DEVELOPMENT OF ENERGY CROPPING FOR BIOGAS PRODUCTION IN GERMANY

Christian Weiser
4th April 2019
Fachagentur Nachwachsende Rohstoffe e. V.

**Facts**

<table>
<thead>
<tr>
<th>Foundation:</th>
<th>October 1993</th>
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<tbody>
<tr>
<td>Main office:</td>
<td>18276 Gülzow-Prüzen</td>
</tr>
<tr>
<td>Support:</td>
<td>Federal Ministry of Food and Agriculture (BMEL) and State of Mecklenburg- Western Pomerania</td>
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<tr>
<td>Employees:</td>
<td>95</td>
</tr>
<tr>
<td>Legal status:</td>
<td>Registered association with 81 members (7 voting members)</td>
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</tbody>
</table>
| Tasks:           | • Promotion of research, development and demonstration (project management)  
                  | • Information & advice  
                  | • Public relations  
                  | • International and EU activities |
| Target groups:   | Industry, SME, public and private research institutes, universities, government agencies |

updated: 01.02.2019
Production Of Biogas Supports Energy Transition

Quelle: FNR nach DBFZ, dena, Fachverband Biogas e.V., BMEL (2017)

Fachagentur Nachwachsende Rohstoffe e. V. Development of Energy Cropping for Biogas Production in Germany 04.04.2019 3
Simultaneously Energy Cropping Increased
Substrate Input In Biogas Plants In 2015

Energy Crops For Biogas/-Methane Production 2015

## Energy Cropping In Germany 2011 - 2017

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<tbody>
<tr>
<td>Biogas (total)</td>
<td>900.00</td>
<td>1,162.50</td>
<td>1,269.00</td>
<td>1,354.00</td>
<td>1,340.00</td>
<td>1,394.00</td>
<td>1,374.00</td>
</tr>
<tr>
<td>maize silage</td>
<td>700.00</td>
<td>834.00</td>
<td>848.00</td>
<td>877.00</td>
<td>872.00</td>
<td>911.00</td>
<td>913.00</td>
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<tr>
<td>cereal (grain)</td>
<td>n.a.</td>
<td>40.80</td>
<td>142.00</td>
<td>159.00</td>
<td>151.00</td>
<td>173.00</td>
<td>160.00</td>
</tr>
<tr>
<td>cereal (silage)</td>
<td>n.a.</td>
<td>111.00</td>
<td>102.00</td>
<td>104.00</td>
<td>123.00</td>
<td>101.00</td>
<td>88.00</td>
</tr>
<tr>
<td>forage silage (grass-, alfalfa- and clover mixtures)</td>
<td>n.a.</td>
<td>153.00</td>
<td>152.00</td>
<td>199.00</td>
<td>178.00</td>
<td>192.00</td>
<td>192.00</td>
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<tr>
<td>sugar beet</td>
<td>n.a.</td>
<td>23.70</td>
<td>14.30</td>
<td>14.70</td>
<td>15.50</td>
<td>15.90</td>
<td>19.30</td>
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<tr>
<td>other energy crops (e.g. cup plant)</td>
<td>n.a.</td>
<td>100</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>800</td>
<td>1,900</td>
</tr>
</tbody>
</table>

Source: FNR, BMEL (2018)
... And The Cultivation Of Maize For Silage ...

Forage, other
1.6 million hectare

Biogas
0.9 million hectare
Alternative Crops: Cup Plant

- Area: ~ 1,900 ha, increasing
- Perennial crop, habitat of insects
- Dry matter yield can compete with maize (silage) but methane yield can not
- Drought tolerant, N-storage, C-enrichment
- Establishment is expensive (seeds)
Alternative Crops: Perennial Wild Plant Mixtures

- Area ~ 1.000 ha
- Perennials, habitat of insects
- High biodiversity
- Significantly outyielded by maize
- Possible distribution of weeds with biogas slurry
Challenges Of (Alternative) Energy Cropping

- Silage maize is the most productive crop for biomethanation in Central Europe

- Alternatives go along with disadvantages (yield performance, substrate quality, and/or economic performance, distribution of weeds)...

- …but their property as „flowering crops“ and their ability to enhance biodiversity can serve to satisfy societal demands (nature conservation, biodiversity,…)
Conclusion

• Energy transition and climate protection in Germany will rely on bioenergy and biogas

• Biogas plants will become more efficient and more flexible with regard to input, process and output

• Development of energy cropping for biogas remains at a plateau of 1.37 million ha at the moment

• Future biogas feedstock spectrum will be mainly based on a wide variety of residues

• Promising new feedstocks and a limited proportion of crops that provide specific environmental benefits will be available
Contact

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