

Levitoi closing webinar 12.12.2024

Jukka Kielenen & Toni Ruokoja



Content



- **General information:**
 - Junkkari in Levitoi project
- **WP1**
 - Inquiries and interviews, research in selected countries
- **WP2**
 - Combi seed drill tests 2022-2024
 - Different machine types, different coulter solutions
 - Different locations and soil conditions, different type and amount of fertilizer
 - Co-operating partners
 - Wood chipper tests 2024
 - Different axle solutions in different conditions
 - Considering
 - chipper weight and efficiency/output
 - Soil/road/weather conditions
 - 2 machine types/axle solutions
 - Co-operating partners



General information



- Junkkari studies were related to both active product lines, combi seed drills and chippers
- We have observed challenges caused by climate change in the use of our combi seed drills and chippers.
 - Drought hardens the soil, setting new requirements for the properties of the seed drill and its ability to place seed and fertilizer into the ground. Sometimes too wet conditions can also cause problems.
 - Both seed drills and chippers also suffer from weakened soil bearing capacity in many areas necessitating new solutions for wheel and chassis configurations.



WP1



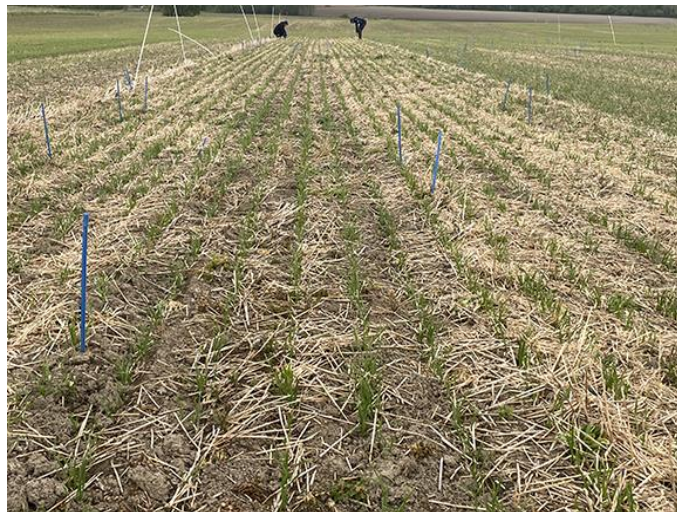
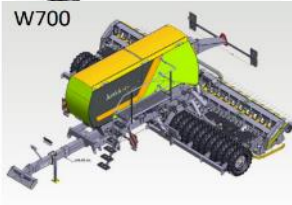
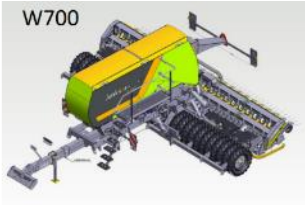
- Inquiries and interviews were done by phone, email or personal visits.
- **Seed drills:** Poland, Lithuania, Egypt, Finland
 - Conditions vary year by year, but most common problem was drought, not so often too wet soil
 - Various sizes of machinery, various technical solutions. Trend towards more efficient machines (capacity of seeding per hour, time spent for logistics etc.)
 - Generally, trend towards reduced soil preparation before seeding
 - Various fertilizer placement in use
- **Chippers:** Austria, Slovenia, Finland
 - Common solution for energy chipping is to transport wood to terminal area for chipping. This is question of efficiency but also done due to construction of bigger chippers which are not very offroad capable.
 - There was certain interest for chipper solutions which could move in more difficult conditions.

WP2, combi drills



- **Year 2022**
 - On spring 2022 test in Peltoluhta farm, Kauhava, Finland
 - Comparison of different machine types, soil preparation and fertilizing levels
 - Co-operation with: Peltoluhta farm, Luke, Seamk, Kari Alasaari, Jussi Knaapi, OAMK
 - Conditions light soil
- **Year 2023**
 - Tests in Vihti, southern Finland, hard clay soil
 - Tests with different coulter types, fertilizer placement and soil preparation
 - Co-operation with Yara, Luke, Nokian Heavy Tyres, Kari Alasaari, OAMK
- **Year 2024**
 - Similar test setup like 2024 with some modifications for hard soil test unit/coulter
 - Additionally, we tested different fertilizer levels (N: 0kg/ha, 80kg/ha and 120kg/ha)
 - Co-operation with Luke and Yara

WP2, combi drills



WP2, combi drills

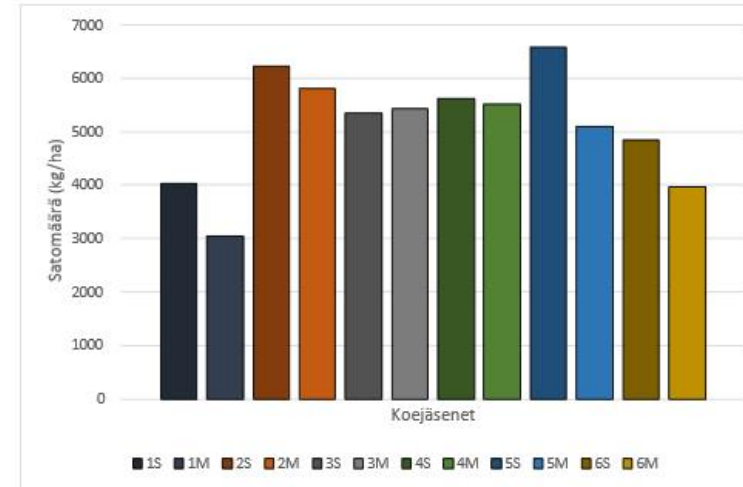


- **Results and conclusions**

- During all 3 test years best germination was achieved with machine type where seed and fertilizer were placed to the different rows (seed 125mm and fertilizer 250mm row spacing)
- This did not always result as a best yield due to various reasons
 - Precipitation/moisture in the soil
 - Soil preparation (direct seeding or tillage)
 - Temperature sum
 - Fertilizer/nitrogen level
- Weather conditions (precipitation mainly) had big effect on the yield during the project.
- Soil conditions vary from light 2022 to heavy 2023-2024. If only one type of coulter would be offered, it would be compromise. It is important to have various solutions to get the optimal result in different conditions.

WP2, sample of yield results JUNKKARI

Kauhava 2022



1. Muokattu pelto

Samaan riviin kylvävä kone nestelannoitteella



2. Muokattu pelto

Eririviin kylvävä kone normaalilla lannoitemäärällä



3. Muokattu pelto

Eririviin kylvävä kone 30% pienemmällä lannoitemäärällä



4. Muokattu pelto

Samaan riviin kylvävä kone 35% pienemmällä lannoitemäärällä. Loppu lannoite lisätään kasvukauden aikana



5. Muokattu pelto

Samaan riviin kylvävä kone normaalilla lannoitemäärällä



6. Muokattu pelto

Samaan riviin kylvävä kone 30% pienemmällä lannoitemäärällä

WP2, chippers



- Test unit got ready for summer 2024. Design work took longer than expected
- Actual woodchipper with heavier design and improved chassis/axle setup was created
 - It was crucial to build prototype of chipper which matches the requirements of potential users/customers. Then with this we could proceed with tests in difficult soil conditions.
- Tested in 2 locations in Kauhava with difficult conditions (wet, muddy terrain)
 - Test machine with 2 axles, spring boggie and Nokian Country King 560/45R22,5 tyres, weight 8100kg
 - Comparison Junkkari HJ500 with single axle and BKT 400/60-15,5-tyres, weight 4500kg
 - Measurement and documentation of tracks and compaction of soil was done

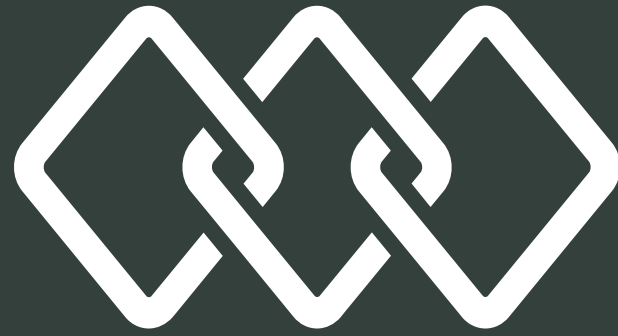
WP2, chippers



- **Test 1:**
 - Transport to chipping location on extremely wet conditions
 - Turf soil, wet
- **Test 2:**
 - Transport to chipping location on wet light terrain
 - Organic field soil, wet
- **Test methods**
 - Measurement of wheel tracks
 - Penetrometer
- **Conclusion of results**
 - Despite of the heavier weight our 2-axle test machine left 27% more shallow tracks on test 2 and even 49% more shallow tracks on test 1.
 - With test machine it seems possible to move to all conditions where tractor itself is able to go. With our existing single axle model this is not possible.

WP2, chippers





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