The potential feed value of grain tailings for poultry

**Problem**
Cereals sold for human or livestock feed are cleaned to remove weed seeds and broken grains to satisfy mill standards. Removal of weed seeds from seed crops is also essential to minimise spread of weeds. In addition, the inclusion of small grains leads to financial penalties. These ‘tailings’ are often composted, burnt or fed to livestock. The potential to utilise tailings as a feed source can reduce production costs and waste.

**Solution**
A blended sample of grains, including heritage varieties, was collected from an organic farm. Grain samples and tailings after seed cleaning were tested at an independent lab for nutritional content including amino acid content.

**Benefits**
Small grains, broken grains and weed seeds are a waste product which can be utilised as a feed stuff. The weed seeds have the potential to supply different amino acids and minerals.

**Practical recommendation**
The sample of tailings tested contained Ryegrass (Lolium spp.), clover (Trifolium spp.), charlock (Sinapis) and dock (Rumex) seeds as well as small and damaged grains as seen in figure 1.

**Figure 1: Tested sample of tailings.** Photo M Lea
The nutritional content of the grains and tailings are shown in Table 1. Reduction in Starch levels are countered by higher levels of sugars due to harvesting weeds before maturity. Higher Oil levels will be due to higher level in weed seeds, some of which were oilseed types such as charlock (Sinapis Arvenis L).

Increased Ash and Neutral Detergent Fibre will potentially reduce intakes and is due to the presence of dust, husks and straw from the grain.

Table 1: Feed analysis results of clean grain and tailings

<table>
<thead>
<tr>
<th></th>
<th>clean kgDM</th>
<th>Tailings KgDM</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pig DE MJ/kg</td>
<td>19.98</td>
<td>19.61</td>
<td>-2.17</td>
</tr>
<tr>
<td>Poultry ME MJ/kg</td>
<td>14.72</td>
<td>15.08</td>
<td>2.87</td>
</tr>
<tr>
<td>Neutral Detergent Fibre %</td>
<td>9.70</td>
<td>15.31</td>
<td>67.67</td>
</tr>
<tr>
<td>Crude Protein %(N x 6.25) (Dumas)</td>
<td>12.97</td>
<td>14.97</td>
<td>18.00</td>
</tr>
<tr>
<td>Ash %</td>
<td>1.52</td>
<td>2.67</td>
<td>88.42</td>
</tr>
<tr>
<td>Total Oil (Oil B) %</td>
<td>2.58</td>
<td>8.13</td>
<td>251.15</td>
</tr>
<tr>
<td>Sugar (as Sucrose) %</td>
<td>2.66</td>
<td>2.74</td>
<td>3.26</td>
</tr>
<tr>
<td>Starch %</td>
<td>68.57</td>
<td>57.89</td>
<td>-18.20</td>
</tr>
</tbody>
</table>

The samples were also tested for amino acid profiles and, in the tailings, there was an increase of all amino acids tested except Glutamine and Proline, as shown in Figure 2.

Figure 2: Amino acid levels in grain samples.

Weed seed type will influence final feed value, and care must also be taken to ensure that any seeds which are toxic to poultry are removed prior to harvest. There is also a risk that weeds can be spread as a result of this practice and so milling may be beneficial.

In conclusion, there is an increased feed value in tailings, compared to clean grains, which could be utilised as a local, organic feed by poultry farmers. Other research has shown that there is no reduction in feed value from small, low bushel or specific weight grain, and so this offers an advantage to farmers who are able to clean grain prior to selling.
Further information

Video
- Check the video "The potential feed value of grain tailings for poultry".

Further reading

Weblinks
- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract and OK-Net EcoFeed

OK-Net EcoFeed: This practice abstract was elaborated in the Organic Knowledge Network on Monogastric Animal Feed project. The project is running from January 2018 to December 2020. The overall aim of OK-Net EcoFeed is to help farmers, breeders and the organic feed processing industry in achieving the goal of 100% use of organic and regional feed for monogastrics.

Project website: ok-net-ecofeed.eu

Project partners: IFOAM EU Group (project coordinator), BE; Aarhus University (ICROFS), DK; Organic Research Centre (ORC), UK; Institut Technique de l'Agriculture Biologique (ITAB), FR; Research Institute of Organic Agriculture (FiBL), CH; Bioland, DE; Associazione Italiana per l'Agricoltura Biologica (AIAB), IT; Donau Soja DS, AT; Swedish University of Agricultural Sciences, SE; ECOVALIA, ES; Soil Association, UK.

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