

Target

Targets in the project :

1. Compare the machines capability to clean the beet from soil
2. Measure beet losses after each machine
3. Compare direct loading with cleanerloader
4. Capability to clean out stones from beets

Method

The pile used in this test contained approximately 1 300 tons of beets and were placed in Vallåkra. The field had a clay content of 15-16% and were harvested around the 18th of November under normal conditions. Before harvest 60 mm of rain was measured in November. To get a even pile every second load were unloaded in the left side of the pile and next in the rights side and so on. The whole pile were covered with Toptex just after harvest and uncovered just before the test the 10th of December.

Before the test started both machines delivered one load each, just to make the perfect setup of the machines. Each machine then delivered eight loads each wich were included in the test. The rest of the pile was loaded with a wheel loader (no cleaning) as a reference.

The machines working width were split in three sections, A, B and C. A represented the area behind the pickup table, B represented area between the back wheels and C the area under the roller bed. Stones, big pieces and small pieces of beets were measured in these areas seperately. The small beet pieces were washed out with water from soil sub samples in the lab the day after.

Cleanerloader

– ROPA vs
Holmer 2015





Foto 1. Photo from test day 10 December 2015. On the right picture the tarp is shown who is collecting bets and stones from the rollerbed.



Result and discussing

Evaluation of the two machines includes measurements made at the factory and measurements done in the field on the test day.

Result from factory

The analysis from factory showed no differences between the machines when it comes to cleanliness and destoning (table 1). However, the numbers of stones in the pile were moderate to low, with just few stones with the size of a fist. In theory the Ropa machine should be better at taking out stones since it is equipped with rollers with spring protection. But under these conditions there was no significant difference between the machines. However, loading with a wheel loader resulted in a dramatic decrease of 12 percent units lower cleanliness. Like the pictures above shows, there was no perfect conditions for loading which might explain the result. A similar study was done in 2014 where a cleaner loader was compared with wheel loading. That study showed a difference in about 5 percent units in favour for the cleaner loader.

Table 1. Cleanness and stones in the delivery's with the different machine. n=48

Machine	Cleanness	Number of stones
Holmer	86,5	0,06
Ropa	86,6	0,11
Wheel loader	74,5	0,08
LSD	2,05	Ns
PROB	0,000	0,801

Result from measuring in the field

Result from the field test confirm the figures from the factory, that there was no different in destoning between the machines. But the field test also shows that Holmer had more beet losses than the Ropa machine. The differences of the cleaner loaders was approximately 300 kg beets per truck load. In percentage this gives 2,6 % loss for the Holmer machine and 1,9 % for the Ropa machine. The size of the loads were 39.3 ton for both machines. The losses might seem high for both machines, but on the other hand, the cleanness was improved from 74,5 % to 86,5% compared to loading with a wheel loader. This improvement is worth more than 500 euro/100 ton beets in the Swedish contract.

It is important to point out that the figures derive only from one year and one place. If the pile would have contained more stones, it is possible that the Ropa machine would have been able to take out more stones, due to the spring protection on the rollers. But on the other hand when the roller opens there is a risk that some beets will follow the stones and lead to more beet losses. But more beet losses compare to have more stones in the load is probably acceptable for most farmers.

Table 2. Stone and beet losses at different parts of the machines. Section A = Behind the pickup table, Section B = Between the back wheels of the machines, Section C = Under the cleaning table at the elevator

Machinery	Ton beets in section A	Ton stones in section A	Ton beets in section B	Ton stones in section B	Ton beets in section C	Ton stones in section C	Sum of beet losses (Ton)	Sum of stones (Ton)	Beet losses (%)
Holmer	0,83	0,16	0,11	0,005	0,14	0,04	1,02	0,21	2,6%
Ropa	0,63	0,14	0,04	0,000	0,10	0,05	0,75	0,19	1,9%
LSD	ns	ns	ns	ns	0,03	ns	0,27	ns	0,7%
PROB	0,116	0,487	0,084	0,191	0,031	0,703	0,047	0,490	0,045

Conclusion (Based on one test 2015 in Vallåkra in Sverige)

- 1) Holmer and Ropa deliver beets with the same cleanliness
- 2) No different between the machines regarding destoning
- 3) Direct loading gave 12 percent units lower cleanliness
- 4) Holmer losses was 2,6 % of beet material, ROPA losses was 1,9 %
- 5) More studies need to be done to make sure that the results is representative for different conditions

ROPA conclusion and sample calculation:

Lower sugar beet loss with the ROPA-Maus

The results of the NBR cleanerloader test in December 2015 in Vallåkra with detailed measurements and evaluations of approx 1 300 tons of beets, clearly demonstrate the lowest losses of loading by the ROPA euro-Maus 4.

Sample calculations:

Basis of 200,000 tons/year
0.7 % less beet losses with
ROPA euro-Maus 4
= 1400 tons/year beet losses
x 35 €/to = 49.000 €/year
x 5 years = 245.000 €
Additional income for
beet-growers with the
ROPA euro-Maus 4!

✓ Highest operational safety

✓ Liftable comfortable cabin

✓ Significantly better traction and stability due to unique counterweight concept

✓ Technology from the market leader

✓ Over 1200 cleanerloaders worldwide

ROPA

Superior class.

