

Autonomy in experimental work for practical handling of tasks in field trials



Plot Seeder – variety testing

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AGENDA

Can you imagine a machine for experimental work which sets off the plot design itself, drills, applying fertilizers and spraying solutions – without manual control?

We will start with presenting the sketches of a self-propelled plotseeder that:

- Drills fertilizer from a seeding box or bag fertilizer
- Drills the crop from a seeding box or bag seed in one and the same machine
- Target - is expected to be ready by March 2025

To come?

Seedy Multi AU and Haldrup



Plot Seeder - AU

- Self propelled, 4X4, Tool carrier
- Fertilizer application, solid/granules/liquid
- Plot drilling – cereals etc
- Plot drilling – grass for seed
- All in one operation



Plot seeder example by TS Agro
The one in the picture are for
Aarhus University
Self propelled, 2.5-meter width;
drills fertilizer, cereals, grass for seed
and liquid sprays in one operation

FERTILIZER unit 1.5 – 10 hoses/exits





- Trailer – This is key and a specific demands
- the machine most be transported on a trailer after a car
- max weight of unit 1500-1800 kg

Produktbeskrive

Hulco Carax-3 3500 - 440x207



Seedy – Plot Seeder – Demand spec

- Self propelled, 4X4, Tool carrier
 - 150 cm center wheel to center wheel
 - Tires size – as large as possible = diameter and 240 mm width
- Fertilizer application, solid/granules
 - E.g. Rotec disc for fertilizer, 5 rows, 25 cm distance
 - To be adjusted independent of seeding disc
- Plot drilling – cereals/canola/beans/peas
 - E.g. Twintec or ? 10 rows, 12.5 cm distance
 - To be adjusted independent of fertilizer disc



Seedy – Plot Seeder – Demand spec

- Plot length: from 3-12(18) meter
- Drilling speed: from 0.8 km/t to 3.6 km/t
- Fertilizer and grain from seed box and cone planter
 - This means fertilizer disc needs to have 2 entries
- One cone belt planter 200-280 mm seed bag-seeding-unit
- One cone cell wheel planter, 400mm for fertilizer bag-seeding-unit
- Seed and fertilizer: free fall using gravity – NO AIR
- Seeder platform with one seat
- GPS for release of cone planter and encoder (pulses) for speed
- Electric control of/for seed box and cone planter – Operator - HarvestMaster

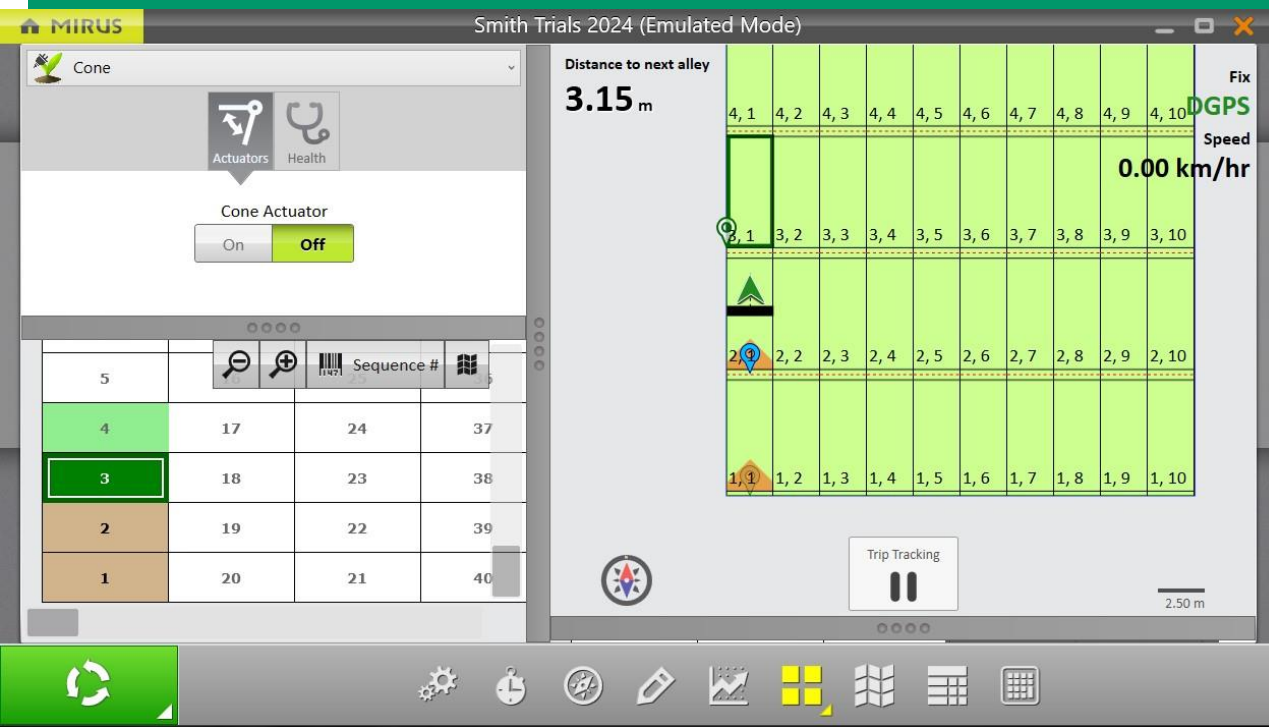
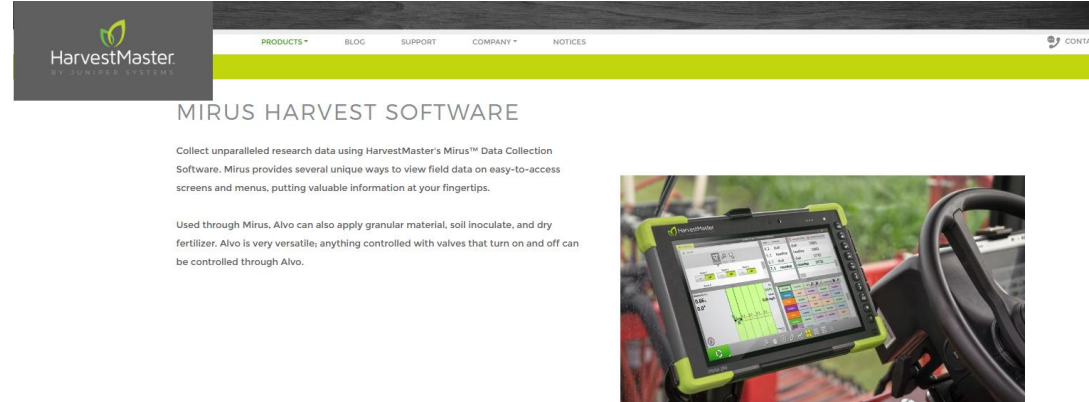
Platform and cones

- Operator sitting in seed direction
- Placed between the 2 cone planter units with the bagged seed box on each side
- Easy access
- Seedbox are heavy – a loading system is a must to have
- The Plot seeder are to be controlled from here – load/unloading field/trailer
- Sunscreen



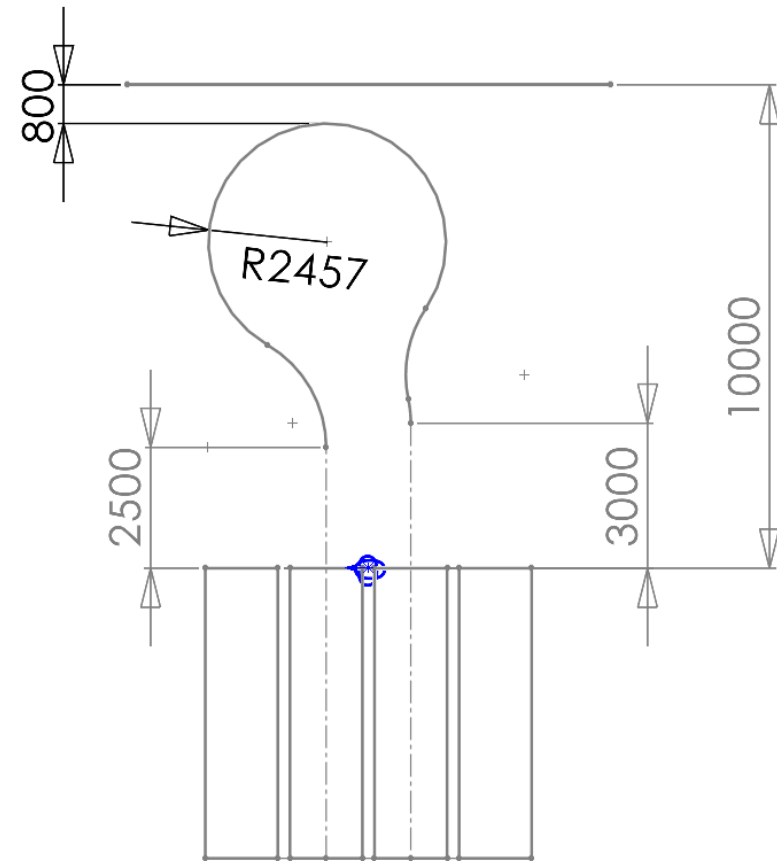
Design and data management

- NFTS/ARM
- Push direct to MIRUS Planter by HarvestMaster
- Bar code scanning of seed bag
- GPS position of single plots
- What do we need to collect???
- Afternoon session



Headlands 4, wheel steering

- Plot Width (max) = 1,5meter
- Distance between plots = 0,25meter
- Distance before exiting the plot = 2,5 meter
- 3 meter prior to entry to secure that the machine are going straight
- **Radius 35 deg = 12 meter headland**
- **Radius 45 deg = 10 meter headland**
- **Radius 55 deg = 8,5 meter headland**



Draft of the Plot Seeder

- Loading seed box – front entry
- Loading bagged seed – elevated to top position
- Easy access
- Roll bar (new on plot equipment)
- Each disc bar to be operated individually
- Disc at upper position, 40 cm above ground
- Wide pressure wheel behind each disc including harrow



To come
Autonomous Plot Sprayer,
Tool carrier

Thank you for your attention
and looking forward to the
afternoon discussion

