FULL TEST
PEL-TUOTE OY
SLURRY INJECTOR
GRAMLINE 8 M
DLG Test Report 6415

A DLG-APPROVED full test for slurry spreading technology comprises:

- Valuation of lateral distribution for both cattle slurry and pig manure on the flat as well as on a slope
- Logging of maintenance times
- Evaluation of the product by several farmers in practice
- Examination of compliance with occupational health and safety regulations

PEL-Tuote Gramline 8 M slurry injector:

Slurry? Correct!

Slurry handling technology becomes ever more complex and this often results in a reduced payload for the slurry tanker, for instance, because the axle load is fully taken up. The slurry injector is therefore fitted with its own axle and thus entered the "DLG APPROVED" full test .

The correct place for slurry is on the ground and not in the air, for on the one hand farmers are nowadays under constant observation and many citizens seem positively to be on the look-out for the opportunity to phone the police to complain about the first whiff of slurry. On the other hand, however, odour emissions are also nitrogen losses, which become markedly more noticeable in unfavourable weather conditions. A range of products is offered on the market intended to reduce emissions during slurry application, but their massive construction involves high vehicle weights. Even if it is possible to avoid exceeding the feasible mass of the overall draught of tractor, slurry tanker and manure injector of 40 tons by shuttle transportation, the axle load of the slurry tanker is a strictly limiting factor. There is no leeway, if the axle load is already fully taken up the load of liquid manure.

Picture 1:
Harsø distributor

On its own axle

The Gramline 8 M manure injector from the Finnish manufacturer, PEL-Tuote therefore brings its own bearing axle along with it. At first sight the single axle trailer behind a slurry tanker looks rather strange. And the practitioners' first question is always: "How does that handle, especially when shunting?" We can calm your fears, for in the DLG test the manure injector connected to a Fuchs liquid manure spreader handled very well on the road as well as when reversing. The reason for this is that the steering lock angle between the tractor and the liquid manure spreader is measured with an angle sensor and this angle is then

Transverse distribution	Application volume at 8 km/h [m³/ha]	Variation coefficient	Mean variation	Assessment of mean variation
Cattle slurry on flat sections (volume stream: 3.890 l/min)	36	6,2	4,8	++
Cattle slurry on flat sections (volume stream: 2.034 l/min)	19	5,6	4,9	++
Cattle slurry on 7° slope (volume stream: 4.150 l/min)	39	5,3	4,2	++
Cattle slurry on 7° slope (volume stream: 2.027 l/min)	19	5,7	5,0	++
Pig slurry on flat sections (volume stream: 4.125 l/min)	39	3,6	2,9	++
Pig slurry on flat sections (volume stream: 2.096 l/min)	20	5,1	4,3	++
Pig slurry on 7° slope (volume stream: 3.823 l/min)	36	3,6	2,8	++
Cattle slurry on 7° slope (volume stream: 1.966 l/min)	18	5,7	4,8	++

*Assessment range of mean variation ++ = ≤ 5 %, + = ≤ 10 %, o = ≤ 15 %

Assessment of Transverse Distribution

regulated by two hydraulic cylinders on the swivel joint.

Best marks at the test site

In order to spread the slurry, the Gramline 8 M manure injector is fitted with two Harsø distributors, each with outflows (Picture 1), through which the total of 32 discs are supplied with slurry. To spread slurry on cultivated soil the discs can be fitted once more with disc heads. In this case behind each pair of discs a levelling bar immediately smears over the slurry-filled slots. The transverse distribution has been investigated under test bench conditions. For this purpose cattle and pig slurry was released respectively on flat sections and on a slope with two different flow volumes of flow. The released liquid manure was collected separately from beneath every outlet, weighed and subsequently the mean variation and the variation coefficient was calculated. It is common to both key figures that a better traverse distribution is expressed by lower numerical values. As the table shows, in all the different tests the manure injector attained the top "++ = clearly better than the standard" marks.

The changeover of the machine from transport to operating condition, setting the operating position, plus checking the distribution heads for foreign bodes and lubricating the 29 grease nipples were identified as typical maintenance activities. The relevant times, which four test persons required for each of these tasks, were measured.

Picture 2: Machine in operation applying 40 m³/ha pig slurry at one go after one-off shallow soil cultivation

Favourable assessment in field trials

The "DLG APPROVED" full test requires that the machinery be seen in operation on several farms with subsequent assessment by means of a questionnaire. After the application of some 1200 m³ of slurry all five field test centres stressed the directional stability of the whole vehicle combination when being driven. The accessibility of the maintenance points was assessed in the school marks system with an average of 1.7. Operation and quality of work were each assessed at 1.7. The overall mark ultimately came out at 1.7, between "very good" and "good". The manufacturer has seized on the suggestion from the practitioners, who wanted a drip stop and is going to modify the series, so that the slurry spreading stops five seconds before extraction and thus the hose can drain.

Summary

The PEL-Tuote Gramline 8 M manure injector was most impressive and obtained predominantly good results in the test modules of the full test and is therefore DLG APPROVED. The appropriate mark of conformity has been awarded. Further details can be seen in the complete test report, which will shortly be published and will be available free of charge on the DLG website.

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