Bells and Whistles
or
Essential Equipment?
Cost of Technologies

- $600 closed loop fumigation system
- $1500 automated aeration controller
- $30-400 insect sampling equipment
- $300 temperature monitoring
- $1000 automatic bug counter
## Ratio: Value of One Batch of Grain/Cost of Technology

<table>
<thead>
<tr>
<th>Item</th>
<th>$3 wheat, 6,000 bu</th>
<th>$9 wheat, 40,000 bu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed loop fumig</td>
<td>30</td>
<td>600</td>
</tr>
<tr>
<td>Temperature probes</td>
<td>60</td>
<td>1200</td>
</tr>
<tr>
<td>Sampling equipment</td>
<td>78</td>
<td>1560</td>
</tr>
<tr>
<td>Automated aeration controller</td>
<td>12</td>
<td>240</td>
</tr>
<tr>
<td>Automatic bug counter</td>
<td>18</td>
<td>360</td>
</tr>
</tbody>
</table>
Closed loop fumigation system
Automatic aeration controller

Opisystems
http://www.opistormax.com/

Skyway Grain Systems
http://www.skywaygrain.com/automated-grain.html
Aeration Fan Information

WINFANS from the Univ. of Minnesota

WINFANS

FANS

RIN AND CROP INPUTS

Selected Crop: Corn, shelled

Floor Type: Full

Bin Diameter (feet): 21
Grain Depth (feet): 20
Desired airflow (cfm/bu): 1

ESTIMATED FAN REQUIREMENTS

Bin capacity (bushels): 5542
Total airflow (cfm): 5542
Estimated static pressure (inches of water): 4.04
Estimated fan power needed (hp): 5.87

RESULTS

Number of fans on bin: 1
Fan Arrangement: Parallel

Selected Fan: 0.33 hp AEROVENT 1240-DW | 12" [Axial]
## Cooling times

<table>
<thead>
<tr>
<th>CFM/bu</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>120 hours</td>
</tr>
<tr>
<td>0.2</td>
<td>60</td>
</tr>
<tr>
<td>0.4</td>
<td>30</td>
</tr>
<tr>
<td>0.6</td>
<td>20</td>
</tr>
<tr>
<td>1.0</td>
<td>12</td>
</tr>
</tbody>
</table>
Insect sampling equipment

$28 for pack of three

www.trece.com
Temperature probes - thermocouplers + readers

$29 ea

5 wires: $145
Reader: $39

Total: $184

www.thermoworks.com
Fancier Temperature Monitoring

• [Link to PDF](http://www.opistormax.com/media/pdf/Cables.060714.pdf)
Insector: Automatic bug counter

http://www.opistormax.com/index.html

http://www.opistormax.com/media/pdf/INSECTOR.pdf

$1,000 for one probe and software
$200 per additional probe
Wireless monitoring

- Binzful Portable Wireless Bin Level Indicator
- Wireless grain drying
- Security cameras
- Temperature monitoring
- Insect Monitoring

Opisystems: http://www.opistormax.com/

Skyway Grain Systems
http://www.skywaygrain.com/automated-grain.html