

Wildlife Services

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Tech Note

October 2017

Estimating Feral Swine Damage to Row Crops Just After Planting

Part of the WS Damage Assessment Series



Materials Needed:

Global Positioning System
Measuring Wheel or Tape Measure
Data Sheet

This Tech Note provides practical in-field measurement methods for estimating wildlife damage at planting to row crops, such as peanuts, corn, soybeans, and sugar beets. The methods are suitable for estimating damage to row crops caused by a variety of wildlife species, including feral swine.

Feral swine damage to row crops at planting can be assessed using the following information gathered from each agricultural field:

1. field size (area),
2. distance between rows, and
3. total combined lengths of segments of damage across all rows.

The method below describes how to estimate these three numbers from each field.



Feral swine cause more than \$190 million in damages to agricultural crops each year.



Sampling for Damage

The example data sheet at the end of this Tech Note can be used to record damage observations.

1. Select fields to be sampled for damage at planting.
2. Assign each field a unique identification number or name.
3. Note whether any feral swine management has occurred on or near the property within the last year.
4. Estimate the area of the field to be sampled for damage. The perimeter of the field can be defined using a Global Positioning System (GPS), and the area can be calculated using the GPS or Geographic Information System (GIS) software. Alternatively, Google Earth may be used to trace the field perimeter and calculate the area.
5. Measure the distance between two adjacent rows.
Note: This distance should be representative of the average distance between all adjacent rows.
6. Sample for damage at least twice in the first 10 days following planting. It is recommended sampling occurs 5 and 10 days post planting.
7. Locate damage by slowly driving the perimeter of the field. Using a measuring wheel, tape measure or GPS, record the length of each segment of rooting damage found in each row.
8. Record if/when a field is replanted, if damage occurs between observation periods, and if damage occurs to a replanted crop.

Note: Each observed damage segment is measured during each observation period, including damage segments that were measured during previous observation periods. This avoids having to keep track of locations and lengths of damage segments across observation periods and helps assess the total damage if crops are replanted.

Calculating the Damage

The amount of damage to the field is calculated as the summed length of all damage segments divided by the total summed length of all rows in the field. To simplify the calculations, the total summed length of all rows in the field is estimated using the field area and row width from Steps 4 and 5 page 1, *Sampling for Damage*.

1. Add the lengths of all damage segments together to get the DAMAGE TOTAL.
2. Convert the size of the field to square feet (or square meters) to get the FIELD AREA.
3. Make sure the ROW WIDTH estimate (from Step 5 on page 1) is in units (feet or meters) consistent with the square units for FIELD AREA.
4. Divide FIELD AREA by the ROW WIDTH. This will provide the estimate of the total summed length of all rows in the field.

$$\text{TOTAL ROW LENGTH} = \frac{\text{FIELD AREA}}{\text{ROW WIDTH}}$$

5. Divide DAMAGE TOTAL by TOTAL ROW LENGTH to estimate the proportion of the crop that was damaged.

$$\text{PROPORTION DAMAGED} = \frac{\text{DAMAGE TOTAL}}{\text{TOTAL ROW LENGTH}}$$

Note: This procedure is based on Thomas, J., Engeman R.M., Tillman, E.A., Fischer, J.W., Orzell, S.L., Glueck, D.H., Felix, R.K. Jr., and Avery, M.L. 2013. Optimizing line intercept sampling and estimation for feral swine damage levels in ecologically sensitive wetland plant communities. Environmental Science and Pollution Research 20:1503-1510.

Additional Information

For more information on estimating feral swine damage, please contact:

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Estimating Feral Swine Damage to Row Crops After Planting (Example Data Sheet)

Date: _____ Observer: _____ Field ID: _____ Crop: _____

Days since planting: _____ Distance between rows: _____ Field area: _____

Has this field been replanted (all or part) due to feral swine damage? Yes No

Has this area received WS operations control? Yes No

If yes, when? _____

Damage measurements units: Feet Meters

Obs #	Length of damage segment	Had this portion of the row been replanted?	Obs #	Length of damage segment	Had this portion of the row been replanted?
1			2		
3			4		
5			6		
7			8		
9			10		
11			12		
13			14		
15			16		
17			18		
19			20		
21			22		
23			24		
25			26		
27			28		
29			30		
31			32		
33			34		
35			36		
37			38		
39			40		
41			42		
43			44		
45			46		
47			48		
49			50		
51			52		
53			54		
55			56		
57			58		
59			60		