Anhalt
Anhalt
Anhalt
42 h
1081
Experimental group (n = 1000)..............................800 IU
16.0
Optimum
1st
6.07
methods
of
42 h
17.7
8th Bernburger Biotechnik
reproduction
synchronization
10.6
biotechnical
3.44
8th Bernburger Biotechnik
result
and
be-

942
c.l
2.68
3.
References:
Following

Heat metabolism
In summer high temperatures are stress for sows mostly. This situation often affects the
hormonal situation (FSH, energy
Control
Balance
Balance
S
Heat metabolism
in
summer high temperatures are stress for sows mostly. This situation often affects the
hormonal situation (FSH, energy intake, Oxytocin, progesterone). This situation often
affects the stability of cycles in sows. The heat increases the production of cortisol and
prolactin, which have a negative effect on ovulation. In addition, high temperatures are
stressful for sows, which can lead to an increase in stress hormone secretion. This can
interfere with the normal reproductive functions of the sow.

Materials and Methods
Several practical farms with 1000 - 2000 sows (Large White x German Landrace) were
involved in the study. The experiment was conducted at the Anhalt University of Applied
Sciences, Bernburg, Germany.

Results
1-4

1. Time distance between REGUMATE® and eCG in synchronized gilts

2. Comparison of GnRH and hCG for stimulation of ovulation

Fig. 1: Saisonal variations in fertility in sows

Fig. 2: Saisonal variations in fertility in sows

3. Influence of cycle stimulation in weaned sows depending on season

Sows in experimental group got 800 IU eCG 24 hours after weaning for cycle stimulation. Sows in
control group got no biotechnical treatment.

Fig. 3: Piglets born alive per 100 inseminations at 1st service as a function of stimulation of cycle

Fig. 4: Parameters: estrus behavior
Number of corpora lutea (c/l) ... n = 18
Number of embryos at day 28 of gestation
Pregnancy rate, litter size

4. Influence of Oxytocin supplementation in boar semen depending on parity

Supplementation of 10 IU Oxytocin into boar semen portion helps to stabilize pregnancy rate in
sows.

Control group...... (n = 88)......................... no Oxytocin

Fig. 5: Influence of 10 IU Oxytocin in boar semen portion on reproduction performance

Fig. 6: Influence of 10 IU Oxytocin in boar semen portion on reproduction performance

References:
Lau, H.: Untersuchungen zum Einfluss verschiedener Fortpflanzungssteuernder Maßnahmen auf die Fruchtbarkeitsleistungen von Jung- und Altsauen unter Großbestandesbedingungen.

Schr. Univ. Leipzig, 2008

Modifications of biotechnical methods help to reduce variations in reproduction performances in sows

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In the last years the reproduction performances increased strongly. Today the
reproduction performance of sows is more than 27 alive born piglets per sow and year. In
the average, the genetic potential is about 32 alive born piglets per sow and year. In
summer high temperatures are stress for sows mostly. This situation often affects the
metabolism and reproduction physiology in high performance sows strongly. As a result of
that the reproduction performance of sows can be reduced.

Heat is stress for circulation
• Mechanism for regulation of body temperature are very active
• Balance of water-acid relation is destroyed
• Control of body temperature is difficult in environmental temperature >25°C because
energy intake is reduced – increasing of temperature about 1°C = 100g reduced
feedintake
• If temperature is higher than 25°C secretion of gonadotropins will be reduced
(FSH, LH)
• Reduced secretion of Insulin, IGF 1 and Thyroxin
• Limited growth of follicles (secretion of estrogen and estrous behaviour are reduced) and
more cyclic – reproduction performance can be reduced (Fig. 1).
• Young sows (gilts and primiparous sows) are more sensitive than older sows. This
situation demands zoö- and biotechnical activities excepting assistance for reproduction
endocrinology in sows

Aim
Modification of biotechnical methods to adapted on special and individual situations in farms.
Following biotechnical methods are included:

• Time distance between last application of REGUMATE® and eCG-injection in synchronized gilt.
• PMG-dosage for cycle-stimulation in primiparous sow should be 1000 IU, in older sows
only 800 IU.
• GnRH-preparation has a higher effect than hCG in stimulation of ovulation in gilts and sows.
In comparison to spontaneous estrus in sows the time of ovulation is affected by different
hormonal stimulation.
• During summer oxytocin supplement in semen stabilize pregnancy rate in sows.

1. Time distance between REGUMATE® and eCG in synchronized gilts

Tab. 1: Influence of distance between last medication of REGUMATE® and eCG on physiology of reproduction in gilts (LAU, 2005)

<table>
<thead>
<tr>
<th>eCG hours after REGUMATE®</th>
<th>n</th>
<th>c.l. (n)</th>
<th>foetuses (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 h</td>
<td>8</td>
<td>15.4 ± 1.78</td>
<td>13.0 ± 1.41</td>
</tr>
<tr>
<td>41 h</td>
<td>6</td>
<td>16.0 ± 2.68</td>
<td>13.3 ± 3.44</td>
</tr>
<tr>
<td>48 h</td>
<td>7</td>
<td>17.7 ± 6.07</td>
<td>15.7 ± 6.32</td>
</tr>
</tbody>
</table>

Tab. 2: Influence of distance between last medication of REGUMATE® and eCG on reproduction performance in gilts (SCHNURBUSCH, 2003)

<table>
<thead>
<tr>
<th>eCG hours after REGUMATE®</th>
<th>n</th>
<th>pregnancy (%)</th>
<th>born alive/ litter (%)</th>
<th>born alive/1000 fl (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 h</td>
<td>953</td>
<td>75.6</td>
<td>9.58</td>
<td>724</td>
</tr>
<tr>
<td>40 – 42 h</td>
<td>1050</td>
<td>83.4</td>
<td>10.40</td>
<td>870</td>
</tr>
</tbody>
</table>

3. Influence of cycle stimulation in weaned sows depending on season

Sows in experimental group got 800 IU eCG 24 hours after weaning for cycle stimulation. Sows in
control group got no biotechnical treatment.

4. Influence of Oxytocin supplementation in boar semen depending on parity

Supplementation of 10 IU Oxytocin into boar semen portion helps to stabilize pregnancy rate in
sows.

Control group...... (n = 88)......................... no Oxytocin

Tab. 4: Influence of 10 IU Oxytocin in boar semen portion on reproduction performance

<table>
<thead>
<tr>
<th>no. of litter</th>
<th>without Oxytocin</th>
<th>10 IU Oxytocin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>pregnancy (%)</td>
</tr>
<tr>
<td>2</td>
<td>206</td>
<td>80.0*</td>
</tr>
<tr>
<td>3</td>
<td>165</td>
<td>83.8</td>
</tr>
<tr>
<td>4</td>
<td>120</td>
<td>88.0</td>
</tr>
<tr>
<td>5</td>
<td>79</td>
<td>86.5</td>
</tr>
<tr>
<td>6</td>
<td>72</td>
<td>94.2</td>
</tr>
<tr>
<td>&gt;6</td>
<td>243</td>
<td>76.4</td>
</tr>
<tr>
<td>total</td>
<td>885</td>
<td>82.5</td>
</tr>
</tbody>
</table>

*p < 0.05

Conclusion
• Biotechnical synchronization of estrus in gilts and weaned sows. Especially the time
distance between last application of REGUMATE® and PMG-injection should be shorter
than 24 hours. Optimum is 42 hours. Generally a biotechnical stimulation by PMSG affects
the reproduction performances in summer positively.
• PMG-dosage for cycle-stimulation in primiparous sow should be 1000 IU, in older sows
only 800 IU.
• GnRH-preparation has a higher effect than hCG in stimulation of ovulation in gilts and sows.
In comparison to spontaneous estrus in sows the time of ovulation is affected by different
hormonal stimulation.
• During summer Oxytocin supplementation in boar semen stabilizes pregnancy rate in sows.