



Christian Grassl - Winery Operator (Austria)

- ▶ Has used Penergetic k and p since 2005.
- ▶ Initially able to reduce pesticide use by 65%.
- ▶ As a result of using penergetic k and p, each year has been able to use less mineral fertilizer. e.g. In 2005 used mineral fertilizer, but by 2011 was just using N, no P or K.
- ▶ By 2012 reduced pesticides 95% and fungicide use by 75%.
- ▶ Note: Uses herbicides, as not an organic farmer.



Breaking New Ground in Vineyard Management

- improves nutrient availability
- promotes mycorrhiza
- increases resistance to stress
- optimizes vine & leaf growth
- reduces need for chemicals
- enhances quality
- income security & profitability

Diocese Klosterneuburg Winery (Austria)

- ▶ At 108 ha in size, this is among the largest and most renowned wineries in Austria.
- ▶ In 2004 in order to improve the soil structure and fertility of their vineyard and increase the vitality of their grape plants, well documented trials with Penergetic products were initiated.
- ▶ Trail Results: Compared to the conventionally-grown grape plants, the Penergetic-treated grape plants showed evidence of: quicker early growth; healthier and greener leaves; no signs of sunburn or drought (that affected conventionally treated plants); higher photosynthesis rates (based on testing); and were harvest-ready 2 weeks earlier (based on testing for BRIX and "yeast-available nitrogen").
- ▶ Penergetic treatment also offered a significant cost advantage over conventional treatments. [Note: even at a 30% reduction in conventional treatment, Penergetic treatment (recommended during the 1st year) results in a breakeven on cost.]



▶ Conclusions Reached:

"The Penergetic System showed outstanding ecological and economic results. Healthy soil => strong and healthy plants => high-quality harvest at pre-calculated/predicted cost structure."

"The high levels of yeast-available nitrogen confirms for winegrowers this is the right way to go."

"The phased Implementation of the Penergetic System in viticulture allows for the gradual reduction of chemical inputs for fertilization and parasitic control leading to a sustainable approaches to production and a reduction in costs."

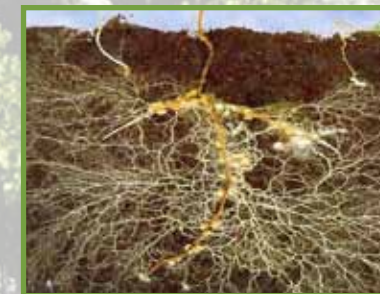
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Grape Production via the Penergetic Method

Two types of products used:

1. Penergetic k - applied on the soil at beginning and end of vegetative stage
- used to increase soil fertility
2. Penergetic p - applied as a foliar application during the vegetative cycle
- enables vines to better access nutrients

Two forms of penergetic p are used in grape production: penergetic p vine and penergetic p vine F.

[Note: "k" in penergetic k stands for "kompost" the German spelling of compost and "p" in penergetic p is "pflanzen" — German for plants.]

Penergetic products originate from Switzerland, have been in use for over twenty years and are used in over 35 countries around the world.

The most extensive research on the use of Penergetic with grape culture has taken place in Europe (especially Austria) — under the direction of Christof Weber (agronomist and grape specialist with 18 years experience with the application of Penergetic products in viticulture).

Research trials and vineyard results have shown that the Penergetic Method can improve soil health, lead to stronger, more vibrant, less stressed vines and permit an increase in grape quality and quantity. Penergetic-treated vines/grapes also need lower rates of chemical inputs (fertilizer, pesticides and fungicides) and exhibit increased resistance to drought and sunburn/heat stress.

Finally, the Penergetic Method offers an affordable, sustainable approach to grape production suitable for both conventional and organic farming.



Penergetic Application Schedule - Summary (Product Used per acre per Year)

Penergetic k	28 - 56 ounces
Penergetic p vine	12.25 - 18.5 ounces
Penergetic p vine F	12.25 - 18.5 ounces



Penergetic Application Rate - Spray Schedule for Grapes

Identification	Stage BBCH / Lorenz	Product	Application Rate (per acre)
	00 / 01	Penergetic k	14 - 28 oz.
Vegetative Rest			
	13 / 09	Penergetic p vine	3.5 - 5.25 oz.
3 Leaf Unfolds			
 	65 / 23 67 - 68 / 25	Penergetic p vine	3.5 - 5.25 oz.
Full Blossom / Losing Flower			
	72 / 29	Penergetic p vine Penergetic p vine F	1.75 - 2.65 oz. 1.75 - 2.65 oz.
Grain-sized Grapes			
	75 / 31	Penergetic p vine Penergetic p vine F	1.75 - 2.65 oz. 1.75 - 2.65 oz.
Pea-sized Grapes			
	79 / 33	Penergetic p vine F	3.5 - 5.25 oz.
Developing of Grapes			
	81 / 35	Penergetic p vine F	3.5 - 5.25 oz.
Ripening of Grapes			
	83 - 85 / 38	Optional (@ 3 wks) Penergetic p vine Penergetic p vine F	1.75 - 2.65 oz. 1.75 - 2.65 oz.
Mellowing of Grapes			
After Harvest 'til end of leaf fall			
	/ 41 - 47	Penergetic k	14 - 28 oz.