Evaluation of *Camelina sativa* as an Alternative Seed Crop and Feedstock for Biofuel and Developing Replacement Heifers

**Bret Hess (Wyoming – Research & Education Grant)**

**Project Number:** SW07-049  
**Title:** Evaluation of *Camelina sativa* as an Alternative Seed Crop and Feedstock for Biofuel and Developing Replacement Heifers  
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**Objectives:**

1. Evaluate field production of camelina in Montana and Wyoming
2. Evaluate camelina oil for production of biodiesel
3. Evaluate camelina co-products in diets of developing replacement beef heifers
4. Evaluate the ecological impact and economic potential of camelina

**Results:**

Cooperators have met to assure consistent methods and procedures at all sites. Industry partners have helped identify varieties and growers who can test them.

Seed grown in Wyoming in 2006 was purchased for crushing at a Nebraska biodiesel facility. The resulting oil was used to produce biodiesel and the meal was shipped to the University of Wyoming, where it and the crude glycerin were used in the first of two heifer feeding trials.

**Growth and reproductive performance of replacement heifers fed camelina biodiesel co-products**

<table>
<thead>
<tr>
<th>Item</th>
<th>Control</th>
<th>Camelina</th>
<th>Glycerin</th>
<th>SBM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-d BW</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>1st</td>
<td>2nd</td>
</tr>
<tr>
<td>1st</td>
<td>40</td>
<td>42</td>
<td>45</td>
<td>67</td>
<td>69</td>
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<tr>
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<td>41</td>
<td>42</td>
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<tr>
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<td>45</td>
<td>68</td>
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<tr>
<td>BW</td>
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<td>786.3</td>
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<tr>
<td>Gain</td>
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<td>72.2</td>
<td>72.2</td>
<td>72.2</td>
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<tr>
<td>Total gain</td>
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<td>111.5</td>
<td>111.5</td>
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<tr>
<td>Fatty acid</td>
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<td>18.5</td>
<td>18.5</td>
<td>18.5</td>
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</tr>
</tbody>
</table>

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**Actions:**

To evaluate the production potential of camelina, the research team set up trials to assess yield, quality, growth patterns, climate and soil properties:

- 10-acre plot at the Montana State University Experiment Station  
- Traditional winter wheat-fallow winter wheat fallow winter wheat• Traditional fallow-winter wheat fallow winter wheat fallow

To evaluate camelina oil for production of biodiesel, Energy Fuel Dynamics LLC and Blue Sun Biodiesel are processing the camelina and manufacturing biodiesel, which will be sent to a commercial lab for quality testing.

The feed trials are being conducted at the UW R&E Center in Laramie. In randomized complete block designed experiments:

- camelina meal is replacing soybean meal as supplemental protein  
- glycerin is replacing corn as supplemental energy

**Potential Benefits:**

If camelina can be economically produced and processed in the High Plains region:

- Producers could achieve net returns per acre greater than those for wheat and canola.  
- Livestock operations would have access to locally produced sources of protein (camelina meal) and energy (glycerin).  
- Soil quality would be improved and erosion reduced by replacing summer fallow.  
- Disease and insect cycles could be broken.  
- Residual N in the soil could be taken up, potentially reducing ground and surface pollution.