

Fly Monitoring for Grazing Cattle - Preliminary Study

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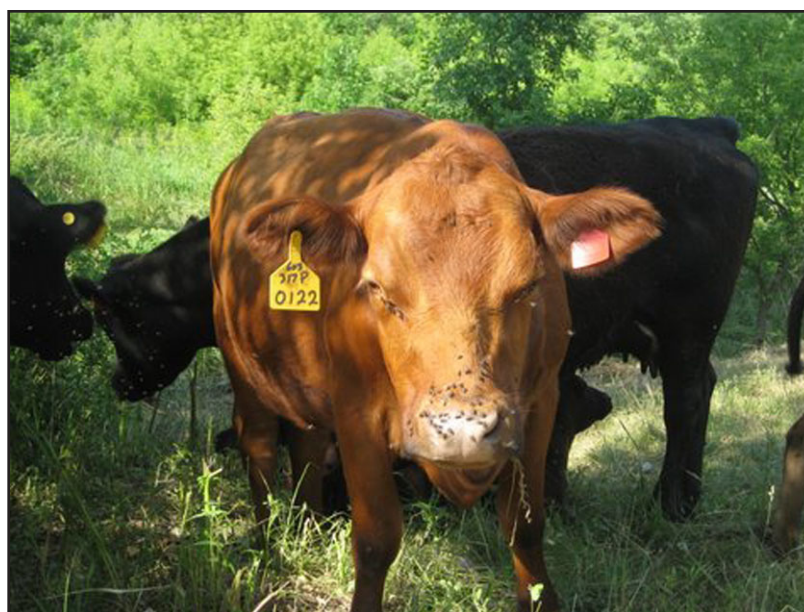
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Web Link:

http://bit.ly/pfi_grazing

In a Nutshell

- Accurate estimates of fly populations help producers evaluate the level of stress cattle are experiencing.
- Accurate estimates are also needed to evaluate the efficacy of fly control methods.
- We compare measurements across farms and fly control treatments.
- Photos were taken of cows' faces and sides for comparison with field counts.
- No relationship was found between face counts and side counts.
- The project will continue in 2013.



Face fly count - cattle's faces and sides were photographed and photo counts were compared to field counts.

Background

This project was designed to compare and evaluate different methods of counting fly populations on grazing cattle. Accurate estimates of fly populations will help producers evaluate the level of stress cattle are experiencing and to evaluate the efficacy of fly control methods. By comparing measurements across farms and across fly treatments, the most effective and efficient methods can be determined.

Materials and Methods

Five cows were selected at the start of the trial for observation. Observations were made twice monthly from June through August 2012. On observation days, the time and current weather (temperature, wind, and sky appearance) was noted, as

were the location and appearance of cows (in shade or in the open, congregated or spread out, etc) and any fly controls in place. For each of the five selected cows, the number of flies on the face (face flies) and side (horn flies) were counted. Photos of the cows' faces and sides were also taken, and the number of flies in the photos was counted.

Data were analyzed with SAS 9.3 (SAS Institute Inc., Cary, NC), and least-squares means are reported. Significance was established at $\alpha = 0.05$ level. Tests were done to detect effects of different days, weather conditions, and other factors on the fly counts. Relationships were determined between the number of flies observed in the field and those in the pictures, and between the face and side.

Preliminary Results

No differences were observed for fly counts between individual cows or cow coat colors ($P > 0.10$). Fly count did not vary reliably with temperature or sky appearance (cloudy or clear) but the number of face flies observed in the face picture was significantly lower on days described as breezy or windy ($P = 0.03$). While about 35 flies were on cows' faces on calm days, only 20 were present when it was windy.

Fly counts differed between sampling dates, but differently for face and side counts, see **Figure 1**. While side fly counts were lower in days 4 and 5 than the rest, face fly counts were lowest on days 2 and 3. This may be due to differences in fly

species and fly control methods in place. Fly trap barrels, which target face flies, were in place on day 2, and may account for the low face counts on days 2 and 3. However, no fly controls were present when side fly numbers dropped on days 4 and 5.

There were nearly always more flies observed in the photo than in the field. Approximately 82% of the flies on cows' sides were observed in the field. However, face counts in the field gave an estimate that was 119% of the actual number of flies counted in pictures. Still, moderately strong linear relationships were established between the number of flies counted in the field and the number counted in the picture for both faces and sides. The r^2 value, a measurement of how well a predicted relationship fits the actual value, was 0.6293 for the side equation and 0.4824 for the face (perfect relationships have $r^2 = 1.0$).

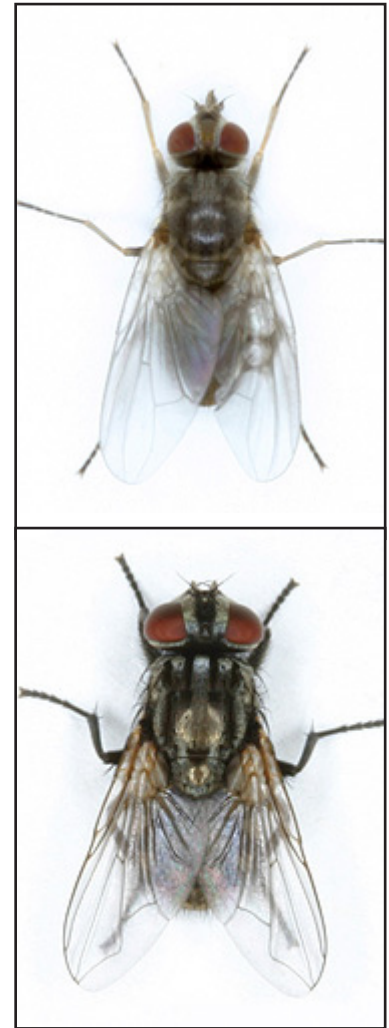
According to data from West Virginia University, in many cases the average face fly counts were above the economic threshold (about 12 flies per cow), but only two sampling dates were above the threshold for horn flies (about 200 flies per cow). At these levels, livestock may be irritated and stressed enough by insects to promote cows clustering in the shade

rather than grazing. Cattle were bunched up in the shade on every sampling day except for day 2, which was also the day with the latest sampling time and the highest temperature, which might also have had an effect.

No meaningful relationship could be established between the face counts and side counts. Ideally, a farmer could count the number of flies on a cow's face in the field, and be able to estimate the total number of flies on its body from that information. Because of fly species differences though, this may be impossible.

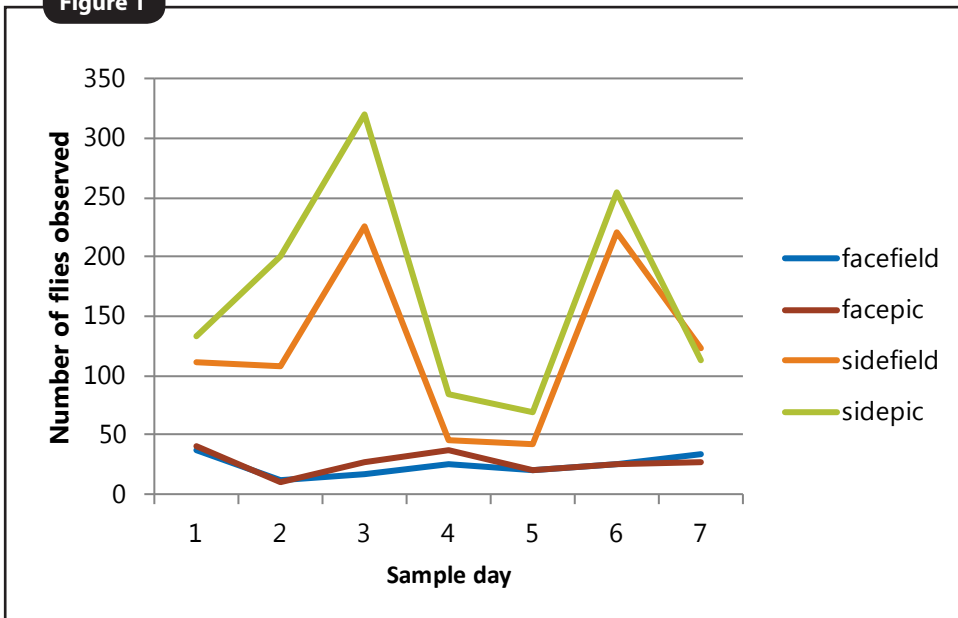
Conclusions & Next Steps

Results indicate that it is possible to establish a relationship between the number of flies observed on a cow's face or side, and the actual number observed with a picture. This will allow for more accurate determination of the stress level on animals due to fly presence. However, few relationships could be established between weather conditions and fly number. By continuing the project in 2013, more data will be collected and may enable more accurate and more detailed analyses. At the same time, now that baseline data has been collected, cooperators may add more or different fly control methods (barrel traps, poultry, etc) to try and reduce fly stress.



Top: Face Fly, *Musca autumnalis*;
Bottom: Horn Fly, *Haematobia irritans*

Figure 1



References

- Powell, P. K. 1995. Face fly biology and management. West Virginia University Extension Service, Morgantown, WV. http://www.caf.wvu.edu/~forage/face-fly_mgmt.htm
- Powell, P. K. 1995. Horn fly biology and management. West Virginia University Extension Service, Morgantown, WV. http://www.caf.wvu.edu/~forage/horn-fly_mgmt.htm

PFI Cooperators' Program

PFI's Cooperators' Program gives farmers practical answers to questions they have about on-farm challenges through research, record-keeping, and demonstration projects.