A recently completed study compared the economic return of hooped buildings versus conventional facilities. Factors considered included pig growth rate, feed efficiency, developing growth function, distribution of growth, production costs and returns, and rate of return on investment.

The bottom line is quite similar between confinement and hoop systems. The decision about which system to use is a management choice, and can be based on the availability of labor versus capital resources.

One comparison was conducted at the Rhodes Research Farm, where there are three hooped structures and one confinement facility. The research has involved animal scientists, veterinarians, economists and ag engineers. They looked at the environment, animal health and behavior, variability, how pigs were moved, and other factors. In one group of summer pigs, hoops had slightly superior feed efficiency in summer, but poorer in the winter.

Labor efficiency: Time spent per pig in confinement, 0.21 hours; compared to time spent per pig in hooped facility, 0.27 hours.

Cost: The largest differences in cost were in capital, bedding and feed expenses. Pigs raised in hoops required less capital but bedding and feed expenses were more.

Consumer willingness to pay for pork: Jim Kliebenstein reported on a study that showed consumer willingness to pay for pork produced in an “environmentally-friendly” manner. His research showed that two of every three participants in the study were willing to pay between 8 percent and 22 percent more for pork, respectively, depending on the level of environmental stewardship for odor and water quality.

Pig mortality: Mark Honeyman said the Rhodes study showed different death losses in summer and winter. In winter, hoops had a pig mortality rate of 3 percent, compared to 1.5 percent for confinement system. In summer, hoops had a pig mortality rate of 2 percent, compared to 4.5 percent for pigs in confinement.
Pig performance: Jay Harmon said pigs in
the trial came from the same source, and
were medium lean gain pigs. Results
showed that pigs raised in hoops were 2.5
percent less lean in the summer, which
could have resulted from the differences in
housing or in nutrition. All pigs were
scanned and lean gain per day was com­
puted. Slaughter data showed a 1 percent
difference in lean gain.

Members of the audience asked about the
accuracy of the measurement and formula
used to calculate lean gain percentage.
Early-weaned pigs also seemed to be
doing fine in hoops during cold weather,
except they might have a problem making
the transition from fall to winter weather.
Pigs usually sleep in a certain area, but as
the weather changes, the nesting area
wasn’t large enough.

Animal behavior: Don Lay reported re­
results of his study to see if pigs in hoops
experience the same amount of stress. He
found the biggest differences were related
to bedding and the size of the group.

Pigs raised in hoops are limited in the
number of resources such as feeders and
waterers. Groups of pigs would tend to get
up together and fight at the feeder and
waterer. There also was fighting during
hot weather, or when one pig walked over
another pig to lay down. In general, how­
ever, pigs raised in hoops fought less than
pigs raised in a confinement facility be­
cause hoop pigs have activities to occupy
their time. Pigs in confinement rested
more than pigs in hoops, and when not
resting they were observed fighting, chew­
ing on ears, nose, biting tails and
manipulating other pigs. Pigs raised in
hoops were observed in more play
behavior.

Lay said future research will evaluate pig
stress and immune response differences.
He said he also wanted to look at feeding
alternatives, drinking space allocation, and
effects on group dynamics. The research
unit can replicate a barren pen, which is
the primary cause of pig stress. The cur­
rent study uses 8 sq. ft. of space per pig in
confinement, versus 12 sq. ft. per pig in a
hoop facility.

Practical Farmers of Iowa (PFI) demonstra­
tions: Mike Duffy reported by PFI cooperators have logged data on labor
spent in hoop facilities. For 12 hoops,
producers spent an average of 0.272 hours
per pig; for 12 hoops, producers spent an
average of 0.29 hours per pig. In one hoop
used for breeding and gestation, average
labor per sow was 1.3 hours.

Duffy said the data was sorted by the type
of bedding used and type of time spent (to
check bedding, feeding, sorting, and
veterinary/medical care). Data was consist­
tent with producers throughout the state.
Data also was consistent when divided by
the type of task that was done.

The overall labor efficiency for pigs in
confinement is 0.21, compared to 0.27 for
pigs in hoops. Some producers, however,
may consider the quality of labor, higher
in hoop structures than for confinement
facilities.

Other comparisons: PFI cooperators said
bedding costs are variable, depending on
whether the bedding is purchased or
produced on the farm. The mortality rate
also seems to be affected by bedding. They
had not been able to determine any differ­
ces in percent lean and yield, but found
they could load out hogs from a hoop
facility much easier than from a confine­
ment facility. PFI cooperators said they

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have fed pigs in hoops the same way they did in confinement, but that hoop pigs tended to grow faster. Some cooperators said they feed more fiber to hoop pigs to slow down growth.

One producer has kept records on three 30 x 84 ft. hoops. His records showed that he spent 7.02 minutes per hoop per day on labor for cleaning.

Paul Mugge, who has a hoop operation with another producer, reported an average daily gain of 1.5 to 1.7 for pigs and F/E of 3.3 to 3.6. He found death loss to be very low, and that pigs in hoops are more uniform than they are in outside feeding. He starts with six inches of corn cobs in the hoop, which has worked well. Pigs come out of a SEW nursery, and he had 0.2 hr. labor per pig.

QUESTIONS:
What about leaching under the hoops? Is there research that addresses this potential problem?
Usually the dirt is not muddy under a hoop building. The ground is packed under the bedding, so leaching is not a problem.
Mugge summarized his data in the table on the following page.
### Producer data on hoops operations

<table>
<thead>
<tr>
<th>Dates</th>
<th>Pen</th>
<th># started</th>
<th>Initial Avg. Wt.</th>
<th>Current Facility</th>
<th>Pen Days</th>
<th>Avg. Wt</th>
<th>Avg. total days to 230 lbs</th>
<th>Test Pd. Days</th>
<th>Avg. Days Fed to Market</th>
<th>Avg. ADG</th>
<th>Feed (AF) to Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/15/97-05/12/98</td>
<td>hoop-12/87</td>
<td>169</td>
<td>51.8</td>
<td>hoop #1</td>
<td>21992</td>
<td>247</td>
<td>185</td>
<td>149</td>
<td>127</td>
<td>1.55</td>
<td>3.46</td>
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<tr>
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<td>barn-12/97</td>
<td>193</td>
<td>50.9</td>
<td>home-n shed</td>
<td>26700</td>
<td>250.2</td>
<td>184</td>
<td>148</td>
<td>131</td>
<td>1.54</td>
<td>3.35</td>
</tr>
<tr>
<td>04/06/98-08/31/98</td>
<td>toms-4/98</td>
<td>373</td>
<td>46.8</td>
<td>toms</td>
<td>49185</td>
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<td>183</td>
<td>148</td>
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<td>1.57</td>
<td>3.44</td>
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<tr>
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<td>hoop #1</td>
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<td>148</td>
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<tr>
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<td>256.7</td>
<td>180</td>
<td>149</td>
<td>130</td>
<td>1.57</td>
<td>3.14</td>
</tr>
</tbody>
</table>

| # started | # Marked | Sort Loss | Avg. B.F. Avg. Lean | Avg. Yield t.gain | Feed/cwt Nonfeed/cwt Feed Gain |
|-----------|----------|-----------|---------------------|--------------------|---------------------|------------------|------------------|-------------------|----------------------|-------------------|
| 12/15/97-05/12/98 | hoop-12/87 | 169       | 164                 | 0.14               | 0.92               | 51.4             | 74.86            | 20.51             | 1.58                 | 25.34             |
| 12/15/97-05/11/98 | barn-12/97 | 193       | 189                 | 1.02               | 0.74               | 53.9             | 19.19            | 1.84              | 1.57                 | 18.71             |
| 04/06/98-08/31/98 | toms-4/98 | 373       | 365                 | 0.86               | 0.9                | 50.9             | 18.71            | 5.51              | 0                    | 0                 |
| 05/04/98-09/28/98 | hoop-5/98 | 169       | 167                 | -1.88              | 0.74               | 54.1             | 18.72            | 1.57              | 2.59                 | 18.96             |
| 05/04/98-09/29/98 | barn-5/98 | 223       | 207                 | -1.27              | 1.01               | 50.4             | 18.96            | 1.93              | 1.43                 | 19.218            |
| 225.4       | 218.4    | 0.282     | 0.862               | 52.14              | 74.86            | 19.218           |                  |                   |                      |                   |