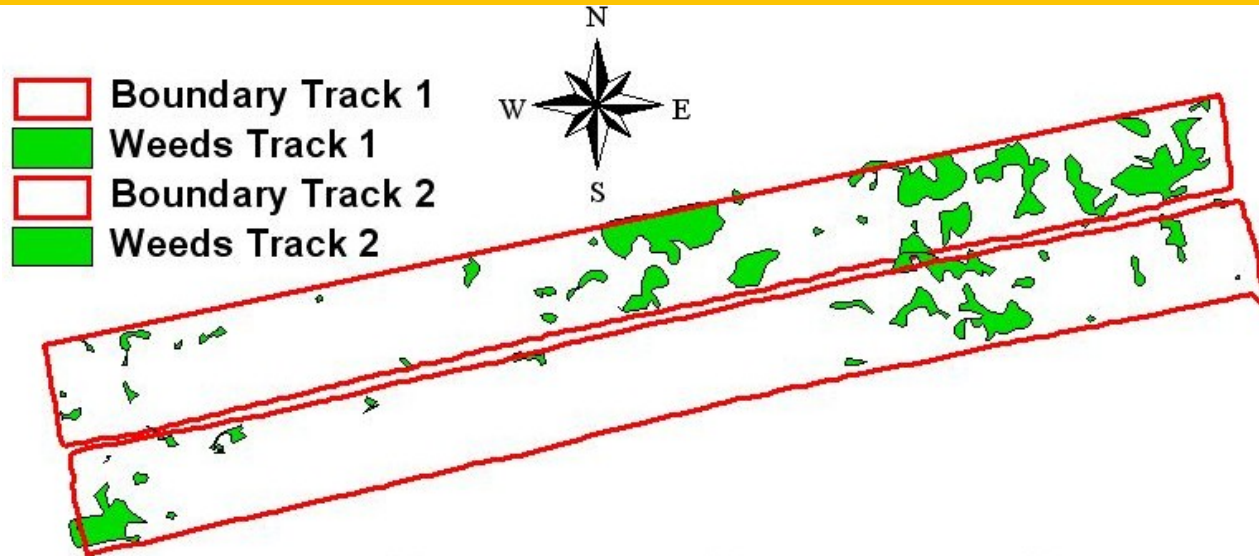
Comparison of Weed and Spray maps using RTK-GPS



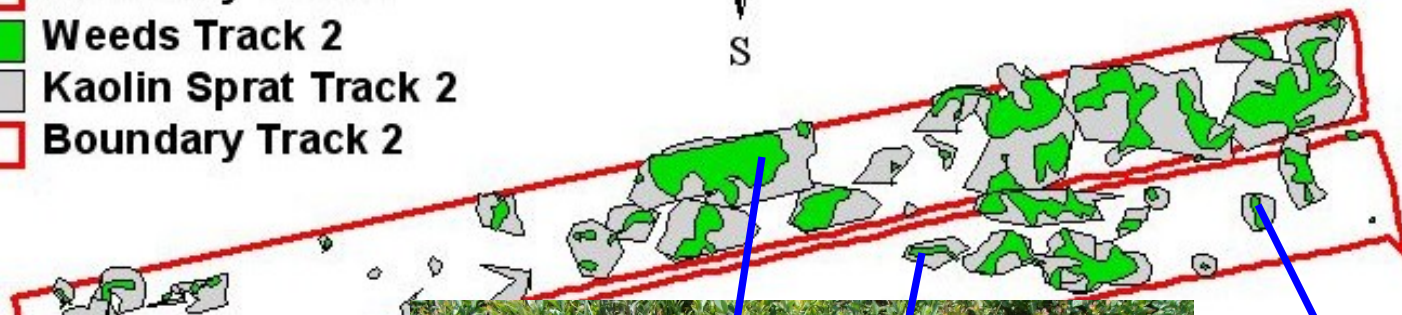
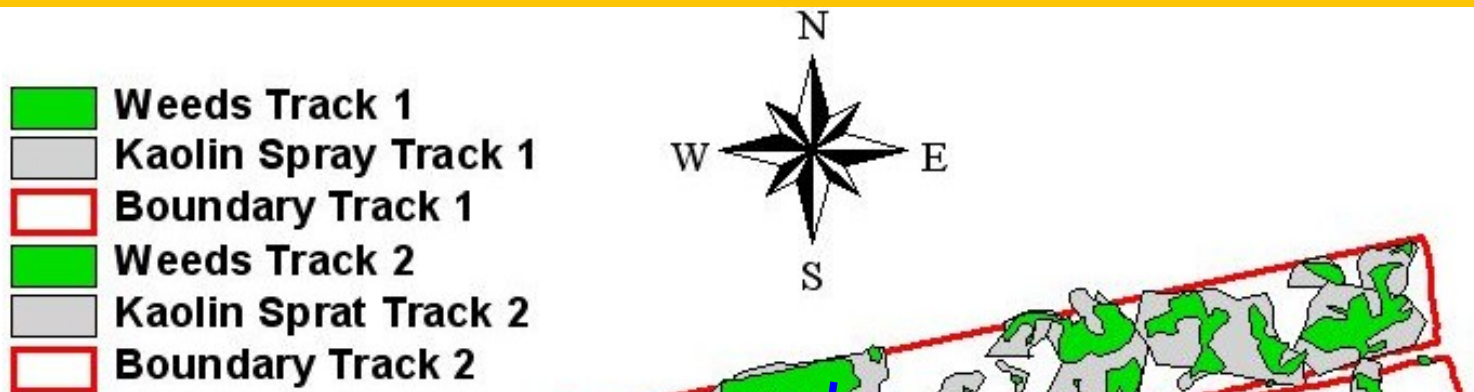
VR Sprayer Evaluation in a Wild Blueberry Field Consisting of Fern, Grass, and Dogbane



Weeds and Spray Maps

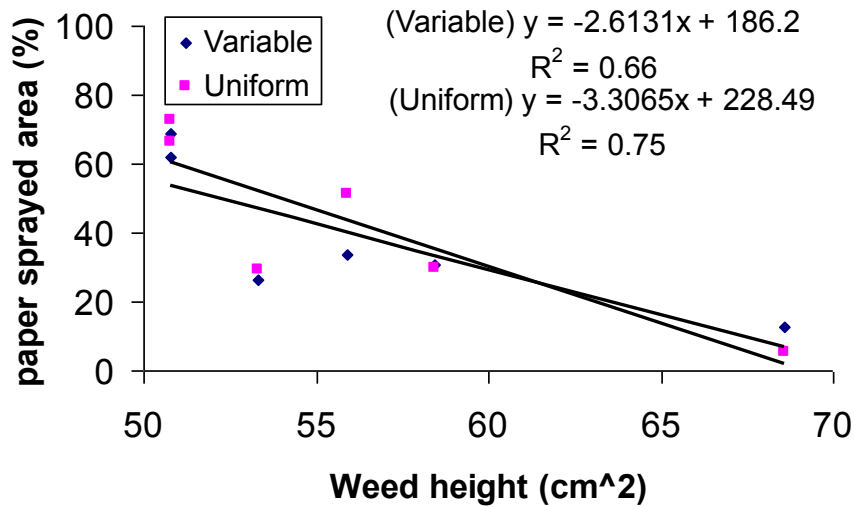


Weeds and Spray Maps

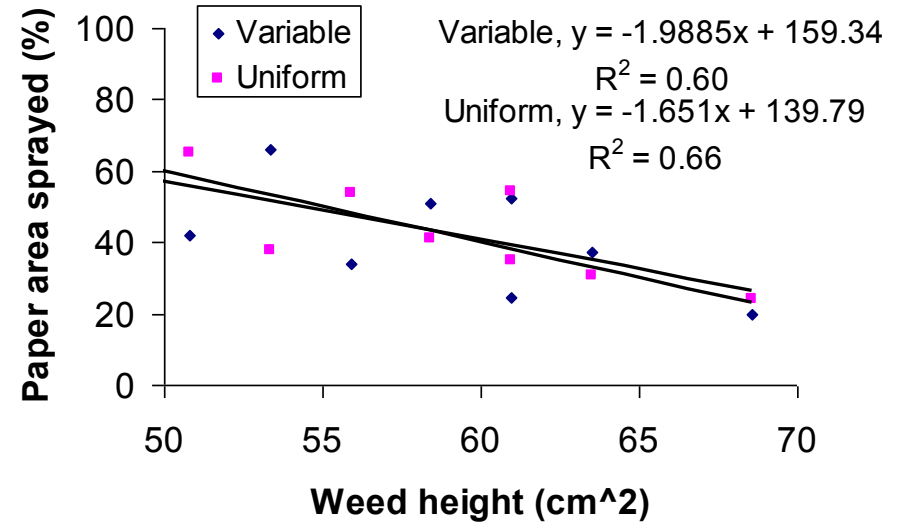


Relationship Between Weed Height and Coverage Area of the Target (Fern, Grass, and Dogbane)

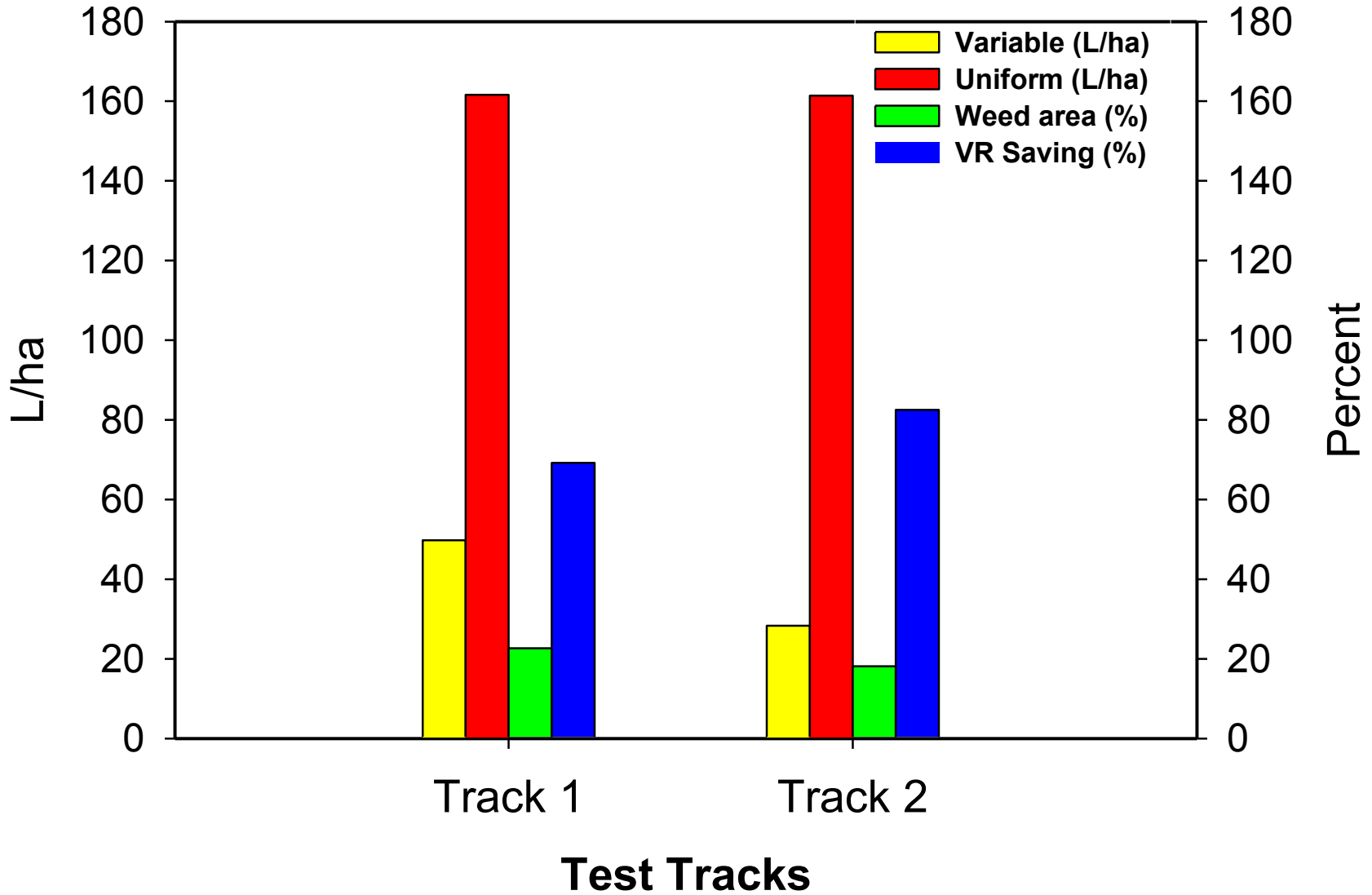
Track 1



Track 2



Chemical Saving with Spot-Application



Conclusions

- VR sprayer could be used for in-season spot application of agrochemicals in wild blueberry cropping systems to significantly reduce the amount of agrochemical usage
- Offers a huge cost saving for farmers
- Accurate.
- Environmentally friendly



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QUESTIONS?

