The use of alternatives to fight diseases in rice

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Rice cultivation & sustainability
Rice Blast disease (*Pyricularia*)

**Brusone del riso, i principi atti autorizzati**

Di Riccardo Buglioni e Massimo Bartiselli 29 Agosto 2018

Il brusone del riso, il cui agente grigia, rappresenta la più grave danno al riso ed è in grado di portare a perdite produttive.

**I danni sulla pianta**

Sulle foglie e sulle guaine si come tacche strette e allungate brunastro. che col tempo e il necrotizzano al centro, assumendo un colore marrone-grigiostra, e si contornano con una bordura brunastro. Sul culmo possono imbrunirsi che rivelano la presenza di sporano.

"Collo" alla base del panico il fungo sporula al centro del sensibili.
Rice water weevil (Lissorhoptrus Oryzophilus)
Conventional Rice cultivation, today

- Available tools:
  - 1° chemical control
  - 2° biological control, resistant
  - 3° models & monitor
Organic Rice, alternative methods - Agroecology -

- Knowledge-based approach
- Biodiversity (variety & community)
- Soil health (indicator)
- Soil always covered
- Use dedicated cover crops to increase nitrogen reserve
- Pasture
- Multi-year rotation (2, 3, 5y)
- Minimum tillage & false seeding
Organic Rice, Blast alternative control, long rotation, cover, variety

Organic Nitrogen manage only by catch and cover crops, pasture

2018

2017

2016

Blast disease control
Organic Rice, pests alternative control, long rotation, cover, biodiversity zone

Complex ecosystem, different community

Pest control

“Biodiversity zone”: 11ha, 3 different ecosystem of wetland area

Intercropping soil ever cover, perimeter and ditch sowing with multispecies
What is agri-biodiversity? (1min)

Rice&Biodiversity.mp4
Is rice cultivation economically sustainable?

Average rice yield last 15 years: 6.48 t/ha
Breakeven point traditional rice
**New model of farm development**

**TOP DOWN**

- Industrial Agriculture Green Revolution
- R&D centrally organized
- Farmer: users

**Innovation of products or process (methods?)**: market oriented dominated by technology (business)

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**Bottom up**

- Agroecology – Organic Farming – sustainable agriculture
- Farmers and researchers: innovators (integrated)

- **System innovation**: creation, diffusion, evolution of know-how, local knowledge (autonomy)
Participatory approach for developing knowledge on organic rice farming: Management strategies and productive performance

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\textbf{ABSTRACT}

Rice is the third grown crop worldwide and responsible of significant environmental impacts. Nevertheless, there is a lack of knowledge concerning the organic rice' performance and management, probably due to the limits encountered by the reductionist approach in studying complex systems such as an organic paddy. The study proposes a knowledge-intensive and qualitative research methodology based on researcher-farmer participatory approach, with the aim to improve the state of knowledge on organic rice, explore the yield potential and adaptability and identify the potential strategies for organic rice production in Italy.
Result 2

Oct 12th, 2018 cover sowing  
winter 18/19 cover crop  
may 1st, 2019 direct sowing

Oct 14th, 2019  
Rice harvest  
100% reduction pesticide dependency  
(3° year)

Average 2019 yield hectare: 5,6 ton .... &
The new, modern, free & independent solution is the baseline for fighting disease sustainably in the future. I don't say this because I read it or heard it, but because I do it.

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Thank you for your attention