Greenresilient Factsheet





Taste of Winter

Growing fresh winter vegetables in Central and Northern European Greenhouses without heating is a good example of low-input food production, with a small environmental footprint. It utilises the frost resistance leafy crops instead of wasting energy and resources through intensive greenhouse production with heating and artificial lighting or long transportation distances of imported greens. Winter crops can be grown either in open field or in protected areas such as unheated greenhouses or polytunnels.

Nutrition

Winter fresh vegetables were analysed for vitamin C content, antioxidants, phenolic compounds, carotenoids, soluble sugars, chlorophylls and dry matter. The results show that cultivars of endive, carrots and parsley harvested in December yield adequate nutritional quality, similar to those from earlier cropping seasons. Parsley and head lettuce (*Lactuca sativa* var. *crispa*) showed

significantly higher concentrations of vitamin C, antioxidants, phenolic compounds, carotenoids, soluble sugars and chlorophylls than those from earlier cropping seasons.

Taste

Extensive tastings tried to find out the specific taste of fresh vegetables during winter time. The tasters found them to be milder in taste and texture, for example endives were perceived to taste less bitter and radishes less spicy. Many fresh crops have a sweeter taste than in other seasons, in fact even radish can taste sweet during winter!

Use tips and recipes

Many different colors, shapes and aromas of winter leafy crops are featured. Here we provide some tips for using these not-so well-known greens, as well as recipes.



Asian greens include different varieties of mustard greens, mizunas as well as mibuna and tatsoi. They cover a range of flavours, and make great additions to salads. For all those who don't like it that spicy, it is recommended to prepare the salad with more oil as it binds with the glucosinolates present in these Asian greens. While Asian greens are delicious additions to salads, they can also be used as an alternative to spinach and chard.



Wintercress is a wild plant and has been a long-valued folk medicine. Its flavor is pungent and zesty with notes of horseradish; that's why it is great to use as a seasoning herb in salads, as an addition to sandwiches or to make pesto, like the featured **recipe 1**.



Minutina is mild in flavor with nutty, earthy, slightly sour and bitter notes. The young leaves make great additions to a salad or smoothie and older leaves can be blanched and used like spinach or used in pasta dishes, like the featured **recipe 2**.



Arugula, also known as rocket, is somewhat sour and bitter, making it a great addition to salads, pasta or risotto, like the featured **recipe 3**.



Winter cress pesto

Ideal for the wintery-spicy pasta dish

Ingredients

1116100	
80 g	Wintercress
30 g	parsley
1-2	garlic bulbs
	olive oil
60 g	roasted sunflower seeds
00 8	Lemon juice & peel, salt

How it's done

Mix all ingredients and puree. Add olive oil until you gain the consistency you desire.

Source: HBLFA and Bio Austria



Minutina gnocchi

A tasty, vegetarian 'wild' dish (4 servings)

Ingredients

B. calel	11.5
300 g	potatoes
200 g	flour
250 g	quark or cottage cheese
20 g	butter
1	egg
1	onion
600 g	minutina greens
	Salt, pepper, nutmeg
For serving	
100 g	butter

roi serv	ing	
100 g	butter	
150 g	parmesan cheese	

How it's done

Boil potatoes, peel and press through sieve/ ricer. Slice onion and sauté for 2 minutes, then add the minutina greens and cook until all liquid has evaporated. Remove and press in a sieve to remove remaining liquid. Add salt, pepper and nutmeg to vegetables and puree. Mix in riced potatoes, egg, cheese, and flour. Bring salted water to a boil. Form small gnocchi balls with teaspoons. Cook for 5 minutes – no longer, or they will fall apart. Brown the butter in a separate pan. Serve warm gnocchi with butter and fresh grated parmesan cheese.

Source: HBLFA and Bio Austria



Arugula risotto

For an aromatic, Italian winter meal (4 servings)

Ingredients

III B. Caller	
250 g	Risotto rice
2	lemons
100 ml	white wine
700 ml	chicken broth
2	onions
150 g	arugula
30 g	butter
300 g	oliv oil
8 tablesp.	parmesan cheese
2 pinches	salt and pepper

How it's done

Peel and finely chop onions. Heat olive oil in a pan and sauté onions. Then add the rice and cook for about 1 minute. Add the chicken broth and white wine and let simmer for about 18 minutes, stirring occasionally. In the meantime, wash, dry and chop the arugula and finely grate the parmesan. Once the rice is ready mix in the butter and a shot of olive oil, then the cheese and arugula. Serve with a bit of lemon juice and some salt and pepper according to taste.

Source: HBLFA and Bio Austria

References

Theurl M.C., Hörtenhuber St., Lindenthal T., Palme W. (2017). Unheated soil-grown winter vegetables in Austria: Greenhouse gas emissions and socio-economic factors of diffusion potential. Journal of Cleaner Production, Vol. 151, 134-144

Depisch A. et al. (2019). Weiterentwicklung Bio-Wintergemüse. Final Report EIP-AGRI

Hampl, S. (2016): Möglichkeiten der Ertrags- und Qualitätssicherung bei alternativem Wintergemüse. Master Thesis, Univ. of Natural Resources and Life Sciences Vienna.

Palme W. (2016). Frisches Gemüse im Winter ernten: die besten Sorten und einfachsten Methoden für Garten und Balkon. ISBN 978-3-7066-2592-0 Publisher: Löwenzahn, Innsbruck

Palme W. (2019). Ernte mich im Winter: einfach immer frisches Gemüse. ISBN 978-3-7066-2661-3 Publisher: Löwenzahn, Innsbruck

Impressum

Publisher: Horticultural College and Research Institute (HBLFA Schönbrunn), Grünbergstr. 24, A-1130 Vienna,

office@gartenbau.at; www.gartenbau.at

Editing/Layout: Research Institute of Organic Agriculture FiBL

Lauren Dietemann, Laura Kemper, Sandra Walti

Tel. +41 (0)62 8657-272, info.suisse@fibl.org, www.fibl.org

Authors: Wolfgang Palme, HBLFA Schönbrunn

Contact: Wolfgang Palme, wolfgang.palme@gartenbau.at

Permalink: https://orgprints.org/39442

Photos: Wolfgang Palme **Cover picture:** Frozen Salads

About Greenresilient: This factsheet was elaborated in the project Greenresilient – Organic and bio-dynamic vegetable production in low-energy GREENhouses – sustainable, RESILIENT and innovative food production systems, running 2018 to 2021. The main objective of Greenresilient is to demonstrate that an agroecological approach to greenhouse production is feasible and allows the establishment of robust agroecosystems in different European areas.

Project partners: Agroscope, Switzerland; AU-FOOD – Aarhus University, Department of Food Science, Denmark; CREA – Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Italy; FiBL – Research Institute of Organic Agriculture, Switzerland; GRAB – Groupe de Recherche en Agriculture Biologique, France; HBLFA – Horticultural College and Research Institute, Austria; ILVO – Institute for Agricultural and Fisheries Research, Belgium; La Colombaia – Società Agricola Semplice LA COLOMBAIA, Italy; PCG – Vegetable Research Centre Kruishoutem, Belgium; SLU – Swedish University of Agricultural Sciences, Sweden; UvA – Institute for Biodiversity and Ecosystem Dynamics, Netherlands; WUR – Stichting Wageningen Research, research institute Wageningen Plant Research, Netherlands

The project 'Greenresilient – Organic and bio-dynamic vegetable production in low-energy GREENhouses – sustainable, RESILIENT and innovative food production systems' is one of the projects initiated in the framework of Horizon 2020 project CORE Organic Co-fund (https://projects.au.dk/coreorganiccofund/) and it is funded by the Funding Bodies being partners of this project (Grant Agreement no. 727495). The opinions expressed and arguments employed in this factsheet do not necessarily reflect the official views of the CORE Organic Cofund Funding Bodies or the European Commission. They are not responsible for the use which might be made of the information provided in this factsheet.

www.greenresilient.net © 2021



