On-Farm Trial Evaluating Drone-Seeded Cover Crop Establishment

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NEED & JUSTIFICATION

- Cover crops reduce nutrient runoff and sediment erosion into surface water.
- Aerial seeding of cover crops with planes and helicopters is common practice; however it is only feasible on larger, flat fields.
- Interest has been generated in using drones to seed cover crops into small, irregularly shaped fields or those fields otherwise not suitable for aerial seeding using a fixed-wing aircraft or helicopter (Figure 1).
- Little is known about how effective drones are at seeding cover crops and if they can deliver seed at the appropriate rate to establish a sufficient cover crop.

METHODS

- A cover crop of radish was flown on to a 26 acre standing corn field in Baltimore County, MD on August 27, 2020 using a HSE-TTA drone with a spin spreader.
- Cover crop establishment was determined on October 21, 2020 by counting the number of radish plants per square foot at 20 random locations across the field (Figure 2).
- Canopy density was calculated using the Canopeo® application for smartphones. Images were captured at 20 random locations across the field and percentage canopy coverage was calculated by the Canopeo software (Figure 3).

RESULTS

- The average cover crop plant population in the field was 3.1 plants/ft² with a low of 0 and maximum of 6. Radish plants averaged 5 inches in height at the time of rating.
- Average canopy coverage was 39.1%, with a minimum and maximum value of 20.3 and 53%, respectively.
- Previous research in Maryland has demonstrated that radish cover crops can capture over 100 lbs of nitrogen/acre.
- This trial demonstrates that seeding cover crops into standing corn via drones may offer a viable solution to planting an early cover crop in challenging fields.

Figure 1. Field location of drone-seeded cover crop (outlined in red).
Figure 2. Radish plant population calculated using a 1 ft² counting aid.
Figure 3. Unedited image (left) and percentage canopy cover image (right) calculated by Canopeo software showing 31% coverage.

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