Standard Operating Procedures Guide

Adapted from *Standard Operating Procedures: A Writing Guide* by Richard Stup, senior extension associate, Human Resources, Penn State Dairy Alliance.

Introduction:

To have a successful swine operation, you must have committed workers who complete work procedures consistently and accurately. This guide explains how swine operations can use standard operating procedures (SOPs) to achieve success.

When standard operating procedures are used along with planned training and regular performance feedback, the outcome is a more effective and motivated workforce. Farm managers are then able to benefit from more predictable results and consistent performance.

Defining Systems, Procedures, and Steps

Producing a high-quality product at a profit is dependent upon consistent operating systems throughout the operation. The systems in most swine operations include breeding, gestation, farrowing, growing, and waste management (Figure 1).

Management systems consist of work procedures. An example would be that on almost all farms, the breeding process involves much more than stimulating the sows and breeding them. The sows must be checked for estrus, then bred, and then rechecked to make sure they are pregnant. The breeding management system is made up of these activities—estrus detection, and preparing to breed, breeding, and pregnancy checking.

Figure 1. Systems

| Breeding | Waste | Feeding | Health |

- Estrus detection
- AI
- Preg-checking

Lastly, steps are small actions that when put together form the procedure. Figure 2 shows a basic SOP for prepping sows for breeding. If procedures are not standardized, the small steps are where slight variations between different workers happen. Managers should use SOPs to make sure each worker performs the job in the same way each time.

Formats for Standard Operating Procedures

Managers can choose many different ways to format standard operating procedures when writing them. The goal should be to create a document that is helpful for the worker and easier for the reader to understand.

There are two factors that determine what type of SOP should be used (Figure 3). First, how many decisions will the user be making during the procedure? Second, how many steps and substeps are in the procedure? The simple steps

Figure 2. Sample "Simple Steps" Operating Procedure Format

A.I. process:
1. Prepare breeding area.
2. Ensure boar is tethered or gated near sow.
3. Clean vulva with single-use paper towel.
4. Insert catheter while rotating the device counter-clockwise.
5. Attach semen tube, clip to breeding belt, and allow semen to flow naturally.
6. When tube is empty, wait 2 to 5 minutes; then remove catheter.
7. Record breeding data on sow card, and mark her back as having been bred.

format can be used for regular procedures that are short and do not require many decisions. The hierarchal steps format or graphic format should be used for long procedures that contain more than 10 steps and require few decisions. The flowchart format should be used for procedures that involve many decisions.

Simple Steps

Most swine farm procedures usually require very few decisions and are very repetitive. For this type of procedure, a set of simple steps like Figure 2 is adequate. A SOP like this one does not contain many details; therefore, a training program would be needed to make sure new workers know how to perform each step. However, this low level of detail allows for animal caretakers to interpret the procedure in their own way. A situation in which only a few people conduct the procedure would be best for this SOP type.

Hierarchical Steps

A very precise format should be used on SOPs for a swine operation that is striving for very consistent work. The hierarchal steps format (Figure 4) contains easy-to-read steps for more experienced workers. It also contains many detailed substeps as well. Beginners may use all of the steps and substeps to help them learn the procedure, while more experienced users may only refer to the steps when they need to.

Graphic Procedures

Managers should use a graphic format when writing procedures for very long activities. The graphic format divides long processes into shorter ones that are only a few steps long. Workers can more easily learn several short subprocesses than one long procedure.

Figure 3. Standard Operating Procedure Format

Many decisions?	>10 steps?	Best format
No	No	Simple Steps
No	Yes	Hierarchical or Graphic
Yes	No	Flowchart
Yes	Yes	Flowchart

Figure 4. Sample "Hierarchical Steps" Operating Procedure Format

A.I. process
1. Prepare breeding area.
   - If sow is in a stall, make sure there are no sharp objects near.
   - Ensure the butt-bar, if present, is locked up in place.
2. Ensure boar is tethered or gated near sow.
   - Keep boar in front of no more than four sows at a time.
   - Have a second technician control the boar so the breeding technician is free to work with the sow and does not have to move the boar.
3. Clean vulva with single-use paper towel.
   - Do not reuse the same paper towel on a second sow.
   - Dispose of towel in trash; do not throw on floor or into manure pit.
4. Insert catheter while rotating the device counter-clockwise.
   - Insert slowly; do not force the catheter.
   - When resistance is felt, the catheter should be locked in cervix.
5. Attach semen tube, clip to breeding belt, and allow it to flow naturally (refer to Semen Selection SOP for more details on selecting the correct semen to use).
   - Make sure the tube is secured to the catheter.
   - Ensure clip does not crimp tube and prevent semen flow.
6. When tube is empty, wait 2 to 5 minutes; then remove catheter.
   - Rotate catheter clockwise while gently pulling it out.
7. Record breeding data on sow card, and mark her back as having been bred.
   - Mark sow's back with color appropriate for the day of the week:
     - Monday – green, Tuesday – red, Wednesday – blue, Thursday – violet, Friday - yellow

You could also use diagrams and pictures to depict the procedure in the graphic format. Digital cameras and computers with graphic capabilities can be used to design creative SOPs that combine text with creative pictures. Pictures can be useful when the literacy level or native language of the users varies or is unknown.

Flowcharts

Notice Step 5 in Figure 4 refers to another SOP called semen selection. This helps employees find additional information, if needed. Flowcharts should be used for procedures that require many decisions, such as determining which semen to use for
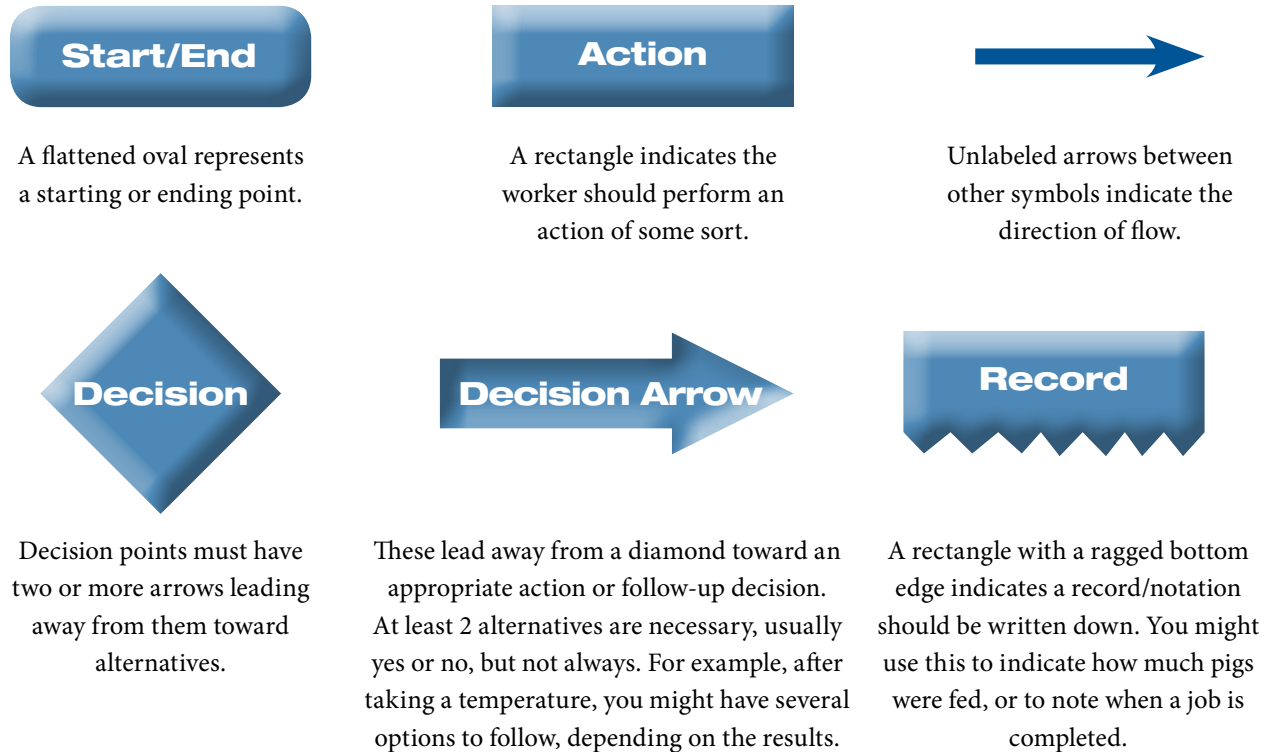
which female. Flowcharts give a method for walking the caretaker through the decisions that should be taken as a result.

Figure 6 shows how caretakers should determine when to order feed. The procedure begins in the top left-hand corner of the page and works downward. Movement throughout the flowchart depends on which decisions are made.

The accepted symbols for flowcharts include:

Start/End

A flattened oval represents a starting or ending point.

Action

A rectangle indicates the worker should perform an action of some sort.

Unlabeled arrows between other symbols indicate the direction of flow.

Decision

Decision points must have two or more arrows leading away from them toward alternatives.

Decision Arrow

These lead away from a diamond toward an appropriate action or follow-up decision. At least 2 alternatives are necessary, usually yes or no, but not always. For example, after taking a temperature, you might have several options to follow, depending on the results.

Record

A rectangle with a ragged bottom edge indicates a record/notation should be written down. You might use this to indicate how much pigs were fed, or to note when a job is completed.

There are a few pieces of information that should be included in every SOP, regardless of what SOP format you choose to use. Every SOP should have a descriptive title, the name of the author of the SOP, the date when the SOP goes into effect, and the date when it is no longer valid. A numbering scheme to keep track of changes and for filing should be created in operations that use many SOPs. A list of tools needed to complete the job should also be included in some SOPs. Safety precautions should be listed on SOPs that involve potentially hazardous working conditions.

Developing the SOP: People Support What They Help Create

The SOP development process should involve the input of everyone interested in the procedure's success. The SOP development process is very important for the successful implementation of SOPs. If a manager writes an SOP without input from workers, he/she risks creating an inadequately written SOP. Better SOPs are written when managers seek the talents of the caretakers. The SOP development process can also be a time for team building among workers, managers, and advisers.
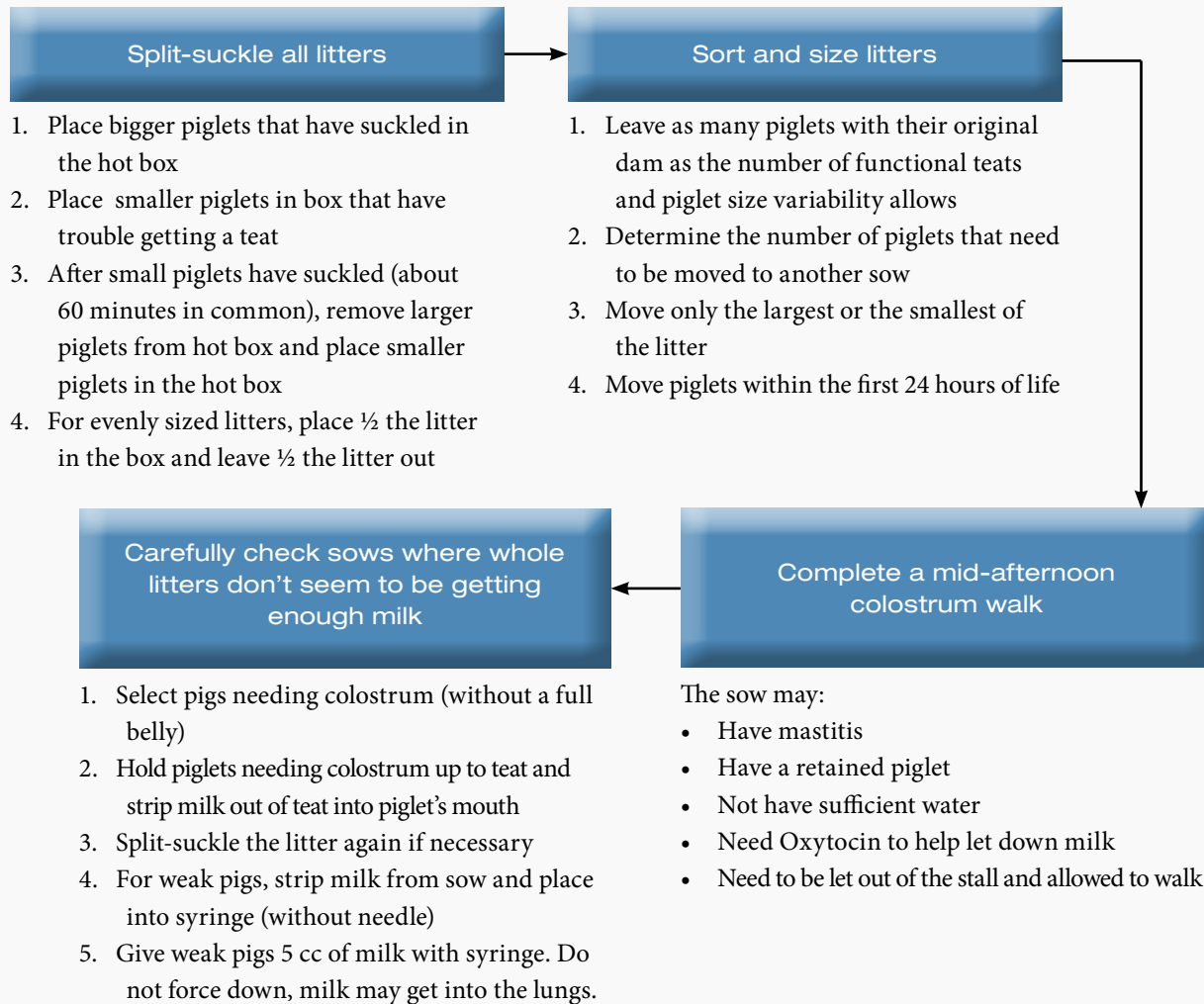
The seven steps that follow are important steps that will help create good procedures and create buy-in among the workforce:

1. Plan for results. You should plan with the business goal in your mind. The goal of a breeding SOP is to efficiently and effectively conduct an A.I. program. The goal is not to make sure each worker is breeding in the EXACTLY the same way, just have the same outcome of the breeding. SOPs should be designed to achieve specific results.

You should decide what business goals will be achieved through SOPs and how the goals will be measured. An example would be that you could measure the pigs farrowed per litter. This would tell you how efficiently the sows are being bred. This information can then be used to change the procedures and help improve worker performance.

Figure 6 – Flowchart SOP diagram
First-Day Farrowing House Procedures: Piglets

Split-suckle all litters

1. Place bigger piglets that have suckled in the hot box
2. Place smaller piglets in box that have trouble getting a teat
3. After small piglets have suckled (about 60 minutes in common), remove larger piglets from hot box and place smaller piglets in the hot box
4. For evenly sized litters, place ½ the litter in the box and leave ½ the litter out

Sort and size litters

1. Leave as many piglets with their original dam as the number of functional teats and piglet size variability allows
2. Determine the number of piglets that need to be moved to another sow
3. Move only the largest or the smallest of the litter
4. Move piglets within the first 24 hours of life

Carefully check sows where whole litters don't seem to be getting enough milk

1. Select pigs needing colostrum (without a full belly)
2. Hold piglets needing colostrum up to teat and strip milk out of teat into piglet's mouth
3. Split-suckle the litter again if necessary
4. For weak pigs, strip milk from sow and place into syringe (without needle)
5. Give weak pigs 5 cc of milk with syringe. Do not force down, milk may get into the lungs.

Complete a mid-afternoon colostrum walk

The sow may:
- Have mastitis
- Have a retained piglet
- Not have sufficient water
- Need Oxytocin to help let down milk
- Need to be let out of the stall and allowed to walk

There are many benchmarks in the industry to help measure efficiency and quality. Sometimes, you may need to create your own ways to help track progress.

2. First draft. Select a format for the SOP. If you select simple steps, hierarchal steps, or graphic format, you should make a list of the steps in the order they are done. You could observe someone performing the task and write down each thing they do. This list could be a draft of the procedure.

If you are turning the procedure into a flowchart, start with a logical beginning point. Show the decisions the worker will need to make and the actions that come after each decision.

3. Internal review. Provide every worker who carries out the procedure with a copy of the SOP draft. Have each worker review it and make suggestions about ways to make it more accurate or easier to understand. Make sure the workers understand that their input is valued and will be used.

Implementing SOPs is generally less successful when the workers feel that the managers are imposing the SOP without regard to their input. To help with this, workers should feel that they have a sense of ownership in creating the SOP during development.

You should also want to involve the workers because they will have great ideas. Effective managers should help their teams to become more efficient, more cost effective, and improve the quality of their work.

4. External review. Many swine operation mangers seek the advice of advisors outside of their organization. When writing an SOP, you could seek the advice of advisers including nutritionists or veterinarians.

You could give your advisors a copy of the SOP draft. Ask them to suggest changes to make the procedure more effective or clear. Revise the procedure when necessary to include changes from technical advisors.

5. Testing. Procedures need to be performed in the workplace to be effective. To be sure that a procedure works as expected, someone should perform each step exactly as described while the writer observes. If a test worker becomes confused or hesitates at step, it should be rewritten.

6. Post. Make a final draft of the SOP, and post it in the proper locations. A file should be placed in a central location so workers can reference SOPs that are rarely used when they need to review that SOP. You could also attach SOPs in employee handbooks or training materials. You should also keep SOPs current and have a set schedule for review and revise the SOPs, if necessary.

The workplace copy of the SOP should be reproduced large enough so that workers can read it easy while doing their work. The workplace copy could be laminated to protect it.

7. Train. The last step in the SOP writing process is often overlooked. Everyone should be trained or retrained to follow the procedure exactly as it is written. Training all workers will eliminate workers interpreting the procedures in different ways. When you are training workers, you should explain why the procedures need to be done correctly, not just what to do. People are more willing to follow procedures when they understand why they are needed. This also helps the workers develop knowledge about the job.

A good SOP training program will let the worker know what will be covered during the program and what he/she will be able to do when the program is completed. The trainer will explain each step of the SOP and demonstrate it. Then he/she will give the worker a chance to practice the steps and then provide the worker with positive feedback.

Effective Writing

SOPs should be easily understood by everyone who uses them. Writers should write the steps as simply as possible, while communicating effectively. For more information on grammar and writing, refer to the book *Procedure Writing: Principles and Practices* by Douglas Wieringa.

Since long sentences are hard to understand and may involve more than one step, you should write the steps as short sentences. Look at the following examples:

Long:	Use your hand and a single-use paper towel to wipe dry dirt and debris from the sow's vulva.
Short:	Wipe dirt and debris from the sow's vulva. Use a clean single-use paper towel.

The short sentences above are in hierarchical format. The examples all convey the same meaning, but the longer sentence is harder to understand.

Write SOP steps as commands, or imperative sentences. Imperative sentences usually begin with an action verb. Look at the following examples:

Unclear:	The number of stillbirths should be recorded on the sow card.
Clear:	The attending farrowing technician should record the number of stillbirths on the sow card.

In the above example, the manager needs to know the number of stillborn piglets so the cause can be identified. The clear example tells the person doing the farrowing to do the recording. The unclear example leaves it open to interpretation as to who should do the recording.

Try to communicate well with as few words as possible. Procedure writers should use short sentences so the reader can read and memorize the steps quickly. Look at the following example:

Rambling:	Make sure that you clean out all of the old feed from the sow feeders before filling them with new feed.
Concise:	Empty all old feed from sow feeders before refilling.

Both sentences covey the same information, but the concise sentence is easier to understand.

Also, use acronyms and abbreviations as little as possible. Most people involved in swine operation management will recognize the abbreviations, but some will not. Only use acronyms when they are widely understood.

Example:	Adjust ABT so it runs every third cycle of the feed auger.

In the above example, ABT stands for automatic bin thumper. There was no advantage of using the abbreviation instead of the actual words.

Level of Detail

The level of detail that should be included in an SOP is a hard decision to make. The procedure should be detailed enough that every essential step is included to make sure each worker performs the procedure in the same way. Procedures should not be so detailed that they are not practical for everyday use.

Detailed procedures cannot replace training. Procedure writers should not try to answer all questions that a worker could have. An SOP should serve as a basis for introductory training.

Procedure writers need to include enough detail that there is not large variation in the work between workers.

You should be aware that a downfall of the flowchart format is that the level of detail needs to be low. If the steps are long and too detailed, the flowchart is hard to follow. Actions that require many detailed steps should refer to another SOP.

Conclusion

SOPs are excellent tools for controlling work procedures. They define small details that make the difference between success and failure. Good SOPs can also contribute to better communication and job satisfaction.

Although the SOP development process can be demanding, significant improvements can be made as an outcome. The development process can bring managers, workers, and advisers together by focusing everyone's abilities on doing the best job possible.