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A chute to trim sow claws

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Introduction

Elongated claws in sows are and will continue to be a cause of lameness and culling in many sow herds. Though trimming has been often recommended for such sows, this trimming should not be simply be clipping the end of the toe, but involves a reshaping of the foot, a time absorbing effort. The first step is thus immobilization of the sow to allow adequate time to trim and manipulate the sow's feet. Thus we are evaluating a chute developed in concert with the staff at the Southern Research and Outreach Center (Waseca, MN) and at Zinpro Performance Minerals (Eden Prairie, MN) to allow better examination and trimming of the sow's foot.

It is not as if a chute has not been developed in the past. Tumbleson et al., (1968) developed a method for restraining adult miniature pigs in which a large metal hoisting rack was used to lift the pig off the floor in an upright position with a heavy support and was found to be effective for comfortably restraining the pig for brief periods. Similar equipments for prolonged restraint were described by Karagianes (1968) and Jackson et al., (1972). Recently, Smith and Swindle (2006) suggested that mechanical restraint using a sling is useful for all sizes of pigs for brief procedures such as drug administration or blood collection and for longer periods when the procedures are less invasive. Squeeze -chutes have also been used to restrain different species of animals. It has been reported that moderate pressure exerted on the animal calms the nervous system (Grandin 1995). Pressure applied to the sides of a pig will cause it to relax and piglets placed in a padded V restrainer are reported to fall asleep (Grandin et al., 1989). Similarly, another report indicated that after being nose-slinged (nose-snared) for approximately 5 min, gilts become quiet and sedated, often laying down (Janssens et al. 1995). Hydraulic chute, along with behavioral training has been successfully used for performing less invasive, assisted reproductive techniques in non-domesticated species like eland antelopes (Wirtu et al., 2005). In contrast, studies in net-suspended anaesthetized polar bears suggested adverse cardiopulmonary responses due to body compression during suspension (Cattet et al., 1999).

Panepinto (1983) has described a sling for restraining miniature pigs and standard pigs of up to 175 kg. This method is reported to ensure comfort of the animal, minimize/ avoid struggling and ease of use. It has been reported that (Rampil et al, 1988) conscious, un-medicated sling-restrained pigs had baseline, normal resting EEG recordings. The Yucatan miniature swine used in the trial by Panepinto et al., (1983) were reported to be relaxing and often sleeping even during procedures such venipuncture of the anterior vena cava. Baker and Andresen (1964) have used a rack to which the pig is strapped and rotated into lateral recumbency. However, the level of stress actually experienced by the pig immediately prior to and during various restraining procedures have not yet been quantified or compared in detail. The usefulness of all these restraining methods may be hindered by the stress experienced by the pig during the process which may affect the parameters in experimental situations. As reported by Hemsworth et al., (1981), unpleasant handling can lead to acute and chronic stress responses.

It is important to have a good experience to induce the sow to repeatedly enter such a device. Although, previous reports indicated the use of restraining techniques such as the use of slings, these studies have not assessed the stress level experienced by the pigs subjected to the restraining procedure in detail. The common indicators suggestive of stress in pigs are elevated level of stress hormone (cortisol), increased vocalization, increased heart and respiration rates, fearful response to handing and/ or approach to the handler. If the pig is stressed by a particular restraining method, it will try to avoid being subjected to the same procedure again. Therefore, reluctance of the pig to method/ equipment may be an indicator of the stress level associated with the procedure. The fear and stress experienced by the pig may be reflected in their approach to the stockpersons as well. Previous studies assessing the stress level associated with different swine housing systems have used the behavior of the pig when exposed to a novel arena/object.

The present electrically operated sling comprises of 5 thick horizontal rubber belts and 3 longitudinal belts (2 on either side and one in the middle) connected to each other in such a way that there are four large openings corresponding to the legs of the pig with an extension to support the neck and head. In the belt assembly, of the 5 horizontal belts, 3 are towards the center with lesser gap between them to support the belly of the sow. The rubber

belts are attached to two metal rods on either side which are connected to two electric motors using metal chains. The whole structure is enclosed in a rectangular metal crate with side bars and doors at the front and rear ends. The metal crate is fitted with lockable wheels to facilitate movement of the unit. A sow can enter the box through the door at the rear end and is made to stand inside the crate in such a way that its legs are placed through the large openings in between the belts. After closing the door, the motors are switched on so that the belt assembly is lifted upwards, lifting the sow from the ground slowly. The second motor simultaneously squeezes the sow laterally using the belt assembly.

We are presently assessing the stress levels of sows in terms of salivary cortisol concentration, heart rate, attempts to struggle, vocalization, response to a mild painful stimulus such as a pin prick, response to the restraint a second time within an hour, behavior to a novel arena/ object following the restraint for the first time, approach to the stockperson associated with the restraint after the first restraint. The restraint will continue for 5 min for each sow.

Preliminary results are surprisingly good. Sows are lifted and remain calm. The feet are manipulated with no further immobilization, and they do not react, even to an electric grinder. Further work must be done, but it does appear to be an excellent tool to examine and manipulate sow feet.

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