

DEPOPULATION – REPOPULATION

There are extreme cases where it may be required to depopulate a farm and clean it before repopulating it again, such as an outbreak of a certain foreign animal disease. Depopulation could be mandated by the government. If this is the case, it is probable that the government will pay indemnification for the cattle, and then slaughter and dispose of all the cattle on the premise. Alternatively, the producer may chose depopulation as a management option to clean up a disease. In this case, the producer will likely sell all of the cattle to a slaughter plant and clean up the farm by himself/herself. Note that in both cases the producer receives at least some income – in the first case from the government and in the second, from a slaughter plant. This could have a substantial effect on the price received in one case versus the other. While the indemnification policy and rates will be announced, the government may price the cattle at fair market value as breeding stock. For a voluntary depopulation, the producer will receive cull value at best.

The following article walks a producer and/or consultant through the depopulation – repopulation process and identifies and quantifies the costs associated with both mandatory and voluntary depopulation-repopulation.

We could identify 3 time periods for this practice:

- 1) Depopulation
- 2) Quarantine and disinfection of the farm
- 3) Repopulation

Depopulation

Government mandated depopulation:

In this period the animals are slaughtered and buried. Materials that are potentially contaminated are also buried at this time. The costs identified at this time are:

- Cost to slaughter the cattle
- Cost to bury/dispose of the cattle
- Cost to destroy feedstuffs, manure, bedding and any other contaminated material
- Value of the buried feedstuffs and bedding

The producer will receive revenue from government indemnification for the cattle, feedstuffs and bedding buried.

Producer voluntarily depopulates:

In this period the animals are sold to a slaughter plant and materials that are potentially contaminated are destroyed. The costs identified at this time are:

- Cost to market the cattle (transportation, commissions, etc..)
- Cost to destroy feedstuffs, manure, bedding and any other material that could be contaminated
- Value of the buried feedstuffs and bedding

The producer will receive revenue from selling the cattle.

The net cash flow for the depopulation period is the difference between revenue from the market or government indemnification and the cost to destroy animal, feedstuffs and materials. Depending on the revenue received, this may be a positive cash flow because the producer is selling breeding stock as well as market stock like calves or cattle on feed.

Quarantine and disinfection of the farm

During this period, the farm remains empty of cattle, cleans up and disinfection practices are applied. Costs are similar for both government mandated and voluntary depopulation situations:

- Downtime cost. This is the value of the expected production that is not attained with respect to a normal situation, i.e, animals, milk, and other products. This is difficult to estimate and will depend on the season of the year, the categories of cattle bought to replace the slaughtered ones, etc. The downtime period could be short or could extend greatly beyond the repopulation time depending on the decisions made by the producer, because the producer can repopulate with a different category and affect future production. For example, the farmer could chose to buy heifer calves to replace the slaughtered cows. This decision greatly affects the cash flow because he/she will not have calves to sell at least for 2 years.
- Disinfection costs. All animal housing, indoor and outdoor pens, yards, water troughs, feed bunks, etc need to be cleaned and disinfected. This will involve labor, use of water, chemicals and possibly personal protective gear.

There are some additional costs that could be expected in the case of government involvement such as:

- Farm inspections
- Inability to sell other farm products (such as corn, wheat, vegetables) because of movement restrictions in the infected area

There are some costs that can be saved during this time such as:

- Money spent on salaries if employees are not retained during the quarantine period
- Manager (owner) opportunity cost if the he/she can get a job somewhere else during this time
- Part of the feed costs
- Veterinary and health related costs
- Other variable costs

The cash flow during the clean up phase will be negative as there is no revenue and there are expenses. The length of this phase will be determined in part by the disease and will impact the lost revenue. The amount of expenses depends largely on how the farmer handles labor during the down time.

Repopulation

During this period, cattle are bought to repopulate the farm. This is typically a gradual process and may involve bringing a few (sentinel) animals to the farm first and they are inspected and monitored for signs of illness. The rest of the cattle are bought after a period of time.

Costs are similar for both government mandated and voluntary depopulation situations:

- Cost of testing sentinel cattle before bringing them to the farm
- Cost of buying sentinel cattle and transporting them to the farm
- Farm inspections/monitoring for illness
- Tests performed on sentinel cattle
- Cost of buying additional cattle to repopulate the farm
- Cost of transporting the purchased cattle to the farm
- Vaccination and deworming of incoming cattle

The revenue from selling cattle is affected by the initial inventory and the time of the year when the outbreak occurs. The producer's purchasing decisions at repopulation not only affect the costs of buying cattle at repopulation but it can also affect successive years' inventory and production. Therefore the simplest way of estimating the effect of the depopulation/repopulation practice is by comparing the livestock existences, production and movements to a baseline situation with an outbreak situation for an extended period of 3 years after the outbreak. Three years is chosen to capture the impact on herds that only repopulate with young stock rather than breeding cattle. In this case there is a period of time without cattle sales. This comparison to the baseline can be done by following the procedure on the *Cattle* sheet of each *Depopulation Repopulation* file.

The result of this sheet is:

$TLRC = (FI_1 - II_1 + R_1 - C_1) - (FI_2 - II_2 + R_2 - C_2)$ where:

TLRC is the total livestock related cost

FI_1 is the value of the final cattle inventory for the baseline case

II_1 is the value of the initial cattle inventory for the baseline case

R_1 are the expected revenues for the baseline case

C_1 are the expected costs for the baseline case

FI_2 is the value of the final cattle inventory for the depopulation-repopulation case

II_2 is the value of the initial cattle inventory for the depopulation-repopulation case

R_2 are the expected revenues for the depopulation-repopulation case

C_2 are the expected costs for the depopulation-repopulation case

The set of spreadsheets has 3 files that help to estimate depopulation repopulation costs:

- *Depopulation Repopulation Cow calf* for cow-calf operations
- *Depopulation Repopulation Feedlot* for feedlot operations
- *Depopulation Repopulation Dairy* for dairy operations