

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.



Figure 1. Field location of drone-seeded cover crop (outlined in red).

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).



Figure 2. Radish plant population calculated using a 1 ft² counting aid.

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 3. Unedited image (left) and percentage canopy cover image (right) calculated by Canopeo software showing 31% coverage.

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