



GO-GRASS

Grass-based circular business models
for rural agri-food value chains

Swedish DEMO

Local, heat treated, quality assured
reed canary grass animal bedding increasing circularity

Susanne Paulrud

R815GP06

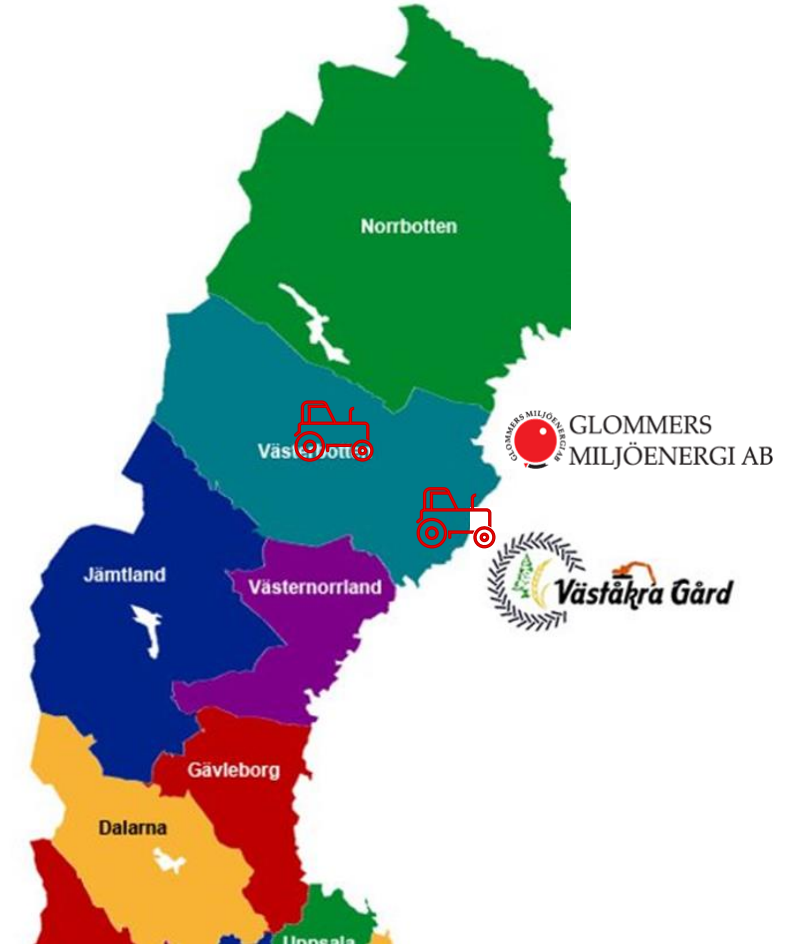




Background and goal

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- New alternative of animal bedding
- Replaces wood-based animal bedding
- Use of unused land for cultivation of reed canary grass
- Create new business and service in rural areas
- Two DEMO sites
- Different scale and different locations



Develop a local small-scale plant to produce reed canary grass animal bedding that is profitable at farm level



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862674

Animal bedding - farm-level production

REED CANARY GRASS

Perennial grass that grows across many different soil types and climate regions



BRIQUETTING TECHNOLOGY

Heat-treated briquetting
Shredding
Packaging



ANIMAL BEDDING

For barn & stable animals like horses or cows



ADDITIONAL SIDE STREAMS

Fertiliser or biogas

SIDE STREAMS

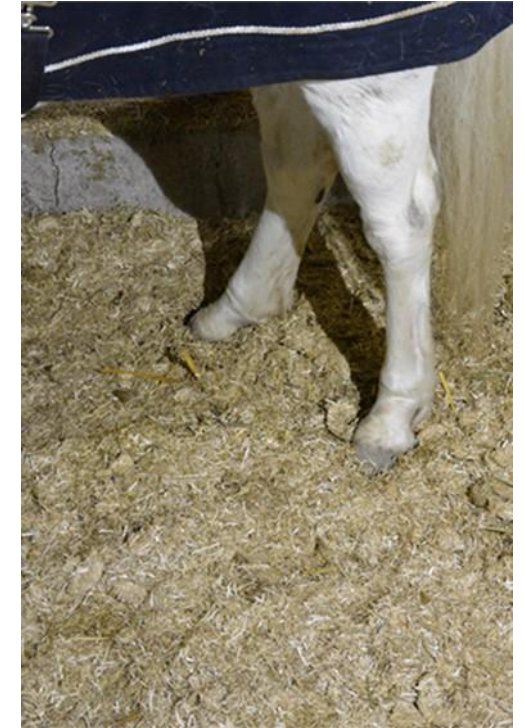
Fines from dust removal



Animal bedding "Klimatströ"

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- ❖ "Klimatströ" a protected trademark
- ❖ Compressed and requires little storage space
- ❖ Heat treated, eliminates bacteria and mold spores and inhibits seed dispersal
- ❖ A stable and soft bed that lies still, reduces risk of sores
- ❖ Binds the ammonia smell and provides a good stable climate
- ❖ Increases the value of the fertilizer when used on field or in biogas plants



	Guideline value	Bale	Bale	Klimatströ	Klimatströ
Mold Fungus log cfu/g	<5	5,2	6,2	2,3	2,6





Development increased efficiency

Bale shredder-first step in the processing chain

- ❖ Test-right straw length, with or without net
- ❖ Rebuilt the shredder to electrical driven
- ❖ High fuel prices and requirement to use the tractor
- ❖ Extended the drum to increase number of bales





Development increased capacity

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Briquetting machine, Duo press

- ❖ Increased capacity (double)
- ❖ Synchronize the process and better serve the market



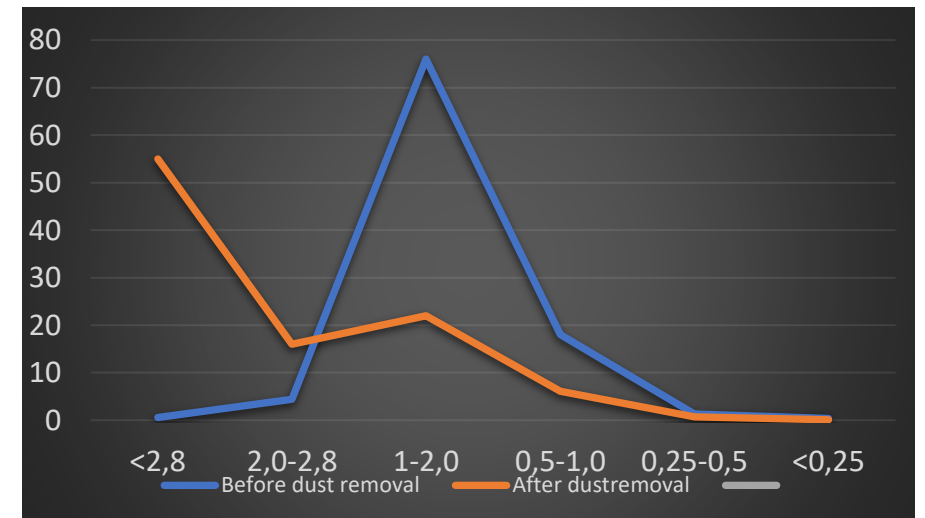


Secure the product quality

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Briquette shredder and dust removal

- ❖ Feedback from users, too dusty material
- ❖ The dust equipment removes about 8-10 % fines and the material contain less dust
- ❖ Percentage particle distribution after dust removal
- ❖ A market for the dust to soil improvement





Secure the packaging

Packaging and distribution

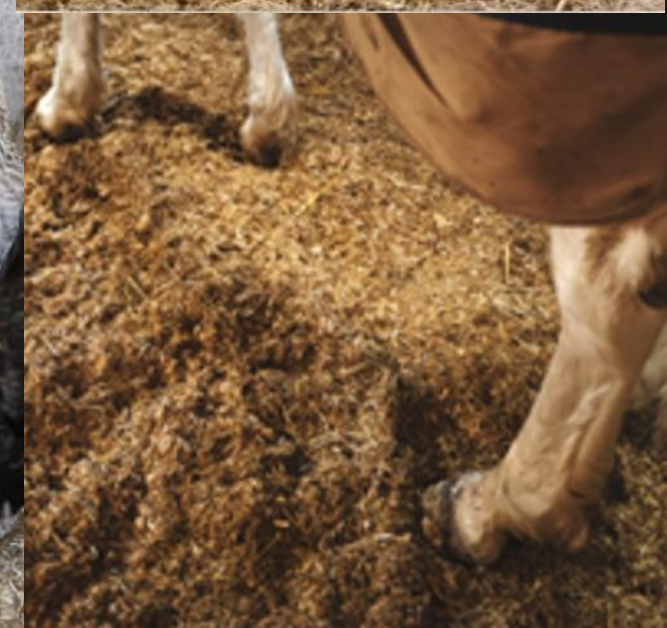
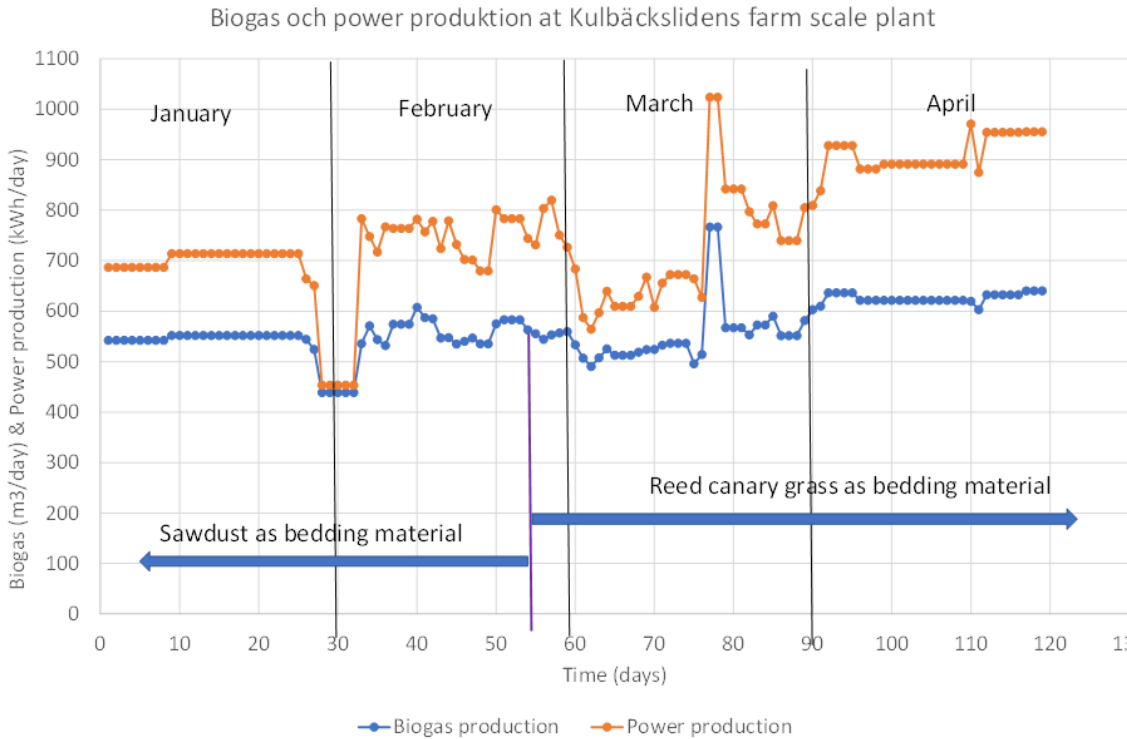
- ❖ Small bags, 20 kg to simplify transport, storage and handling
- ❖ Half manual version of packaging machine
- ❖ Improved function, equipment that weigh the material when falling into the press
- ❖ Adjustments to make it more efficient
- ❖ Optimal filling of big bags and packaging on pallets





Customer tests and feedback

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- Superb, best animal bedding so far! Last long and easy to handle!
Chicken owner, Umeå

Long-term test at dairy farm with biogas production



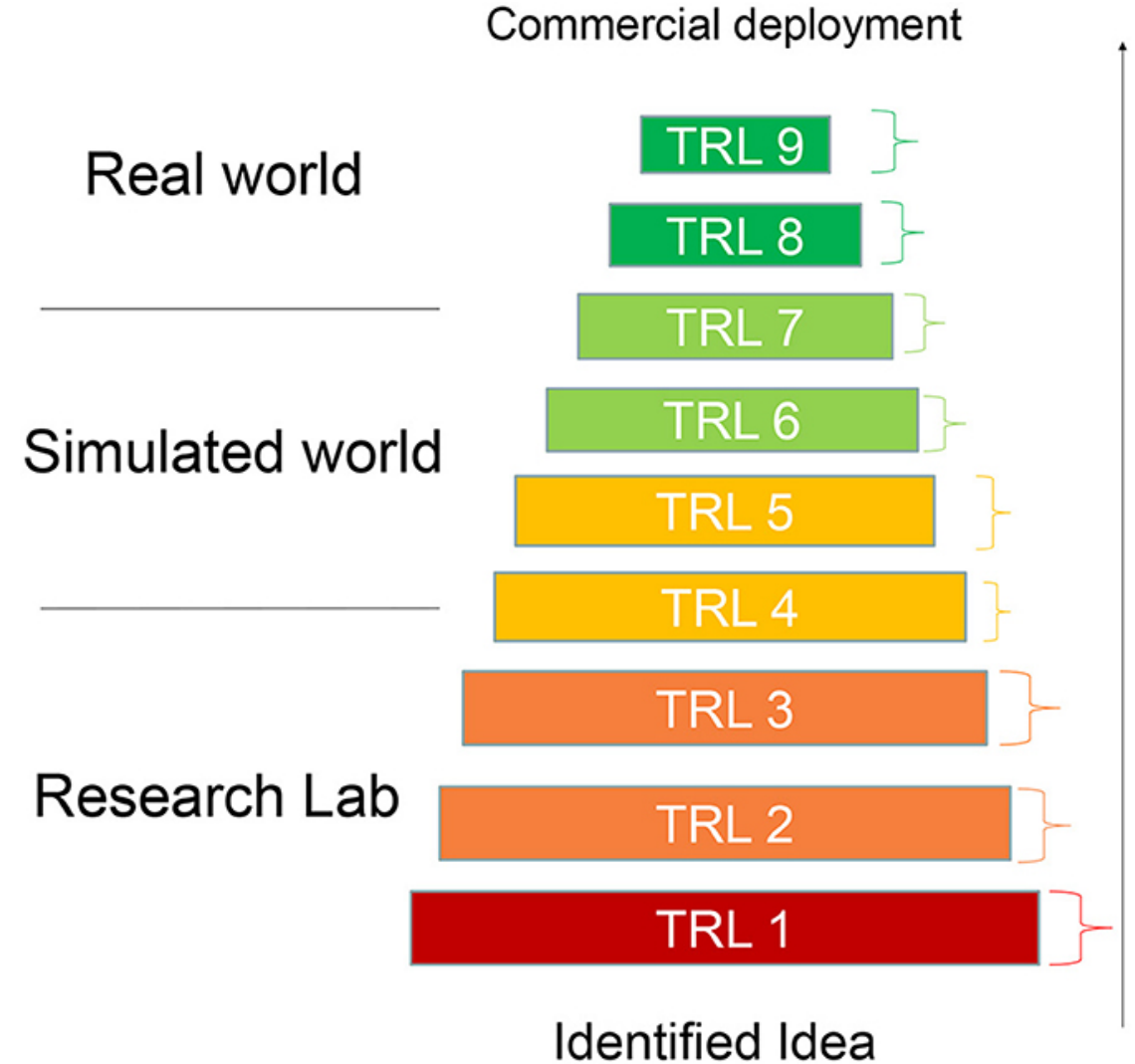
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Technology readiness level (TRL)

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- ❖ After last improvements and adjustments, the Swedish demo reach
- ❖ TRL 8 – System completed and qualified through test and demonstration.
- ❖ The product has been launched into the market





Economic analysis

		Scenario 1: 2 Duo press (222 ton)	Scenario 2: 2 Duo press (500 ton)	Unit
COST:				
Investment:	Infrastructure (excluding personnel costs)	176,225	176,225	SEK/year
Running costs:				
	Labour costs	264,059	594,727	SEK/year
	Raw material	333,000	750,000	SEK/year
	Other running costs	89,194	200,888	SEK/year
TOTAL COSTS:		862,478	1,721,840	SEK/year
BENEFIT:				
<i>Product sales</i>				
	Amount per year (raw material - 10% dust-fine fraction)	200	450	ton dry matter
	Price per unit exkl VAT	3,750	3,750	SEK/ton
	Sales of outsorted fine fraction	2,500	2,500	SEK/ton
	Turnover	805,000	1,812,500	SEK/Year
Balance:		-57,478	90,660	SEK/ Year





Market price other products

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- ❖ Customers compare the price with wood based products:
- ❖ Wood shavings
- ❖ Wood pellets
- ❖ Price for similar products in the market are higher
- ❖ Need to pay for increased value

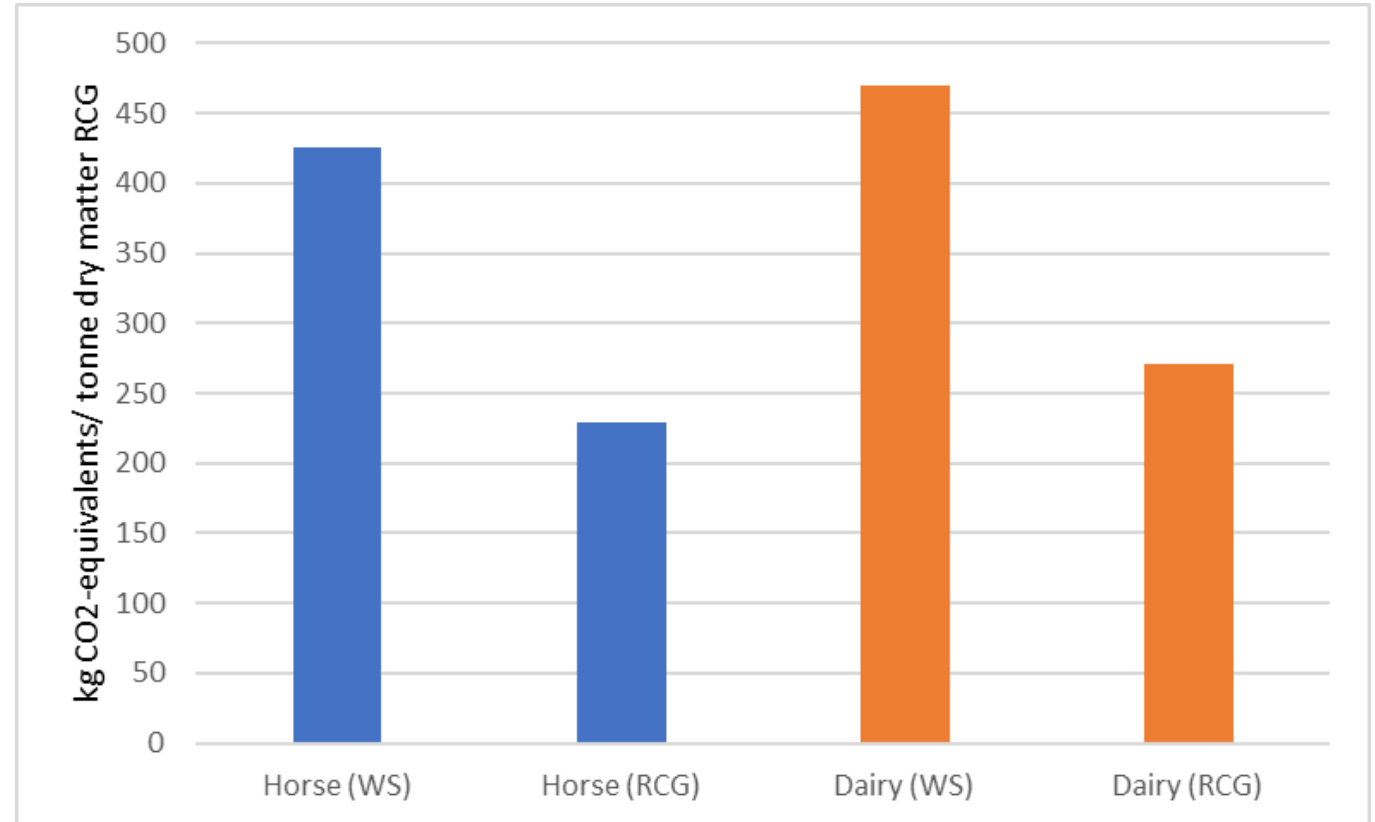




Climate impact

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- ❖ From cultivation to use as fertilizer
- ❖ The horse manure is spread on arable land
- ❖ The manure from the dairy farm to biogas production
- ❖ “Klimatströ” has a significantly better climate performance than wood shavings



Klimatströ (RCG) compared to wood shavings (WS)

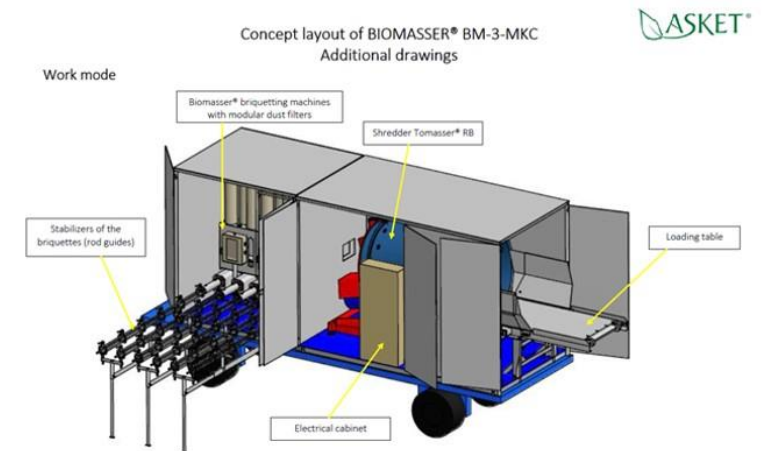




Outlook

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- ❖ A commercial animal bedding product to sell and distribute
- ❖ Continued production for different customers
- ❖ Collaboration with a research project-calf rearing and animal health
- ❖ Market communications, sales and distribution
- ❖ Continue dialogue with Asket, adapted technology for new producers





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Thank You!

