

AMAZONEN-WERKE H. Dreyer GmbH & Co. KG

D9-30 Super tractor-mounted seed drill

Consistency of application and lateral distribution

DLG 5724F Test Report



Manufacturer and applicant

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DLG e.V.
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Brief Description

- For either conventional or mulch sowing
- 25 Suffolk coulters, in three stagger and 12cm row spacing
- Peg seed wheels for normal and fine seeds with infinitely variable seed rate control, bottom flaps and disengageable agitator shaft
- Adaptation to different seed types by changing from normal to fine seed wheel
- Adaptation to different seed rates by adjusting the rotational speed of the seed shaft
- Undivided seed shaft, one direction of rotation
- Drive taken from right hand land wheel via drive chain
- 600 litre seed hopper
- Exact following harrow
- Hydraulically adjustable coulter and harrow pressure
- Automatically controlled electronic tramline system
- Electronic control and monitoring unit with b/w display

Assessment – abbreviated

| Test criterion | Test result | Assessment |
|----------------------|-------------|------------|
| Quantity Reliability | very good | ++ |
| Lateral Distribution | very good | ++ |

Assessment range: ++ / + / o / - / -- (o = default)

Test Results

The Amazone D9-30 Super is a linkage mounted seed drill with mechanical seed metering intended for sowing in ploughed or conservation tillage applications.

The 3.0 working width is divided into 25 rows with a row spacing of 12.0 cm. The test machine was equipped with Suffolk coulters, hydraulic seed rate adjustment, hydraulic exact following harrow

adjustment and Amalog+ on-board computer. Some of the equipment featured is optional. In accordance with the DLG testing framework for drilling machines, consistency of application was ascertained both on the test stand as well as under practical conditions in the field. During the process on the test stand, lateral distribution was measured with wheat on the flat as well as on a slope.

The following seed varieties were used for the tests:

- "Titan" Rape (4.5 g tgw)
Elad + TMTD treated
- "Campanile" Barley (49.0 g tgw)
EFA + BBA treated
- "Dekan" Wheat (43.0 g tgw)
Arena C treated.

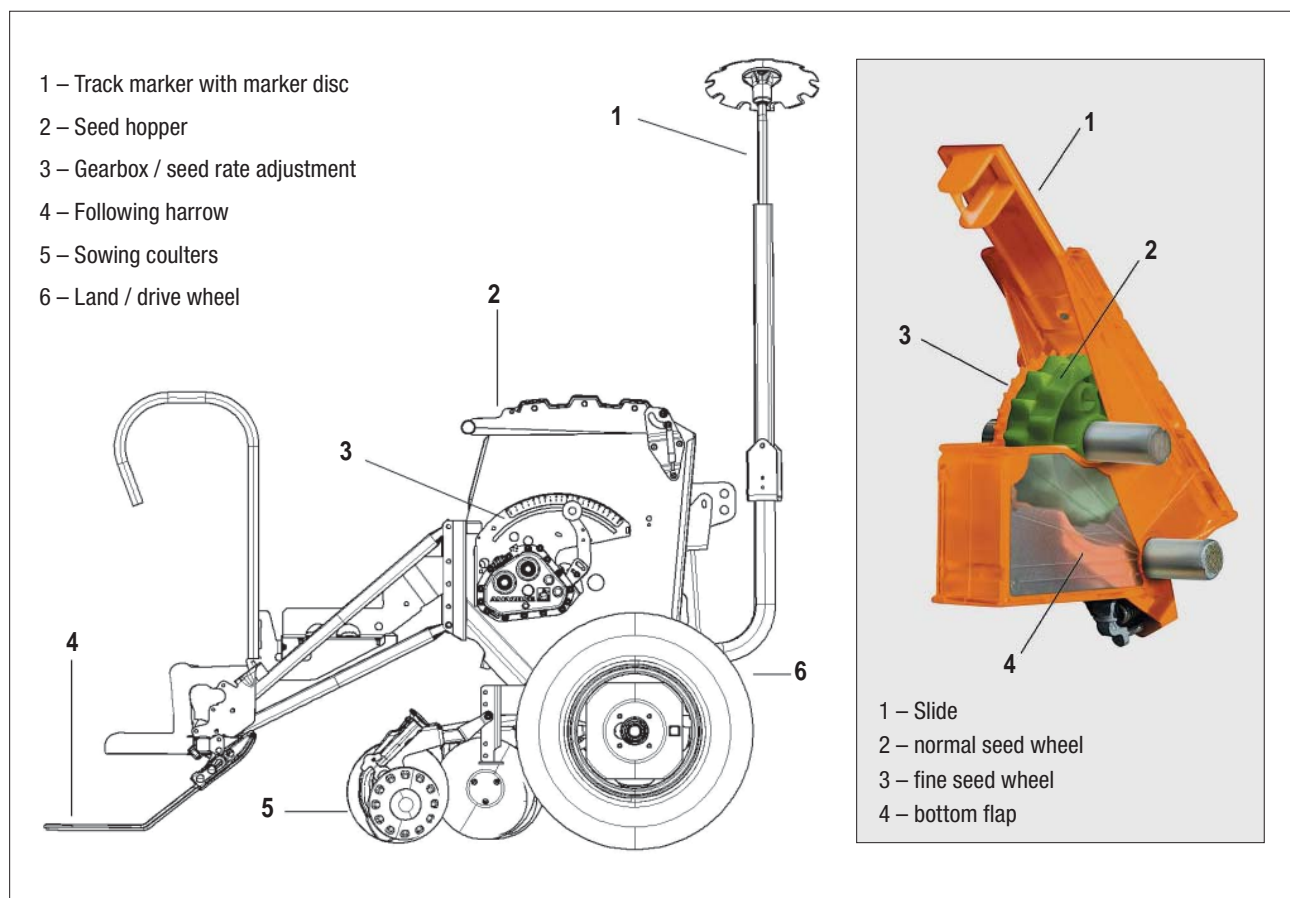


Illustration 1:

Left: outline sketch of the Amazone D9. The test machine was equipped with Suffolk coulters and not as depicted with disc coulters.

Right: The metering housing with slide, normal seed wheel, fine seed wheel, and bottom flap

Test Stand Results

Lateral distribution and consistency of application

Lateral distribution and consistency of application was evaluated according to the DLG testing framework for rape on 1/10 ha and for barley and wheat on 1/40 ha. Additionally, consistency of application was evaluated over an area of 1 ha with each.

Calibration takes place manually via the right hand land wheel and after 3 calibration procedures the desired seed rate is established. The required crank revolutions can be found in the operator's manual and also on the table next to the gear-box.

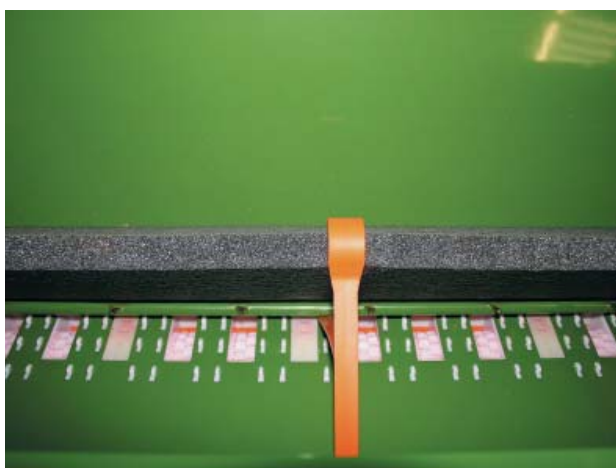
The coefficient of variation (CV) is used to measure the accuracy of distribution across the direction of travel (lateral distribution). The lateral distribution on the level is rated as very good for rape, barley and wheat.

The accuracy of distribution is slightly influenced by the machine's inclination (11°/20 %).

However, the lateral distribution is still very good even at an inclination of 11° (20 %).



*Illustration 2:
View into the
seed hopper with
agitator shaft and
normal and fine
seed wheels*



*Illustration 3:
It takes roughly
5 minutes to fit
the rape insert
kit. The agitator
shaft is switched
off when sowing
rape*

Table 1:

Accuracy of distribution of the seed corn across the direction of travel (lateral distribution) on the test stand (forward speed 8 km/h)

| Accuracy of distribution | | | | |
|--------------------------|---------|--------------------------|----------------------------------|--|
| Seed | TGW (g) | Application rate (kg/ha) | Position and tilt of the machine | Coefficient of Variation CV ¹ |
| Wheat | 43,0 | 163,0 | level | 1.0 |
| | | | tilt to the right 20% | 1.6 |
| | | | tilt backwards 20% | 1.4 |
| | | | tilt forward 20% | 1.5 |
| Barley | 49,0 | 149,0 | level | 1.2 |
| Rape | 4,5 | 1,6 | level | 2.7 |

| Assessment of Lateral Distribution | VC for wheat, peas, grass | VC for rape |
|------------------------------------|---------------------------|-------------|
| very good | < 2,0 | < 2,9 |
| good | 2,0 – 3,2 | 2,9 – 4,7 |
| satisfactory | 3,3 – 4,5 | 4,8 – 6,6 |
| adequate | 4,6 – 6,3 | 6,7 – 9,4 |
| inadequate | > 6,3 | > 9,4 |

¹ The coefficient of variation (CV) is a guide figure showing by how much the amount of seeds delivered from each individual coulter deviates from the mean value. The smaller the CV, the more accurate is the distribution.

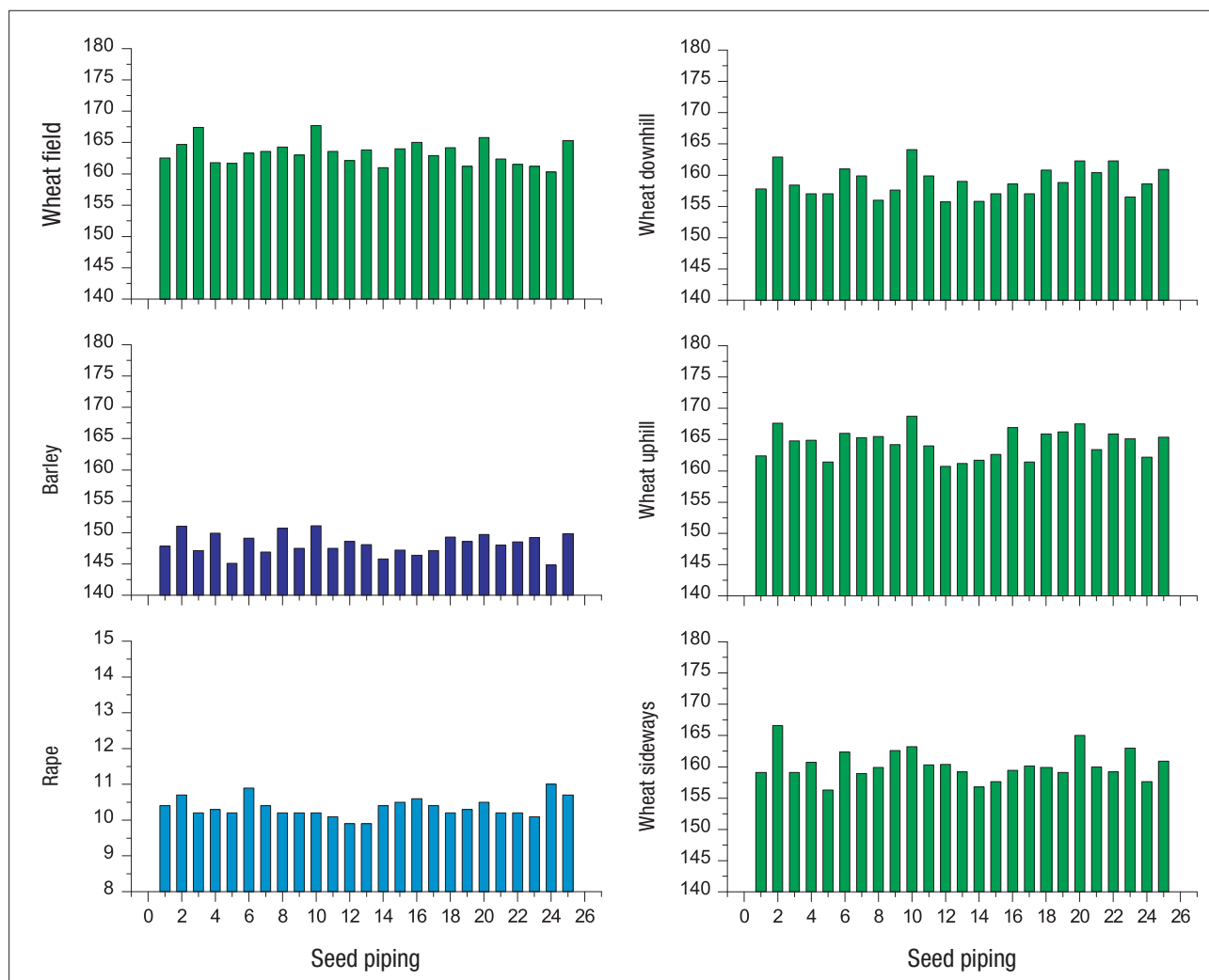


Illustration 4:

Lateral distribution of wheat, barley and rape when level and also, wheat when tilted on a side slope, backwards and forwards by 11°/20 %.

Table 2

Accuracy of application rate (consistency of seed rate) on the test stand (forward speed 8 km/h)

| Output Precision | | | | | | |
|------------------|---------|-----------|------------------------------|----------------------------------|--------------------------|---------------|
| Seed | TGW (g) | Area (ha) | Calibrated seed rate (kg/ha) | Position and tilt of the machine | Actual seed rate (kg/ha) | Deviation (%) |
| Wheat | 43.0 | 1/40 | 163.1 | even | 163.1 | 0.0 |
| | | | | to the right 20 % | 161.6 | 0.9 |
| | | | | to the rear 20 % | 164.4 | 0.8 |
| | | | | forward 20 % | 162.1 | 0.6 |
| | | | | even | 163.2 | 0.1 |
| Barley | 49.0 | 1/40 | 148.1 | even | 148.5 | 0.3 |
| | | 1.0 | | even | 148.6 | 0.4 |
| Rape | 4.5 | 1/10 | 2.62 | even | 2.54 | 3.1 |
| | | 1.0 | | even | 2.61 | 0.4 |

| Assessment of accuracy of application | Deviation from the target rate (%) |
|---------------------------------------|------------------------------------|
| Extremely slight | to 2.5 |
| Slight | to 5 |
| Acceptable | > 5 to 10 |
| High | > 10 to 15 |
| Very high | > 15 |

Accuracy of seed rate

The accuracy of application rate was determined on the test stand for rape, barley and wheat on the level and with wheat, additionally at an inclination of 11° (20 %).

In the case of barley and wheat the seed hopper was filled with 200 kg whereas for rape with 20 kg.

The deviation from the calibrated rate with wheat and barley over

1/40 ha and 1 ha was very slight and with rape over 1/10 ha slight and over 1 ha very slight. The individual results are shown in table 2.

Field Results

The accuracy of application was determined over 1 ha in an area that had been just cultivated rather than ploughed. The soil type was heavy clay with a large crumb size that had been prepared with two passes of a two row disc cultivator.

The number of passes with the D9 across the direction of cultivation amounted to approx. 50% in order to allow a sufficient amount of vibration during the test. The deviation of the actually applied rate from the calibrated value

was very slight with wheat and slight with rape.

Table 3:
Accuracy of seed rate in the field (forward speed 8 km/h)

| Accuracy of application | | | | | | |
|-------------------------|---------|-----------|------------------------------|----------------------------------|--------------------------|---------------|
| Seed | TGW (g) | Area (ha) | Calibrated seed rate (kg/ha) | Position and tilt of the machine | Actual seed rate (kg/ha) | Deviation (%) |
| Wheat | 43.0 | 1.0 | 161.2 | level | 161.0 | 0.1 |
| Rape | 4.5 | 1.0 | 2.44 | level | 2.51 | 2.9 |



Illustration 5:
The seed rate is adjusted on the infinitely variable gearbox on the right hand side of the machine. The required number of crank turns for calibration can be found on an easily visible decal just above the gearbox. The hydraulic seed rate adjustment shown is available as an option.

Realization of the tests

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