Self-loading wagon against the harvester

Battle of the systems

@info

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BATTLE OF THE SYSTEMS: SELF-LOADIN

You want to remain indep and make a profit?

High cost pressures and changing economic conditions in agriculture are forcing modern farming operations to constantly review the cost-effectiveness of processing silage. The question "which is the best method for making quality silage?" is more relevant today than ever before.

Pöttinger, the green land specialist, has been investigating this question in depth. In this respect the self-loading wagon process – proven over decades of success – increases its significance still further.

Aims of producing silage:

- ✔ Quality (short cut required for high density)
- ✔ High energy content (e.g. ”Extra dry” conditioner with wide spread system)
- ✔ Dynamic operation for the whole process
- ✔ Low leaf loss and loss due to disintegration
- ✔ Low contamination (ash)
- ✔ Optimum logistics – high cost effectiveness of the process

G WAGON AGAINST THE HARVESTER

pendent

Heinz Günter Gerighausen

from the Rheinland Chamber of Agriculture in Bonn is convinced of the cost-effectiveness of processing silage with the self-loading wagon.

"The latest generation of self-loading wagons with feeding rotor has a remarkable capacity.

Improved fermentation occurs with the excellent quality of cut.

Every combination of discharge, distribution and mixing systems is possible.

High compression in the loading chamber achieves heavier loads and higher transport performance.

Over distances its application is virtually unlimited, making it a competitor with the harvester too."

Heinz-Günter Gerighausen

Examples from the field

Northern Germany:

Yield 10 t wilted matter/ha, dry matter content 35%, field-to-farm up to 2.5 km

JUMBO 6000: 36 m3 (DIN)

Tractor 200 hp		
Average performance	2.5 ha/h	
Costs for JUMBO with 200 hp tractor:	€ 117.0/h	€ 47.0/ha
Fuel consumption:	25 l/h	10 l/ha

Adds up to a fuel consumption of *1 litre per tonne* of silage

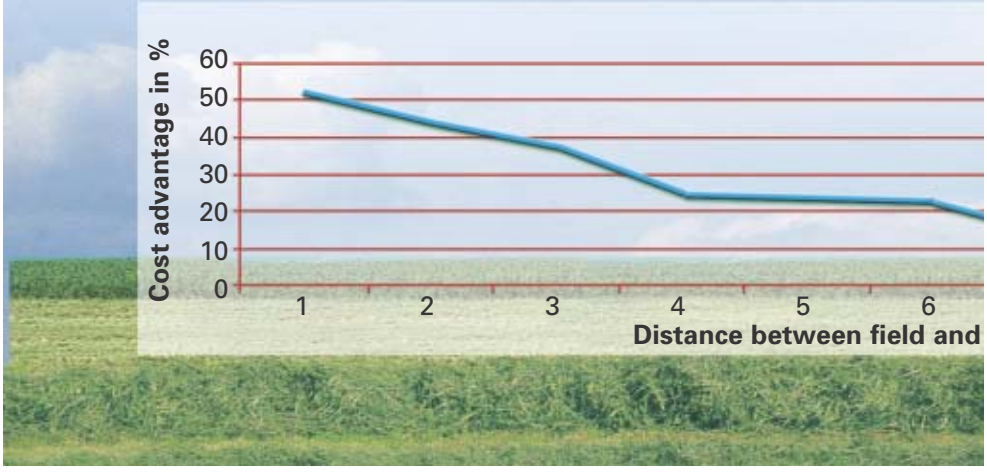
60 % saving in fuel consumption per tonne of silage

Ireland

Comparison of performance and no. of drivers:
Average distance between field and farm 2 to 3 km

	self-propelled harvester 450 hp			silage trailer JUMBO 6600		
		Total			Total	
	[hp]	[hp]	[drivers]	[hp]	[hp]	[drivers]
Harvesting units	450	450	1	220 x 2	440	2
Transport units	125 x 3	375	3			
Wheel loader	145	145	1	145	145	1
Comparison of performance and no. of drivers		**970**	**5**		**585**	**3**
Comparison in % of forage harvester		**100%**	**100%**		**60%**	**60%**

COST ADVANTAGE OF JUMBO SILAGE TRAILER COMPARED TO FORAGE HARVESTER OVER A FIELD-TO-FARM DISTANCE OF 1 to 10 KM



Forage harvester

416 hp + 2 tractors, each with 40 m_ trailer		
Average performance	5.0 ha/h	
Costs for harvester train:	€ 306.0/h	€ 61.0/ha
Fuel consumption:	80 l/h	16 l/ha

Adds up to a fuel consumption of *1.6 litre per tonne* of silage

with the JUMBO compared to the harvester train.

Cost analysis JUMBO 6000

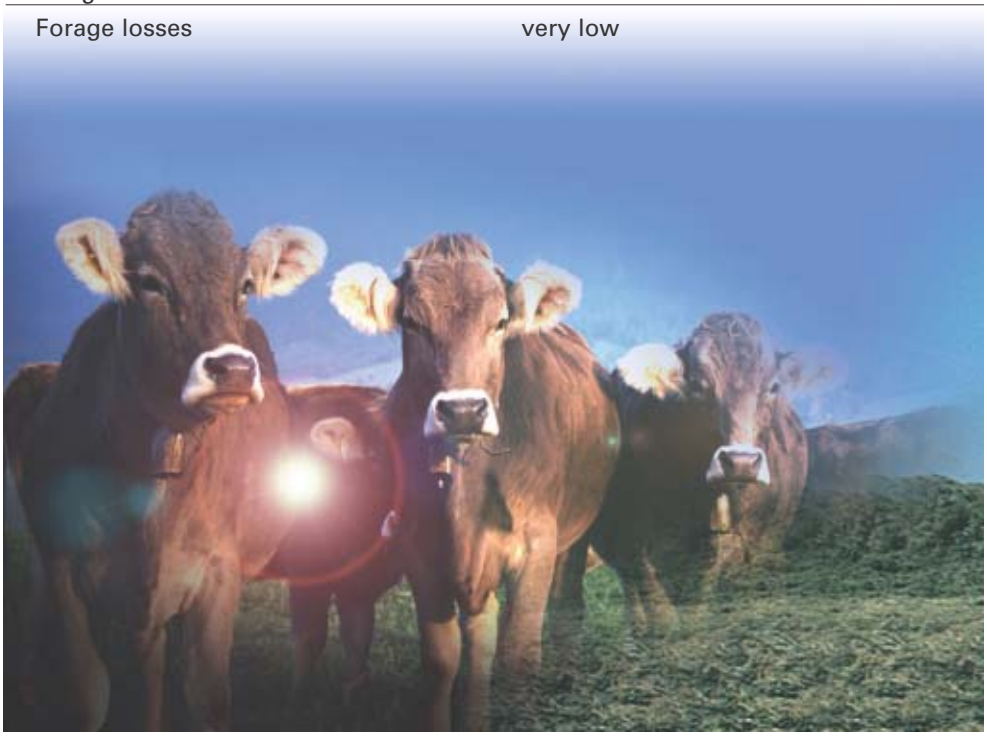
Investment price € 63.770,0	
wear, value after 10 years, € 12.754,0	€ 5.101,0
Interest rate: € 31885,0 x 6,0%	€ 1.913,0
General costs: 5,0 %	€ 3.188,0
Estimated repair costs:	€ 2.550,0
	€ 12.754,0
Costs per hour at 250 hours of operation per year	€ 51,0
Tractor 200 hp (1000 hours/year)	
25 litre/h fuel + driver	€ 64,0
Costs/h Jumbo 6000 with 200 hp tractor	**€ 115,0**

Summary:

1. The harvester train (€ 61.0/ha) is around 30 % more expensive than the Jumbo self-loading wagon (€ 47.0/ha)
2. The harvester train consumes 60% more fuel.
3. Logistics are much more straightforward.
4. Number of drivers is much lower with self-loading wagon chain (see Irish example).

Comparison between silage

	Self-loading wagon
1. Current trends	
More cuts for quality silage	optimum forage quantities
Mixer feeder wagon	supports process
Expanding business	size of field does not matter
2.Technology	
Ongoing development	cutting quality, performance, load, conv
Performance	heavy increase
Power requirement	favourable
Loading	high, compression in chamber
	higher than in trailer for forage harveste
Logistics	straightforward
Downtime risk due to foreign objects	low risk
Cutting length	at least 40 mm
Wear	low
Maintenance	low
3. Business conditions	
Existing technology	can easily be incorporated
Additional utilisation for investment	harvest wagon, hay, straw
Utilisation of existing tractors	160 – 260 hp tractors
Field size	little influence
Headland	low loss
Changing location (distributed fields)	virtually no loss
Distance between field and farm	virtually unlimited due to high load
Fields on slopes	good performance on slopes capacity
4. Other factors: Raking, forage contamination, forage loss	
Swath quality	important
Swath quantity,	easily reached
forage contamination	low
Forage losses	very low



trailer and forage harvester

Forage harvester

	too little forage for 100 % utilisation
	makes very short cut superfluous
	neighbouring areas preferred
enience	transmission power, convenience
	hardly increased despite 4 rotor windrower
	limited
er	medium to high, depending on actual volumes
	complicated
	high risk, transport chain has to wait
	at least 20 mm
	2 to 3 times higher wear than harvesting maize
	higher wear due to stones and dirt
	not easy to integrate
	investment for maize and grass additional
	for hauling trailers only
	relatively strong influence
	coordination with transport required, causes higher losses at headland
	unproductive time moving harvester
	high-capacity trailers required
	limited use only
	important
	often too low for 100 % utilisation
	high with large swaths: negative effect on health of cattle
	can be high (due to wind and/or driving errors)

Self-loading wagon

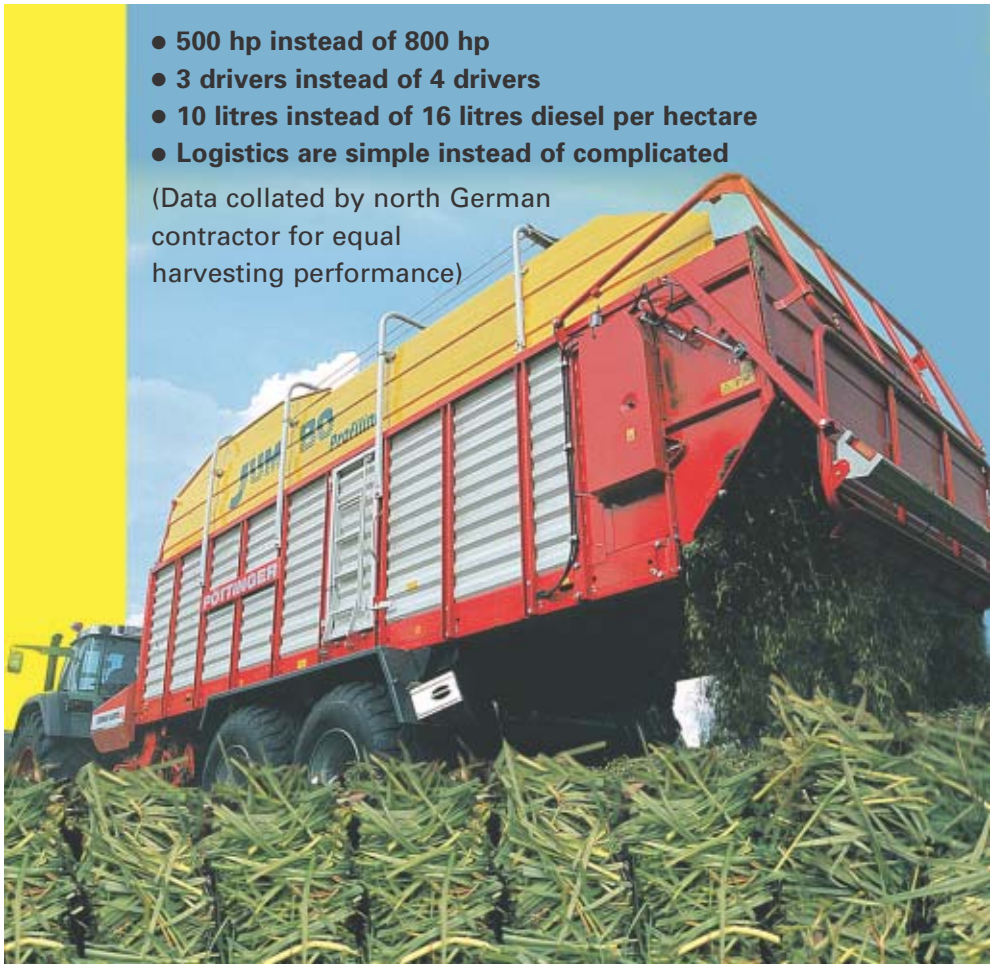
5. Utilisation	
General	the more cuts the better additional utilisation for hay and straw or as chipper wagon
Large farm	ideal
Contractor, machine ring,	ideal, especially in grassland area
Ownership for medium sized farms	wagon type can easily be matched to size of farm for best utilisation, when shared too.
6. Energy costs	
If energy costs continue to increase	little negative affect on processing costsf on processing costs
Energy costs per t of dry matter	favourable
7. Clamp	
Compressing	very good with fine cut
Silage volume requirement	normal
Fermentation stability	very good
Silage additives	could be used
8. Feeding	
	very good a certain "structure value" is required to achieve top consumption cut length of 40 mm is quite sufficient
Forage waste	low

Forage harvester

	additional capacity for grass with low yield
	a) higher cost pressure
	b) 2 to 3 times higher wear with grass!
	only if big enough, at least
	around 300 ha maize/year
	at least around 300 ha maize/year
	not economically feasible
f	higher negative affect on processing costs
	relatively high
	abt 5 % better
	abt 5 % lower
	very good
	could be used
	very good
	too short a cut is counter productive
	low

- **500 hp instead of 800 hp**
- **3 drivers instead of 4 drivers**
- **10 litres instead of 16 litres diesel per hectare**
- **Logistics are simple instead of complicated**

(Data collated by north German contractor for equal harvesting performance)



The intelligent choice

Today's self-loading wagons are unbeatable for high-performance grassland farming

✔ Top-quality forage for higher yield in the cattle shed
✔ Harvest silage at the right moment
✔ Ideal for mixer feeder wagons and all other feeding systems
✔ Best digestibility and cattle health due to ideal cut length
✔ Additional utilisation of existing tractors
✔ The most economical process compared to forage harvesters or balers.

The perfect solution for contractors

✔ At last you can start making a profit again with grass silage too
✔ Reliable engineering
✔ High performance due to high payloads and high transport speeds
✔ Modern technology has made working with tractors more attractive
✔ Lower wear, straightforward maintenance, much easier logistics (drivers, ...)

Hanshermann Buttjer – contractor in northern Germany

Using the self-loading wagon leaves me more at the bottom line. I need fewer drivers, consume less fuel per hectare, and save on complicated logistics. My customers keep on asking for a self-loading wagon because they want to pay less per year and per hectare. What persuaded me was the previously unobtainable performance and consistent chop length of the JUMBO feeding rotor and chopping system.

Large farms discover high-performance silage trailers

✔ Reduce costs dramatically. High availability in 24-hour operation (up to 1000 loads per year and more)
✔ Amazing performance
✔ Reliable engineering
✔ Livestock health, performance and fertility

Institute for Agricultural Engineering at the University of Brno – Czech Republic

The Institute of Agricultural Engineering at the University in Brno have carried out a cost analysis of silage production. The investigation was made over a period of 4 years on a large farm with around 800 ha of grassland.
A comparison was made between the self-loading wagon (EUROPROFI and JUMBO) and a 420 hp self-propelled harvester. All costs relating to each process were collated.

The results are quite clear:

Modern EUROPROFI and JUMBO silage trailers are 30 to 40 % more economical than the self-propelled harvester.

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The intelligent choice ...

... perfect solution from Pöttinger

Advantages of today's self-loading wagon technology:

- The most economical process compared to forage harvesters or balers
- Top silage quality
- Clean forage and the right length of cut for healthy, productive and fertile cattle
- Ideal for mixer feeder wagons
- Reliable technology
- Straightforward logistics and high flexibility
- Harvest silage at the right moment
- High performance due to high payloads and high transport speeds
- Straightforward maintenance
- Low wear
- Less downtime
- Best utilisation of existing tractors

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