

Salmonella sampling for conventional multi-tier cages with manure pit using drag swab

Purpose/Scope: This SOP defines the methodology for *Salmonella* sampling in conventional multi-tier cages with a manure pit

FREQUENCY
Every 12 to 15 weeks



MATERIALS NEEDED

- Cotton gauze swabs, can use either:
 - See instructions on how to make your own*or,
 - Tampons or,
 - Supplied by laboratory
- 1.5m cotton string
- Disposable latex gloves
- Sample transport liquid (peptone water)
- ^Whirl-Pak® bags or screw top plastic jar
- Scissors
- Permanent marker
- Laboratory sample submission form
- Plastic post satchel for transporting swabs to the laboratory
- Plastic container for swabbed samples

* Making cotton gauze swabs

^ <https://www.whirl-pak.com/whirl-pak-bags-general-information>

MAKING THE COTTON GAUZE SWABS

- 1 Obtain a 10cm x 10cm cotton gauze and fold onto itself in a pleated pattern.



Figure 1
Image: Michael J et al. 2020

- 2 Continue folding gauze to form a pad.



Figure 2
Image: Michael J et al. 2020

- 3 Tie the cotton string around the centre of the cotton gauze.



Figure 3
Image: Michael J et al. 2020

- 4 Wind string around the cotton gauze.



Figure 4

- 5 Place the required number of swabs for each shed into their own plastic container or Whirl-Pak® bag.

- 6 Store the rest in a dry, secure place.

PROCEDURE

Step 1

Get prepared

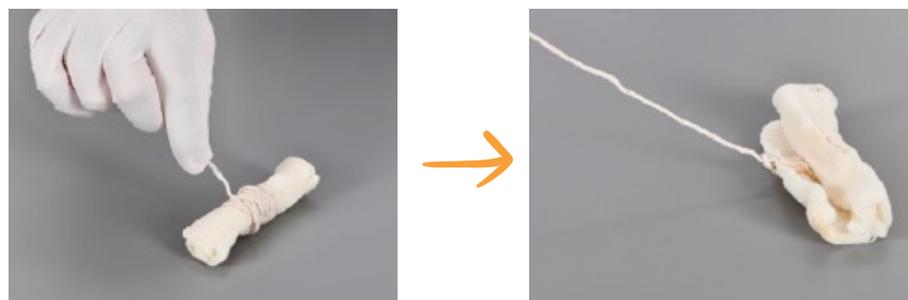
- 1 Notify the laboratory 24 hours in advance of sending the swab samples.
- 2 Obtain a sample submission form from the laboratory.
- 3 Prepare **three (3) drag swabs** for each manure pit.

Step 2

Swab the shed

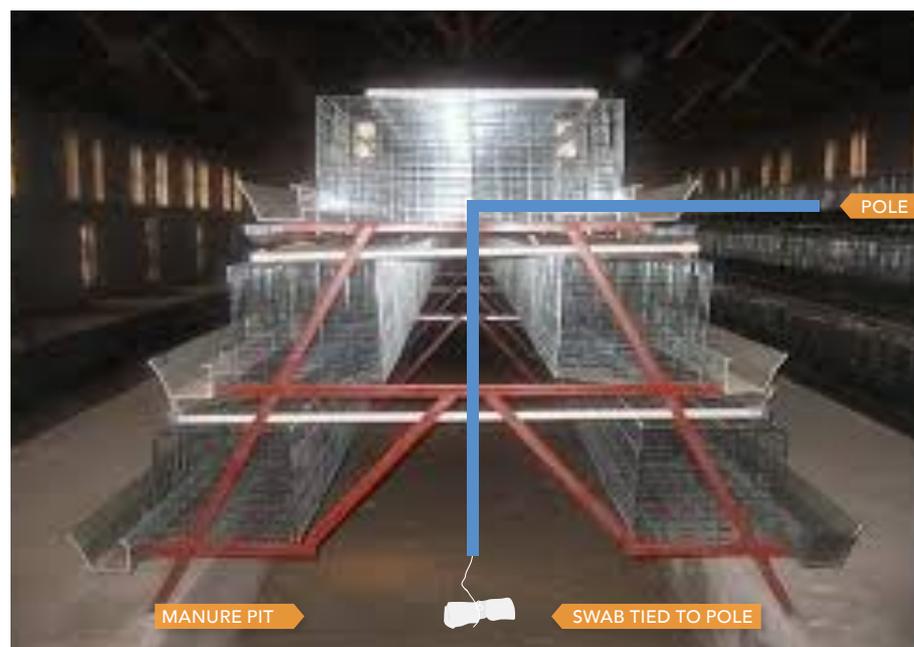
- 1 Wash your hands.
- 2 Put on a pair of disposable latex gloves.
- 3 Moisten **Swab 1** with water from the drinkers or solution provided by the laboratory.
- 4 Hold **Swab 1** by the string and unravel (Figure 5).

Figure 5. Hold the swab by the string and unravel (Romer Labs)



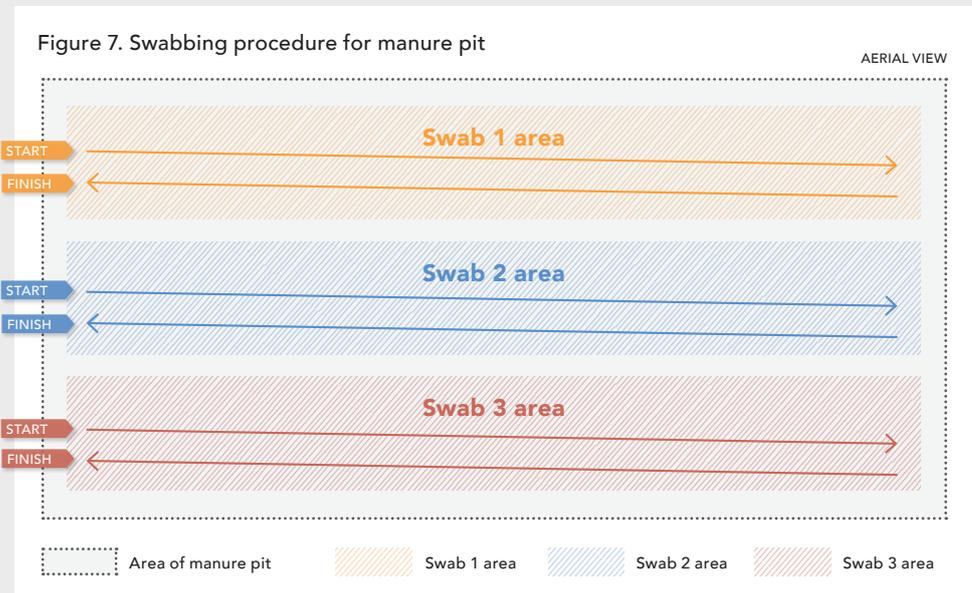
- 5 Attach moistened swab by the string to a pole (Figure 6).

Figure 6. Attach swab to a pole



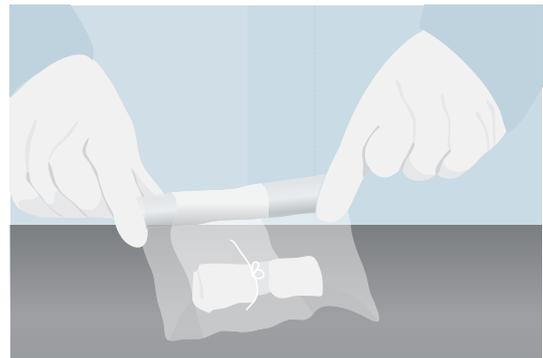
PROCEDURE

- 6 Walk between the cages for the full length of the shed, dragging the swab over the top of the manure piles in the manner shown in Figure 7 by the arrow 'Swab 1'.



- 7 With **Swab 1** repeat in the opposite direction as depicted in Figure 7.
- 8 **Swab 1** should be considered finished when it has been run 'up and back' the entire length of the manure pit.
- 9 The string should not be included in the sample sent to the laboratory, cut the string from **Swab 1** with a pair of scissors.
- 10 Place **Swab 1** in a Whirl-Pak[®] bag or screw top plastic jar (Figure 8).

Figure 8. Put swab into Whirl-Pak[®] bag (Romer Labs)



- 11 Seal the bag or plastic jar.
- 12 **Repeat procedure 3 to 11 with Swab 2, Swab 3, etc** using one Whirl-Pak[®] bag or plastic jar per swab. If gloves come into contact with litter or manure they should be changed between swabs.

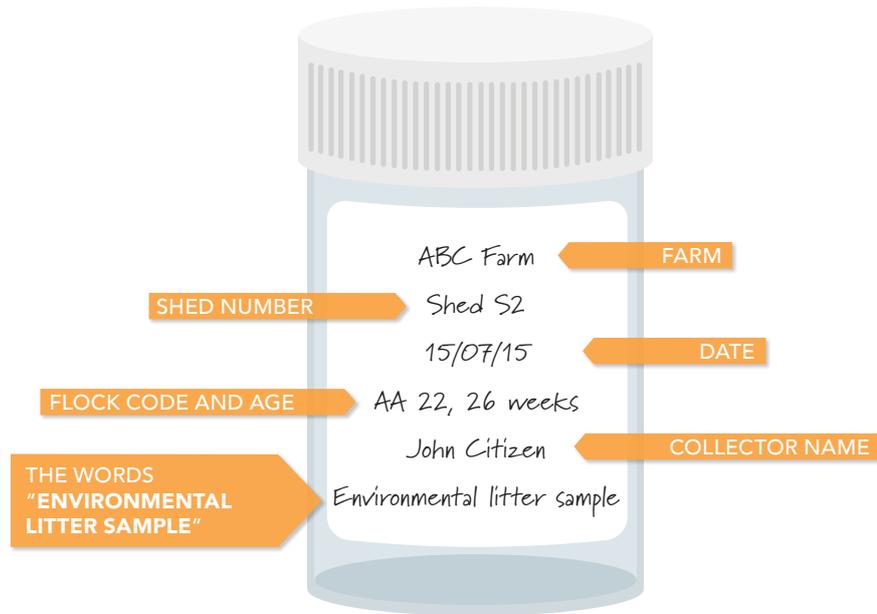
PROCEDURE

Step 3

Pack the samples

- 1 Each sample should be placed in its own Whirl-Pak® bag or screw top plastic jar. Clearly label each bag or jar with permanent marker.
- 2 Include information as per Example 1.

Example 1. Information to include on the Whirl-Pak® bag or screw top plastic jar



- 3 Complete the laboratory sample submission form (always record on submission sheets as "ENVIRONMENTAL LITTER SAMPLES").

PROCEDURE

Step 4

Submit the samples

- 1 Pack the swabs that are in the bags (Figure 9A) securely into a plastic container (Figure 9B) and put the container into a plastic post satchel (Figure 9C).

Figure 9. Pack swab samples



<https://ie.vwr.com/store/product/17962031/sample-container-with-screw-cap-sterilin#gallery-1>



<https://auspost.com.au/shop/product/flat-rate-small-satchel-10-pack-059049131?fm=recommendations:shop:1>

- 2 Put the completed sample submission form into the same plastic post satchel as the swabs.
- 3 Post the samples to the diagnostic laboratory.
- 4 If the swabs cannot be posted on the same day, store the swabs in the fridge (between 4 and 8°C) until ready to be posted. Conduct procedures 1 to 4 as soon as possible.

Swabs must not be frozen.

REFERENCE

Michael J. Sikorski, Myron M. Levine 2020 Reviving the “Moore Swab”: A Classic Environmental Surveillance Tool Involving Filtration of Flowing Surface Water and Sewage Water To Recover Typhoidal *Salmonella* Bacteria

Applied and Environmental Microbiology, 86 (13) e00060-20; DOI: 10.1128/AEM.00060-20)

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