



PRACTICE ABSTRACT N°7

Intercropping wheat and pea for on-farm pasta production

Problem

While traditional pasta has become a staple food worldwide, several public health strategies agree that their nutritional qualities could be improved. The quality improvement through the crop diversification has not been sufficiently studied in semi-arid climate and organic production.

Solution

Intercropping winter wheat with field pea in organic systems enables to increase the protein content of the cultivated cereal, and so its nutritional quality.

Benefits

Intercropping cereals with legumes in organic systems allows a better crop use of resources, brings a higher biodiversity in the agricultural landscape, and delivers ecosystems services (soil fertility and health, C sequestration and water regulation). These benefits can add extra value to the produced pastas.

Practical recommendations

Variety selection

- An early ripening wheat variety to match with a winter field pea variety. Make sure that the selected legume matches the harvesting period of wheat (e.g., Mraz in Serbia).

Seeding density

- Wheat at 70% and legume at 30% of their recommended sole-crop densities.

Seeding time

- 2-3 weeks after the optimum sowing date to avoid pest and diseases proliferation, especially in organic agriculture.

Weed control

- Usually not needed in autumn, but weeds can be controlled in spring by harrowing.

Applicability box

Theme

Crop production, Food chain management.

Keywords

Intercropping, Crop management, Postharvest technology, Food processing and Food quality.

Context

South-Eastern Europe, temperate climate, rainfed conditions.

Application time

Autumn (October) to summer (June).

Required time

No additional time during cultivation of pure winter wheat crop. The harvested grains need to be separated and cleaned before milling.

Period of impact

One year

Equipment

Standard machinery for the winter wheat cultivation.

Best in

Low input/ organic agricultural systems.



Harvest

- Adjust the harvesting period of winter wheat and field peas to the same time frame and set harvester grain sieves to the pea size.

Sorting

- Use proper separation methods afterwards in order to leave as little pea seeds as possible (<5%).



Fig 1: Sowing intercrop winter wheat and field pea. Photo: Rada Šućur.



Fig 2: Intercrops of winter wheat and field peas. Picture taken during the stem extension phase of winter wheat. Photo: Srdjan Šeremešić.



Fig 3: Variety of on-farm produced pasta. Photo: Srdjan Šeremešić.

Further information

Video

- <https://intercropvalues.eu/news/short-video-release-sowing-winter-wheat-and-field-pea/> (English)

Further readings

- Timaeus, J., Weedon, O. D., & Finckh, M. R. (2022). Harnessing the potential of wheat-pea species mixtures: evaluation of multifunctional performance and wheat diversity. *Frontiers in Plant Science*, 13, 846237.
- [From theory to practice of species mixtures](#), 2022, EU-funded ReMix project
- [Mischkulturen, bioaktuell.ch](https://mischkulturen.bioaktuell.ch)

Weblinks

- [Intercropping of grain pea with cereals - legumehub.eu](https://legumehub.eu), 2021



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About this practice abstract

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Publisher: IFOAM Organics Europe, Rue Marie Thérèse 11, 1000 Brussels -BE, organicseurope.bio

Date : 29/04/2024

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Review: Claire Morelle, IFOAM Organics Europe

IntercropVALUES aims to exploit the benefits of intercropping to design and manage productive, diversified, resilient, profitable, environmentally friendly cropping systems acceptable to farmers and actors in the agri-food chain. As a multi-disciplinary and multi-actor project, it brings together scientists and local actors representing the food value chain. It includes 27 participants from 15 countries (3 continents) from a wide diversity of organizations and stakeholders. The project will run for four years and started in November 2022.

Project website: <https://intercropvalues.eu/>





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Združena setva pšenice i graška za proizvodnju testenina

Problem

Testenine od pšenice se tradicionalno proizvode širom sveta. Međutim, savremene strategije javnog zdravlja ukazuju da se nutritivni kvalitet proizvoda od pšenice može poboljšati. Jedan od pravaca popravke kvaliteta testenina može biti sistem združivanja žita sa leguminozama, što nije dovoljno proučeno u semiaridnoj klimi i organskoj proizvodnji.

Rešenje

Združena setva ozime pšenice i graška u organskom sistemu proizvodnje omogućava povećanje sadržaja proteina kod žitarica, što kasnije dovodi do popravke kvaliteta testenina i nutritivnih svojstava proizvoda.

Koristi

Združena setva žitarica sa leguminozama u sistemu organske poljoprivrede omogućava bolje korišćenje raspoloživih resursa, povećava biodiverzitet poljoprivrednog pejzaža, obezbeđuje ekosistemske usluge povezane se plodnošću i zdravljem zemljišta, vezivanje ugljenika i regulaciju vode. Mnogobrojne koristi koje se javljaju kao posledica združene setve daju dodatnu vrednost testeninama kao krajnjem proizvodu.

Praktične preporuke

Odabir sorte

- Neophodno je izabrati sorte pšenice ranijih grupa zrenja kako bi se uklopile sa vegetacijom ozimog graška. Odabrati sorte graška (npr. sorta Mraz u Srbiji) čija se tehnološka zrelost poklapa sa vremenom žetve pšenice.

Gustina setve

- Preporučeno je da se pšenica seje na 70%, a leguminoze na 30% od njihovih preporučenih normi setve za čiste useve.

Primena tehnologije

Tema

Biljna proizvodnja, Upravljanje lancem ishrane

Ključne reči

Združena setva, Agrotehničke mere, Posležetvena tehnologija, Prerada žitarica i kvalitet hrane

Kontekst

Jugoistočna Evropa, umerena klimatska zona, u suvom ratarenju

Vreme primene

Jesen (oktobar) do leto (jun)

Potrebno vreme, ako je relevantno

Nije potrebno dodatno vreme za proizvodnju useva u združenoj setvi u pređenju sa čistim usevom. Nakon žetve neophodna kontrola, razdvajanje i čišćenje semena pre mlevenja i dalje prerade.

Period realizacije

Najviše godinu dana od zasnivanja

Oprema

Standardna oprema i priključne mašine za proizvodnju pšenice

Najbolja primena

Poljoprivreda sa niskim ulaganjima/Organska poljoprivreda



Vreme setve

- 2-3 nedelje izvan optimalnog roka kako bi se izbegao napad bolesti i štetočina (naročito u organskoj proizvodnji).

Kontrola korova

- obično nije neophodna, međutim po potrebi se koriste češljaste drljače u proleće.

Žetva

- Prilagođavanje perioda žetve kada i pešenica i grašak dostignu tehnološku zrelost, a tokom žetve podesiti sita na kombajnu u zavisnosti od krupnoće semena graška.

Sortiranje

- Korišćenje adakvantnih separatora i metoda za izdvajanje graška u cilju boljeg čišćenja semena i dobijanja što manjeg procenta graška u žetvenoj masi (<5%).



Sl. 1: Združena setva pšenice i graška.
Foto: Rada Šučur.



Sl. 2: Združeni usev pšenice i graška. Faza vlatanja pšenice. Foto: Srdjan Šeremešić.



Sl. 3: Različite vrste testenina koje mogu nastati iz združene setve. Foto: Srdjan Šeremešić.

Dodatne informacije

Video

- Pogledajte sledeći video <https://intercropvalues.eu/news/short-video-release-sowing-winter-wheat-and-field-pea/> (English)

Dodatna literatura

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Više informacija o ovom praktičnom abstraktu (projekat i ime organizacije)

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Internet stranica projekta: <https://intercropvalues.eu/>

