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A New Method of Early Detection of Pregnancy in the Sow

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in the outline as they fit a morphological classification scheme and require more sophisticated laboratory procedures for accurate diagnosis. The outline presented here was not intended to be complete but rather should be used in conjunction with a current text of veterinary clinical pathology.

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A New Method of Early Detection of Pregnancy In The Sow

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Conclusion

A portable, compact electronic device has been developed to detect pregnancy in the sow. Accuracy has been reported to be 90–95 percent in the 30 to 80 day post conception sow or gilt. The instrument is able to detect fluid in the gravid uterus with ultra-sound waves. Diagnosis is rapid and can be made on the farm.

Discussion

Recently a new electronic device has become available commercially in the U.S. that will accurately determine pregnancy in the sow. Accuracy has been estimated at 90 to 95 percent at 30 to 80 days after conception. Pregnancy can be determined in a matter of a few seconds per sow “on-the-spot” thus eliminating the need for positive sow identification.

The Pregnosticator* is a compact, portable instrument that determines pregnancy by detecting the increase in fluid content of the uterus. It operates on the principal of ultra-sound transmitted through the body tissues via a thumb-sized probe. The probe, which is attached to the machine by a 10-foot extension cord, also receives the ultra-sound waves bounced back as they pass through each tissue interface. An oscilloscope in the instrument then indicates if the ultra-sound waves have passed through a fluid filled uterus.

The use of this machine offers the following advantages in a swine operation:
1. Early diagnosis of pregnancy enables the owner to eliminate the nonpregnant gilts or sows, thus, saving feed costs.
2. Closer grouping of a given number of females for a farrowing period.
3. Enables a producer to more nearly have the desired number of sows to farrow at one time by breeding extra sows and culling to a given number.
4. Aid in diagnosis of reproductive problems by determining percentage of pregnancy.

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Methods in the Past

Until the late 1960's pregnancy diagnosis consisted of observation for return to estrus and a "wait to see if she farrows" procedure. The vaginal biopsy method of determining pregnancy was reported in 1967.\textsuperscript{5} Accuracy of this method was reported as 90 percent at 30 days after breeding.\textsuperscript{4} The number of cells in the vaginal epithelial layer are counted after histologic preparation and fewer than 4 cells indicates pregnancy. An epithelial layer with a thickness of 4 to 12 cells indicates nonpregnancy. Aside from the obvious problem of need for a rather sophisticated laboratory in order to prepare the vaginal biopsy and make histologic preparations there is one other practical disadvantage. This involves the necessity of making positive sow identifications at biopsy time so that negative animals can be found in the herd at a later date. This method has not been widely used in the swine industry.

Another ultrasonic pregnancy detector which is manufactured in Great Britain is also commercially available. The \textit{Centaure Doppler Fetometer}\textsuperscript{b} diagnoses pregnancy by interpreting the characteristic signals produced by the reflection of sounds from blood flow in the fetal heart, umbilical cord and uterine vessels.\textsuperscript{2} The instrument is effective from the 6th week of gestation to term. Environmental sounds have been reported to cause some trouble in interpreting machine sounds.\textsuperscript{1,3}

Sow Reproductive Physiology

The sow is polyestrous with estrus occurring approximately each 21 days. Nor-

mal length of estrus is about 3 days. Ovu-
lation occurs about midway in the estrus
period. Length of gestation is about 112-
15 days.

Amount of uterine fluids increases rap-
idly after conception and reaches detecta-
ble levels with the *Pregnosticator* at day
25–26. The amount of fluid declines grad-
ually after 85–90 days of gestation falling
below the instrument’s detection capabil-
ity. The following chart indicates the
growth of uterine content during preg-
nancy in the pig. 6

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**Growth of the Uterine Contents During Pregnancy in the Pig.**