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PREPARATION AND COMPACTION OF WHEAT CHAFF FOR SOLID BIOFUELS

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ISSUE

The collection of chaff during harvesting opens a new biomass potential for energetic usage. The efficient logistic of chaff is in conflict with its low bulk density. Pelletizing chaff can overcome this issue and was evaluated.

QUESTIONS

Is pre-treatment prior to pelletizing necessary?

Chaff consists mainly of husks and straw. Pre-sieving chaff to sort out straw avoids milling and improves combustion properties.

What are optimized pelletizing conditions?

Experiments evaluated the pelletizability of chaff.

Varied parameters	
Moisture content	8 – 28 wt.%
Starch as a binder	1 and 2 wt.%
l/d – ratio of die bores	4 and 5

How good are the produced pellets?

- High durability
- High bulk density
- Moisture content of < 10 wt.%

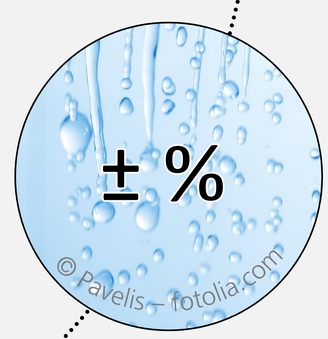
SUMMARY

Wheat chaff can be pelletized without the addition of binder. With the correct pelletizing parameters, the resulting pellets have characteristics, which are **in accordance with the ENPlus standards** and can be used as biofuel.

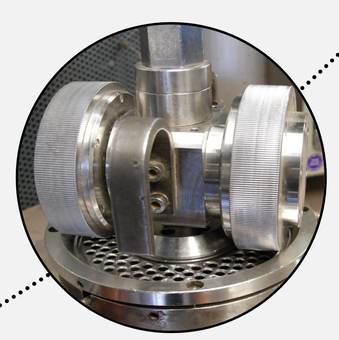
FROM HARVEST TO PELLETS

Harvest
Collection of chaff

Pre-sieving
Mesh size: 10 mm
Fine fraction ≙ 80 wt.%



Conditioning
Adjusting water content to 20 wt.%



Pelletizing
Bore dimensions:
l/d = 5

Chaff pellets
- Bulk density: 680 kg/m³
- Durability: 98.6 %
- Moisture content: 9.3 wt.%

Proposed process chain from the harvest to optimized biofuel pellets

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