**Feasibility of Feral Swine Trapping Equipment Cooperatives**

There are over 6M feral swine in the U.S. creating over $1.5B of damages annually. Because of their high reproductive capacity, control methods must eliminate 75% of the population annually to match population growth. Trapping swine with remotely monitored and triggered traps is considered an effective control strategy. Alternative control options include ground shooting, aerial shooting, and poisoning. Sophisticated traps can cost over $5,000 and are cost prohibitive for many landowners. However, a feral swine trapping equipment cooperative could make this feasible.

**Feral Swine Trap Designs and Options**

There are multiple trap designs and options available to suit a landowner’s individual situation. For example, rectangular cage traps are typically constructed of heavy gage wire livestock panels while corral traps are typically round and are constructed of livestock panels and T-posts.

The type of gate also affects trap effectiveness. A trigger line suspends drop or guillotine gates. Once the line is triggered, the gate drops. Swing or saloon gates pivot toward the inside of the trap and are initially held open with a trigger line. A rooter or lift gate consists of a square gate hinged at the top and angled into the trap. A funnel entry system is an alternative to gate traps. The entry to the trap creates a funnel that the swine must push through to enter the trap. None of these simple trap designs are particularly effective in capturing large numbers of swine, but can have a place in an integrated trapping program.

“Smart traps” use cameras and remote triggering to allow the trapper to monitor the trap with a smart phone and catch large groups of feral swine or the entire sounder at once. (A sounder is a family group primarily composed of one more adult sows and multiple generations of offspring) The costs of “smart traps” range from $5,000 to $7,000 per trap, thus creating a cost barrier for many landoweners.

**The Concept of a Feral Swine Trapping Cooperative**

Ideally, a trapping program should concentrate on smart traps rotated among locations with the goal of capturing the entire sounder with each trap drop. Simpler, lower cost traps might also be incorporated to supplement the smart traps and to help monitor swine feeding patterns. A sounder of hogs can range over 70,000 acres, creating an advantage for adjoining landowners to coordinate control efforts. These factors create the economic rationale for the creation of feral swine trapping cooperatives. A trapping cooperative spreads the capital investment over more users and creates convenient access to multiple trap configurations. In addition to economies of scale, cooperative scale trapping is more likely to reduce the overall area population of feral swine.

The cooperative corporation is a common business structure for producer-owned farm supply, marketing or processing operations. Their member-owners control cooperatives. Under the cooperative structure, the net surplus after fixed and operating expenses is allocated to the members in proportion to business volume. By charging market price based fees and returning the surplus to members in proportion to use, cooperatives can operate at cost without the challenges of accurately predicting all costs. The cooperative board of directors (or the membership, in the case of a small cooperative) may elect to return the surplus to the members as a cash distribution or retain a portion to fund re-investment in equipment.

Most equipment sharing cooperatives are organized as closed cooperatives. In a closed machinery cooperative, the membership size and investment are established at the time of the cooperative’s formation. Members typically sign a usage commitment and invest equity in proportion to their contracted use. Each equity share has an associated usage right and the initial equity drive establishes the cooperative’s permanent capital. The cost of membership investment is based on the pro-rata cost of the equipment adjusted for the amount of debt financing. After the initial equity drive, new members may not be allowed to join unless they purchase shares from an existing member. If the closed membership equipment cooperative desires to grow, it may periodically offer opportunities for new members to join with the fees set in accordance with the current price of additional equipment compliments.

**Example Feral Hog Trapping Cooperative**

A group of landowners considering a trapping cooperative can utilize a Feral Hog Trapping Cooperative Feasibility Template developed by Oklahoma State University. The template models the operations of a feral swine equipment cooperative and determines their return on investment. The template models all fixed and variable costs of the cooperative, creates a complete ten year time series of pro-forma financial information, models the full range of possible profit distribution and retention strategies, models taxation, and analyzes the internal rate of return.

The template was used to analyze the return on investment of a representative feral swine-trapping cooperative. The representative trapping cooperative had an equipment compliment of 25 vertical drop corral traps, 50 salon gate corral traps and 30 homemade drop gate corral traps. The vertical drop corral traps were assumed to catch an average of five hogs per trap set while the salon gate and drop gate traps caught four and two hogs, respectively. Capture rates are location specific and there is very little information on average trapping yield. Antidotal evidence suggests that vertical trap capture is often higher than our baseline assumption while the capture rate of the simpler traps are highly variable. The impact of capture rate is analyzed in our sensitivity analysis. Additional assumptions are shown in Table 1 below.

Table 1: Feral Hog Trapping Cooperative Return on Investment Example Assumptions

|  |  |
| --- | --- |
| Trapping Season | 90 days |
| Time at each Location (after pre-baiting) | 10 days |
| Travel distance (round trip) per trap set | 150 miles |
| Trucking Costs for Trap Movement | $0.08/mile |
| Bait Costs per Trap Setting | 100 pounds x $0.10/pound |
| Disposal Value (Cost) | $0/hog |
| Equipment Investment | $284,000 (traps, storage shed, truck, trailer) |
| Loans | 50% of the equipment cost was financed with a 10 year loan @ 5% interest |
| Member Equity Investment | 50% of the equipment cost was provided by member equity investment consisting of 945 shares @ $150.26/share |
| Usage Right | One 10 day trap set |
| Trapping Fee | $21/day per trap |
| Equipment Replacements | 10% replaced each year, truck and trailer replaced on 3 year cycle |
| Maintenance and Insurance | 7% of equipment value |
| Cooperative Tax Rate | 27% |
| Member’s Tax Rate | 30% |
| Cash Patronage | 45% |
| Unallocated Retained Earnings | 5% |
| Nonqualified Revolving Equity | 50% - redeemed to cash under 7-year revolving cycle |

Under these baseline assumptions, the cooperative’s profit before patronage and taxes was $14,786 in year 1 and increased to $32,421 by year 10. While the depreciation expense on the equipment and vehicles was fairly constant over the projection period due to the replacement assumptions, interest expense declined as the 10 year loan was repaid. Cash patronage ranges from $6,654 in year 1 ($0.70/trap day) to $14,580 in year 10 ($1.54/trap day) with an average of $8,311 ($0.88/trap day). The net trapping fee, after patronage averaged $25.12/trap day. Under the baseline assumptions, the cooperative was able to maintain a positive cash flow for the 10 year period while replacing 10% of the traps each year and replacing the truck and trailer every 3 years. Table 2 demonstrates the member’s investment in the trapping cooperative.

Table 2: Member Investment for a Permanent 10 day/year Usage Right

|  |  |
| --- | --- |
| Member Investment per Trapping Period | $150.26 |
| Trapping Fee | $26/day per trap |
| Net Trapping Fee after Member Payments | $25.12 |
| Member Annual Payment per Trap | $251.20 ($25.12/day x 10 days) |

**Risk Factors**

The net trapping cost in an actual feral swine-trapping cooperative could vary from that of our example due to a number of factors. The key factor influencing net trapping cost is the disposal value/cost of hogs. Feral hogs could potentially be commercially processed in Oklahoma but the hogs would have to be inspected prior to and after slaughter by either a USDA or Oklahoma Agriculture, Food and Forestry (ODAFF) Food Safety Meat Inspector. The holding facilities and transportation would also have to be licensed by ODAFF. All holding pens would also have to meet strict guidelines to prevent feral hogs from escaping or mixing with domestic swine. There are currently no feral swine processing operations in Oklahoma and it is illegal to transport feral swine across state lines. A processing market has developed in Texas and other states so it is possible that an Oklahoma market could develop if a consistent supply of hogs was available. Antidotal evidence suggests that, in states where commercial processing exists, the processors pay $.18-$.33/lb. depending on the size of the hog.

Our baseline projections assumed that the landowners would process the captured hogs for personal consumption implying no disposal cost and no disposal value. At the baseline trapping fee of $26/day the cooperative can still maintain a positive cash flow for disposal costs up to $1.00/hog. A $1.00/hog disposal cost would decrease cash patronage and increase net trapping fee by around $0.10/day. On the other end of the spectrum, if a processing market was available and a disposal value of $25/hog was obtained, the net trapping fee would decrease to $16.76. The development of a processing market would have significant impacts on net fees and investment returns of a trapping cooperative.

Other factors influencing net trapping costs are the length of trapping season, the trapping equipment cost, and the number of traps (members). At the baseline trapping fee the cooperative is feasible as long as the trapping season is at least 81 days long (5% below baseline) or the equipment cost does not exceed $340,800 (20% above baseline) or the number of members exceeds 900 (approximately 5% below baseline). As the number of members decrease, (even with a proportional decrease in the number of traps), the cooperative’s personnel and transportation equipment costs must be spread over fewer units. The number of hogs captured per trap impacts the member’s patronage and the impact of the feral swine population. The capture rate does not have a major impact on the cooperative’s cash flow since the rental rate is on a per day basis.

**Conclusion**

If our baseline assumptions are representative, it appears that a landowner could purchase a 10- day annual usage right in the trapping cooperative for approximately $160 and have a net trapping cost of around $25.00 per day with a 945 member cooperative. Under that fee structure, the cooperative would have sufficient income and cash flow to transport and maintain the traps and replace 10% of the traps each year. There are obviously many details, such as the assignment of specific usage days that would have to be addressed by the cooperative’s board of directors and manager. The scale of an actual trapping cooperative would also depend upon the location and the level of landowner interest. The Feral Hog Trapping Cooperative Feasibility Template is available, free of charge. Landowners considering the formation of a feral swine trapping cooperative can use the template to analyze a cooperative consistent with their specific situation.

Participation in a feral swine trapping equipment cooperative would appear to have major advantages relative to the alternative of each landowner purchasing his/her own trapping system. Through the cooperative structure, a landowner or farmer could invest in whatever trapping capacity they desired. They could also potentially sell or rent their usage rights if they no longer needed trapping services. While this analysis has considered the financial implications of a trapping cooperative, a major value would likely come from the synergies of adjacent landowners simultaneously controlling swine.