Meeting Minutes – September 12

Attendees

- Logan Sutton
- Gil Rezin
- Andrew Nelson
- Jordan Jobe

Project Vision

- Connect final project to an implementable solution for farmers.
- Aim for a practical, accessible system using off-the-shelf components.
- Long-term hope: Current large self-propelled sprayer may be the last one purchased.

Current Challenges

- Large sprayer (Case 44-40) has individual nozzle control and high accuracy.
- DGI drone sprayer issues:
- - Wind interference reduces spray quality and accuracy.
- - Frequent refills increase chemical exposure.
- Individual nozzle rate control not yet supported on big sprayers.
- Labor shortages mean the need to spray multiple products simultaneously.

Opportunities / Ideas

- Use drone imagery and AI to build prescriptions for spraying.
- Transfer prescriptions to robot sprayer for variable-rate application.
- Vary spray rate across boom using individual nozzle control.
- Validate effectiveness and determine optimal boom width.
- Develop toward larger, farm-ready robots.
- Explore open-source and cloud tools: Pix4D, AgriPilot.ai, WebODM, OpenDroneMap.

Field Test Example

- 20-acre field currently requires:
- - 8 fills with drone sprayer.
- - About 1 active hour to spray.
- Preference: Robot with individual nozzle control for efficiency.

Technical Considerations

- Robot path planning should allow for booms possibly extending beyond field boundaries.
- Cloud processing can be helpful for imagery but may not directly benefit farmers—on-farm usability is key.

Action Items

- Explore off-the-shelf components for practical robot sprayer design.
- Investigate drone imagery + AI workflow for prescription generation.
- Evaluate process for transferring prescriptions to robots.
- Research feasibility of individual nozzle rate control for robots.

- Assess open-source mapping and stitching tools for prescription generation.
- Plan next steps for meaningful field trials with robot sprayer.