Development and adaptation of dry rice sowing in the Ebro Delta

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01. Rationale

The aim was to develop the dry sowing system in the Ebro Delta. To do this, we studied how this sowing methodology affects the birth and subsequent establishment of the crop in terms of salinity, water management, soil type, sowing rate and crop varieties.

The project also aimed to assess the impact of dry sowing of the crop on apple snail populations. In this regard, by restricting the presence of water in the plots during the period of the crop's maximum sensitivity to the apple snail, the damage of this pest on the crop could be significantly controlled.

The main objective was the development and adaptation of dry rice sowing in the Ebro Delta. The specific objectives were the optimisation and management of water according to the type of soil (texture and salinity), crop variety and management, and the identification and evaluation of the impact of dry sowing on the apple snail pest.

02. Results and conclusions

Sowing rates

Sowing rate recommendations were determined for five of the most representative crop varieties in the sector according to clay or sandy soil type.

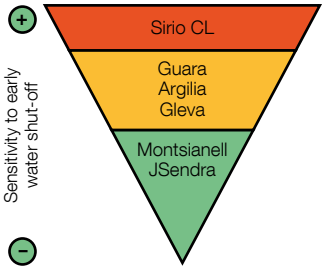
- The study of sowing rates for each variety in clay soil made it possible to evaluate two different dry sowing scenarios that farmers may consider: a high plant density (2017 trial) or a low density (2018 trial).
- In both cases, the crop was able to develop correctly and high yields were achieved, similar to those obtained from conventional sowing.
- On the basis of the results obtained over the two years of trials, the recommended sowing rate for each variety in dry sowing in clay soil would be as follows: Sirio CL, Montsianell and Argilia, rate of 500 seeds/m^2, and JSendra and Guara, 300 seeds/m^2.
- The two seasons in which the trial was carried out in sandy soil showed good germination and establishment of the crop, as a result of the ideal degree of humidity that sandy soil usually has.
- The crop was easily established correctly and the agronomic evaluations were quite similar, which allowed conclusive results to be obtained.
- From the results obtained in the two trial years (2018-2019), the sowing rate recommendation for each variety in dry seeding in sandy soil would be as follows: Sirio CL would require a sowing rate of 500 seeds/m^2 and the rest of the varieties, Montsianell, JSendra, Guara and Argila, would give competitive production with a rate of 300 seeds/m^2.

Water management for apple snail control (Continuous flooding vs Intermittent irrigation)

- Mill yield is not affected by early water shut-off in any of the varieties.
- Early water withdrawal executed by strategy 3 is the most advisable to avoid losing grain yield and at the same time minimise the period of apple snail activity.
- It has been determined that in order to minimise the reproduction of the apple snail pest, the flooding period can be reduced from 21 to 25 days before harvesting the crop depending on the variety.

Variety	Sowing rate soil clay (seeds/m^2)	Sowing rate soil sandy (seeds/m^2)
Sirio CL	500 (30 kg/j)	500 (30 kg/j)
Montsianell	500 (44 kg/j)	300 (26 kg/j)
JSendra	300 (26 kg/j)	300 (26 kg/j)
Guara	300 (28 kg/j)	300 (28 kg/j)
Argilia	500 (54 kg/j)	300 (32 kg/j)

Water withdrawal according to strategy 3		
Variety	**Phenological stage**	**Days before harvest**
Argilia	Hard pasty grain	24
Guara	Hard grain	21
Gleva	Hard grain	25
Montsianell	Soft pasty grain	24
Sirio CL	Hard grain	21
JSendra	Late milky grain	24



Table, graphic and photos: Operational Group.

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