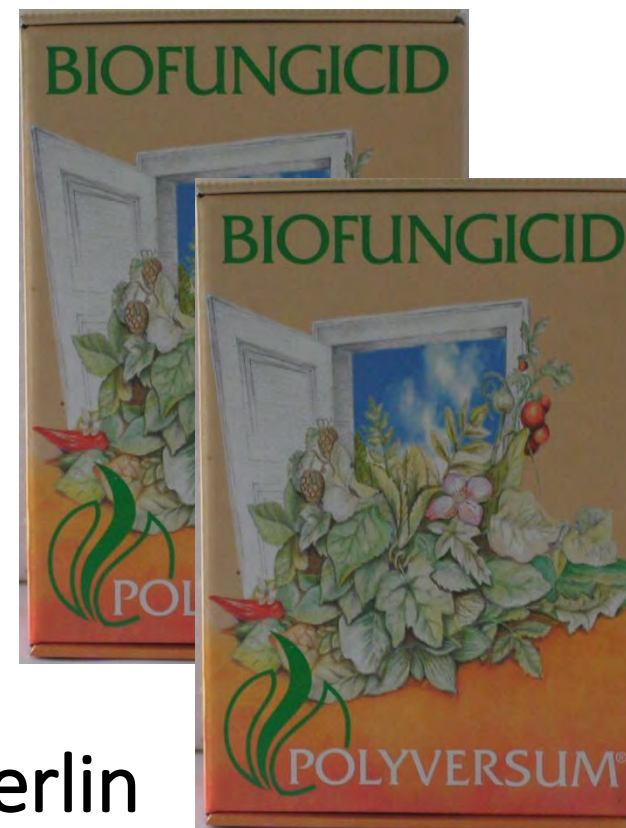




# Polyversum® Biofungicide for integrated pest management



European Conference on Copper in  
Plant Protection – 16. – 17. 11. 2017, Berlin



# Biopreparáty, spol. s r.o.

## Opening Door for Sustainable Agriculture



Biopreparáty, spol. s r.o.

### Martin Suchánek

**Company founded in 1997** producing **biological plant protection products for conventional, integrated and organic farming.**

Company has **a long tradition** in the market for plant protection products.  
We want to offer to the final users - farmers - **plant protection products on a natural base, which are as effective as synthetic plant protection products.**

Company has currently 47 employees.

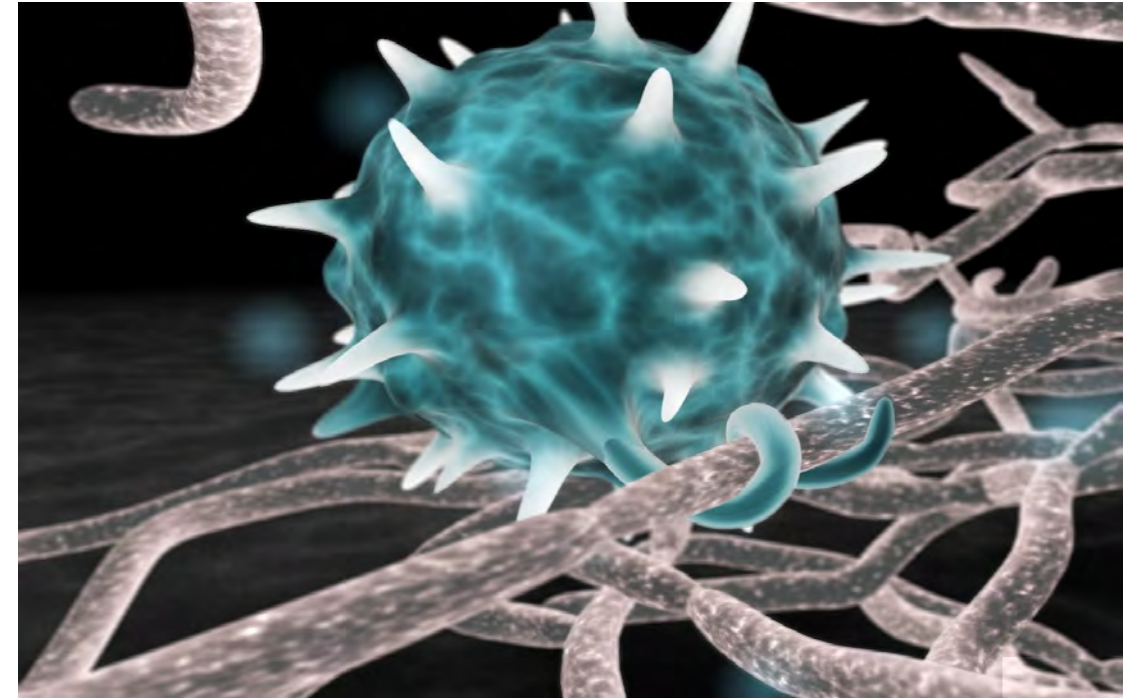
3 production units.

Production capacity 2017 is **80 tons.** = 800.000ha

Projected capacity in 2018: **200 tons.** = 2mil ha

## *Pythium oligandrum* - major mechanisms of action

- Mycoparasitism
- Induction of resistance
- Growth stimulation



## Typical target microorganisms (mycoparasitism)

- ***Alternaria* spp.**
- ***Botrytis cinerea***
- ***Fusarium* spp.**
- ***Gaeumannomyces graminis***
- ***Phytophthora cactorum***
- ***Sclerotinia sclerotiorum***
- ***Verticilium dahliae***



## Polyversum registred in the EU and worldwide

- Czech Republic 1107/2009
- Poland 91/414 and 1107/2009
- Slovakia 1107/2009
- Hungary 91/414
- France 1107/2009
- United Kingdom 1107/2009
- Romania 1107/2009
- Italy 1107/2009
- Austria 1107/2009
- USA
- People's Republic of China
- Morocco
- Serbia
- Macedonia
- Montenegro

## HOP

Target diseases:

- Downy mildew (*Pseudoperonospora humuli*)
- Fungal diseases of hop seedlings (*Fusarium* spp., *Verticillium albo-atrum*)

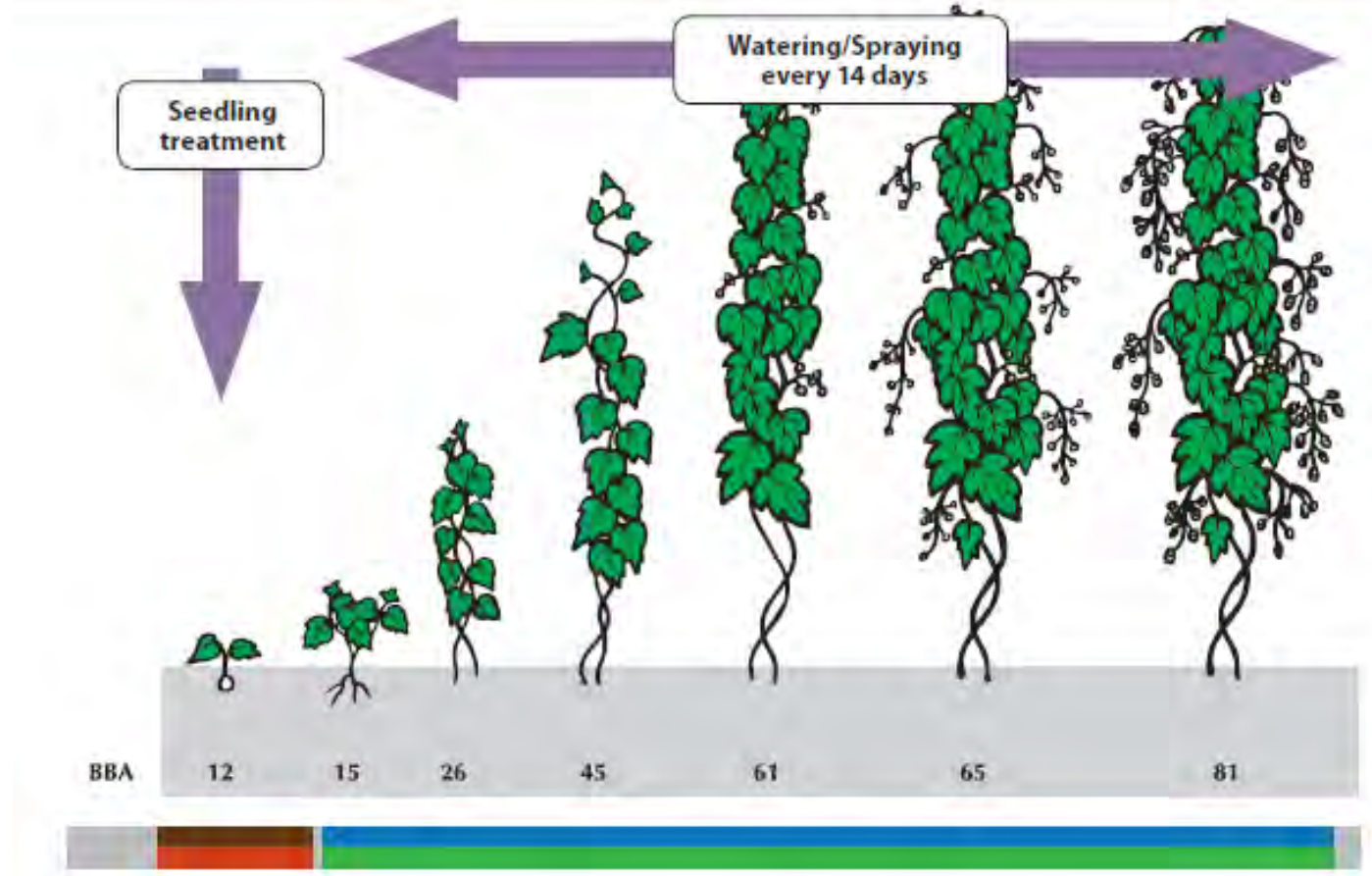


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### Hop – treatment by Polyversum





## **HOP**

**Efficacy trials against downy mildew (peronospora)  
Hop Institute, Žatec, 2016 - 2017**







## Efficacy trials against downy mildew 2016

<b>Variant</b>	<b>Efficacy</b>
<b>Untreated variant</b>	<b>0,00</b>
<b>Polyversum</b>	<b>81,55 %</b>
<b>Aliette 80 WG</b>	<b>90,06 %</b>



## Efficacy trials against downy mildew 2017

Variant	Efficacy %		
	7 days after application	14 days after application	21 days after application
Untreated variant			
<b>Aliette</b>	73,3	91,67	94,48
<b>Polyversum</b>	60,4	77,50	84,14

## Grape wine

Target diseases:

- Fungal diseases of seedlings e. g.: (*Pythium* spp., *Fusarium* spp., *Verticillium* spp.)
- Grey Mould (*Botrytis cinerea*)

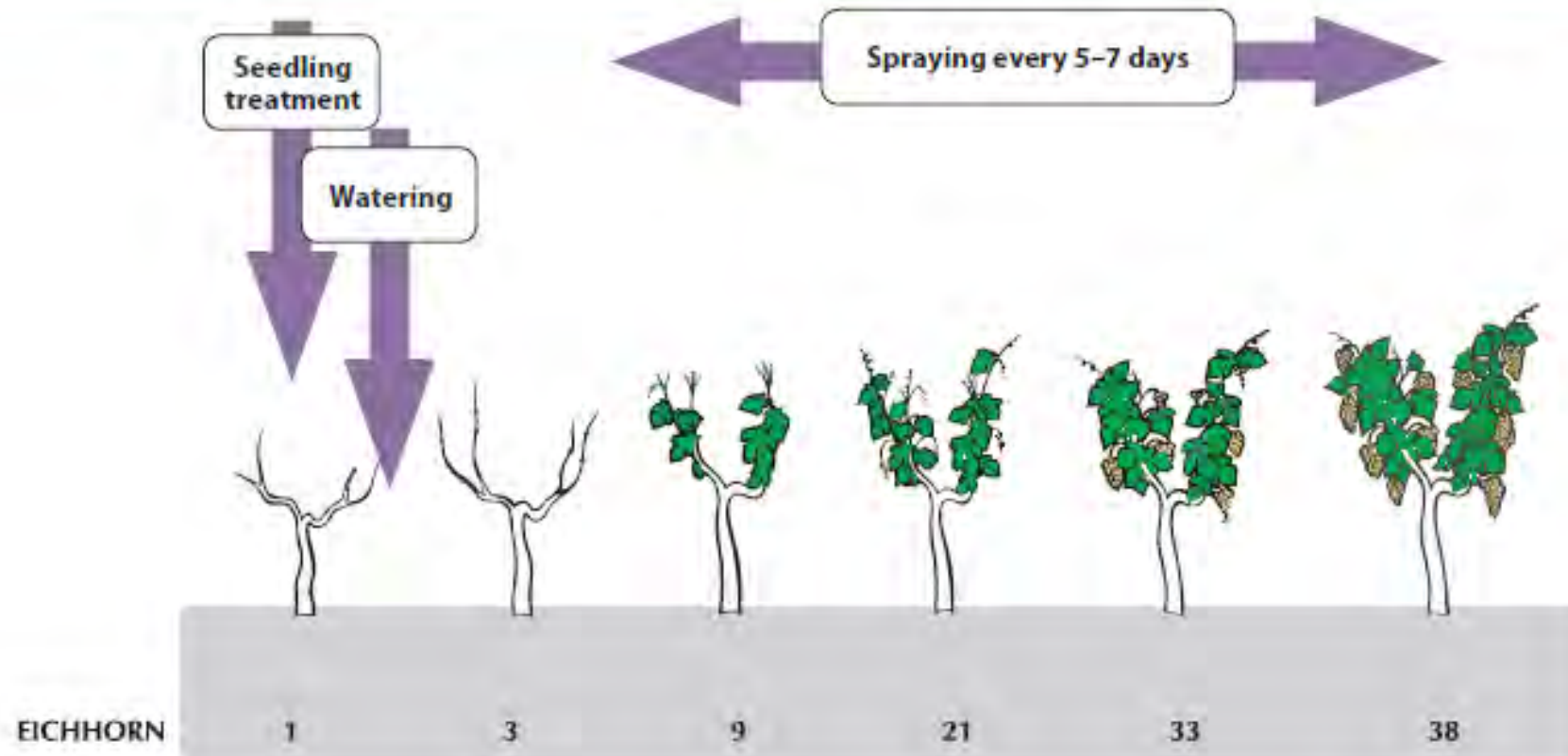


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### Grape wine – treatment by Polyversum



## Grape wine



Untreated grape wine



Grape wine  
treated by  
Polyversum

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### CdS Sagea

Anno 2014 - Cormons (GO)

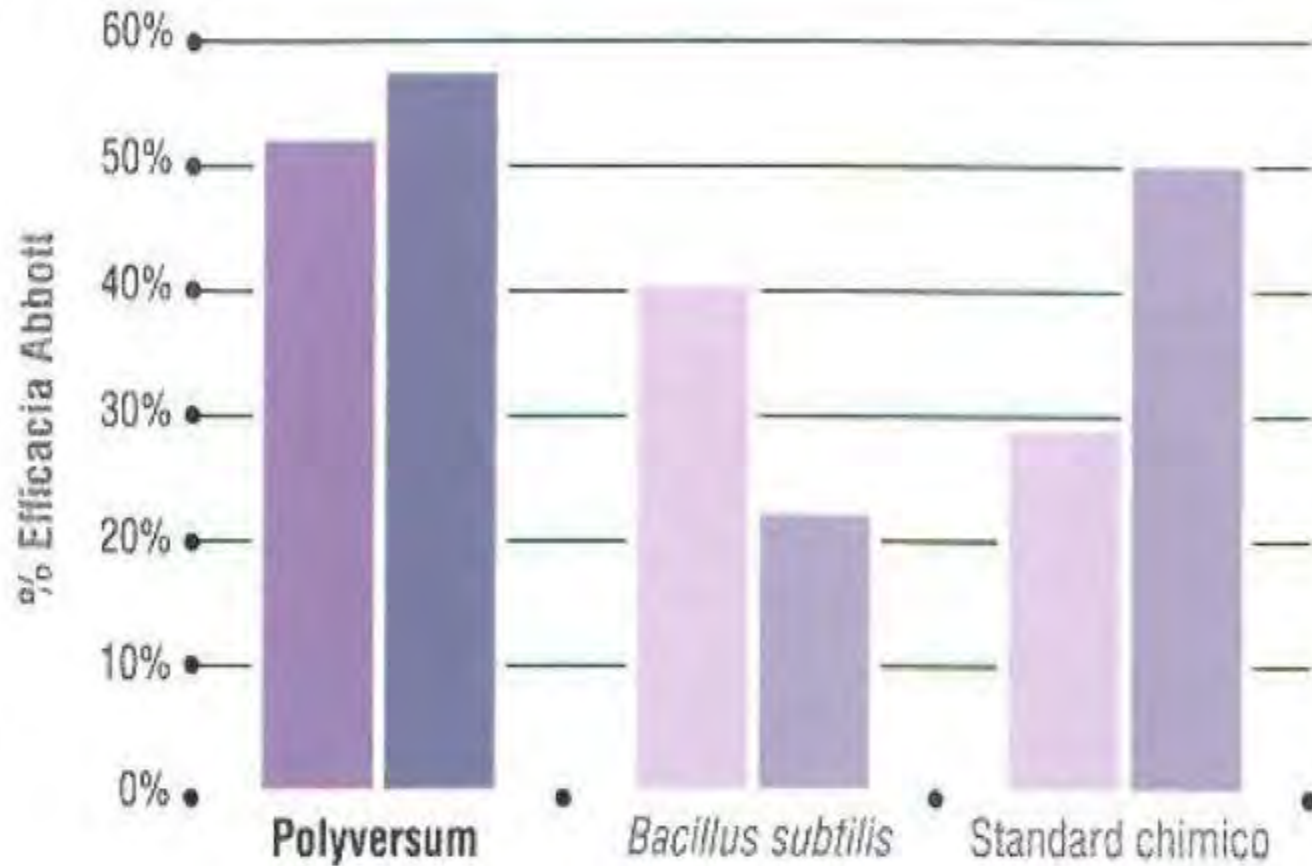
Varietà: Merlot.

Biofungicidi a confronto:  
4 trattamenti ripetuti  
da fine fioritura (20/06)  
a pre-raccolta (26/08).

Standard antibiotritico chimico  
(cyprodinil+fludioxonil):  
2 trattamenti al 20 giugno e 12 agosto.

Rilievi: 17 settembre.

- diffusione  
(testimone = 35% grappoli colpiti)
- intensità  
(testimone = 2% acini attaccati)



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### CdS CRPV-Astra Innovazione Anno 2016 - Faenza (RA)

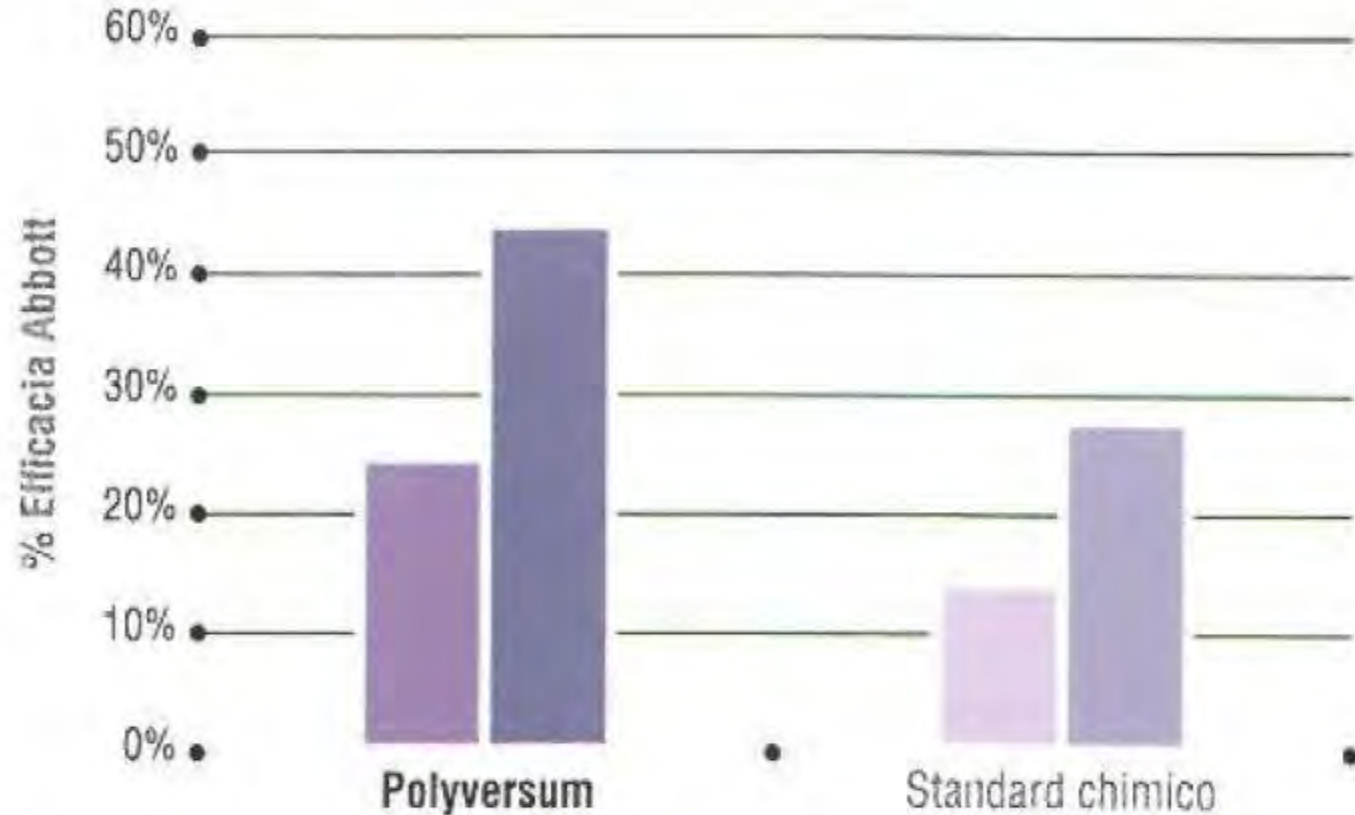
Varietà: *Trebbiano*.

2 trattamenti: 9 e 19 settembre.

Rilievi: 28 settembre.

Standard antibiotritico chimico:  
*cyprodinil+fludioxonil*

- diffusione  
(testimone = 69% grappoli colpiti)
- intensità  
(testimone = 11% acini attaccati)

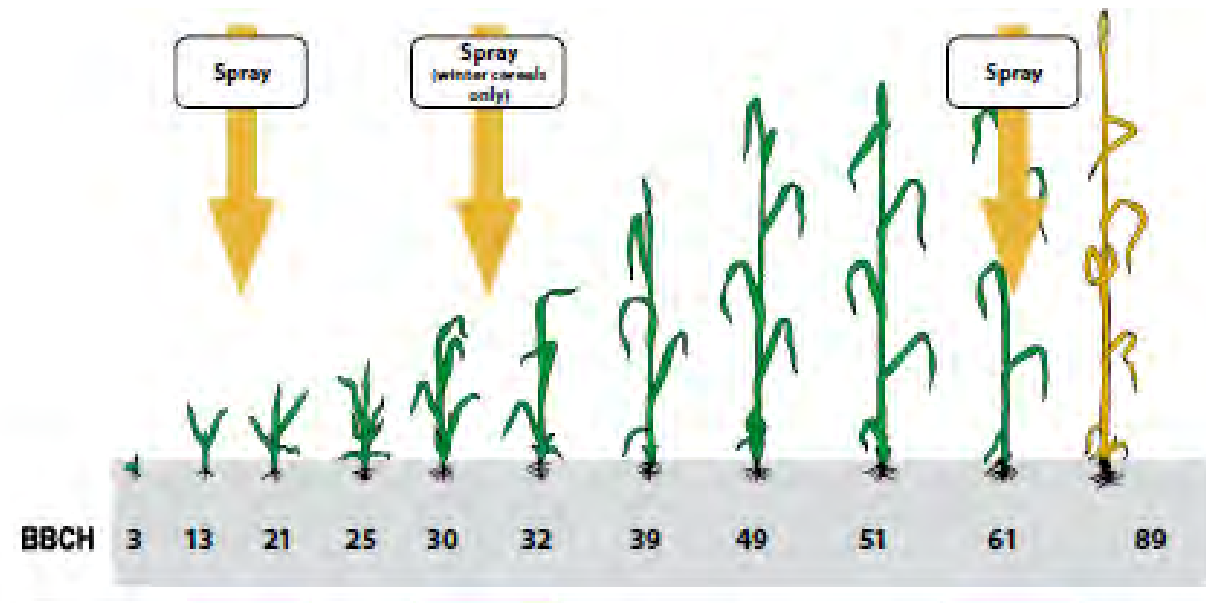


## Winter wheat

- Against Fusarium head blight
- Confirmed efficacy against rusts, take all, snow mold and septorioses)

- **APPLICATION:**

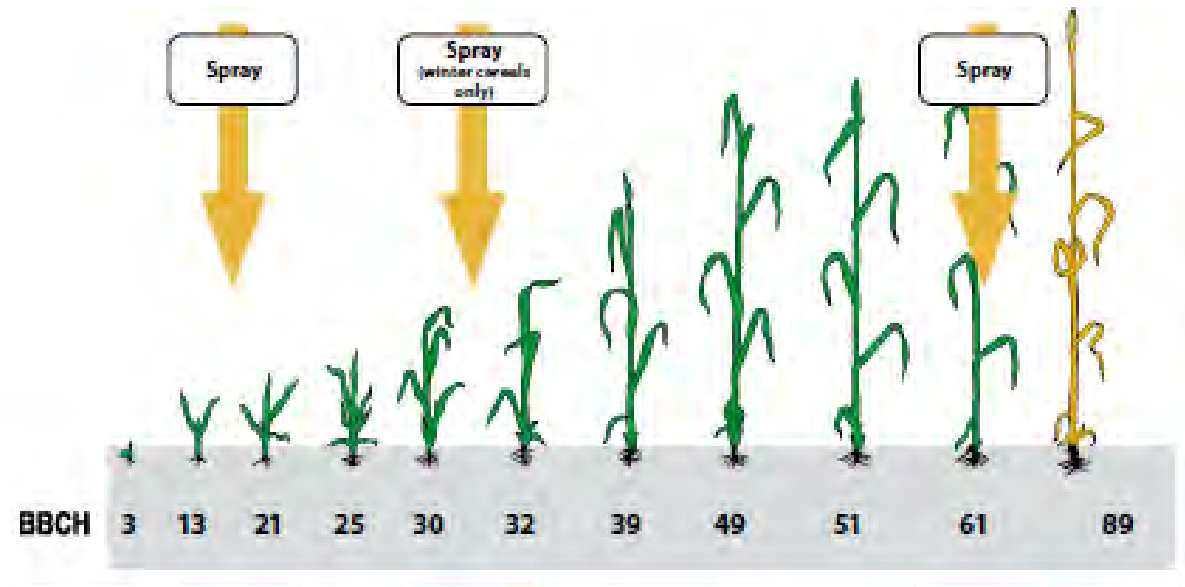
- 100 g/ha in the stages:





## Spring barley

- Against Fusarium head blight
- **APPLICATION:**
- 100 g/ha in stages:

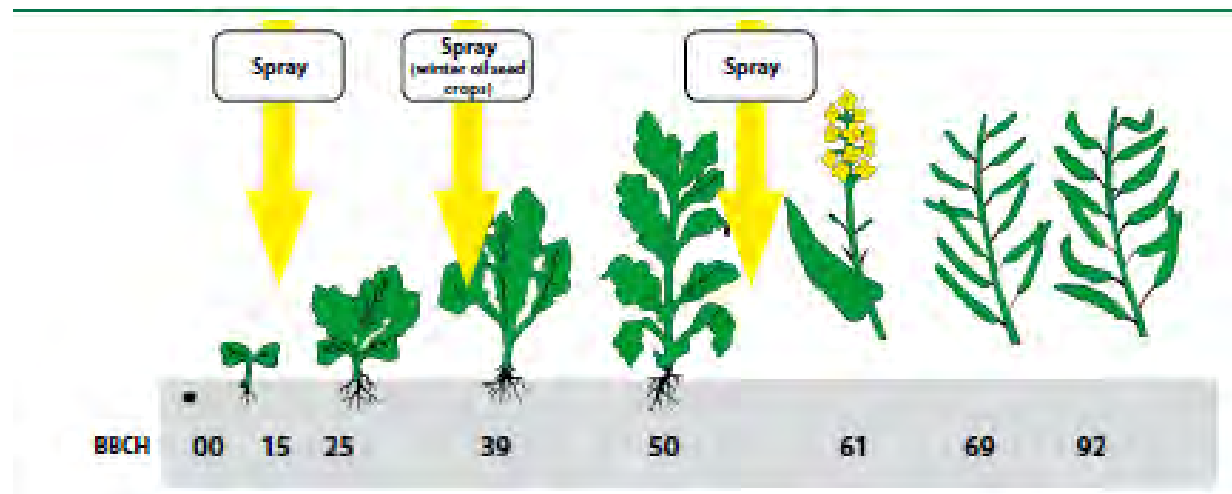


## Oilseed rape

- Against sclerotinia and phoma
- Confirmed efficacy against alternaria leaf spot, gray mold, verticillium wilt, clubroot)

- **APPLICATION:**

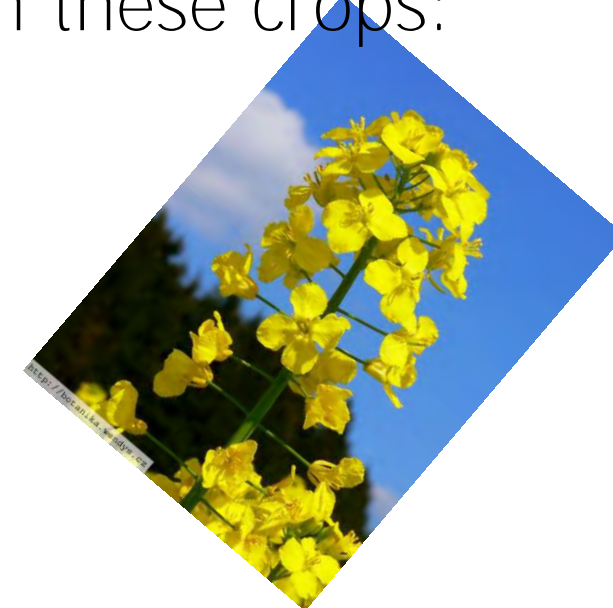
- 100 g/ha in stages:





## Customers in Czech Republic

- We have more than 400 customers managing over 40.000 hectares of arable land in the Czech Republic.
- Polyversum is selling mostly for foliar application in these crops:
  - Cereals
  - Oil seed rape
  - Sunflower



## Co-operative farm Žichlínek

- Total acreage is 7.000 hectares agricultural land
- Altitude: 348 meters above sea level
- Crop composition : winter wheat 4.500 ha, spring and winter barley 870 ha, oilseed rape 1.000 ha, peas 100 ha, poppy 50 ha
- Polyversum – 5 years on poppy, barley and oilseed rape
- Yields 2015: wheat 8 t/ha, barley 8 t/ha, oilseed rape 4.7 t/ha, peas 3 t/ha, poppy 0.6 – 0.8 t/ha
- **Consumption of Polyversum kg/year - 520 kilograms = 5.200 hectares (saving around 5.200 liters of chemical fungicides)**

## Václav Novák - Kobylníky

- Total acreage is 3.500 hectares agricultural land
- Altitude: 262 meters above sea level
- Crop composition : winter wheat 1.400 ha, spring barley 400 ha, corn 600 ha, oilseed rape 530 ha, sugar beet 180 ha, alfalfa 300 ha
- Polyversum – 4 years on wheat and barley
- Yields 2015: wheat 9.3 t/ha, barley 7.3 t/ha, corn 6 t/ha, oilseed rape,4 t/ha, sugar beet 95 t/ha, alfaalfa 6.8 t/ha
- Tank mix: herbicide
- **Consumption of Polyversum kg / year - 120 kg = 1.200 hectares (saving around 1.200 liters of chemical fungicides)**



## Zeva Bečov – Aleš Charvát

- The total area is 700 hectares of farmland
- Crops: 82 ha rapeseed, 400 ha winter wheat, sunflowers 73 ha, 90 ha of spring barley
- Polyversum used from 2011 on all crops for rapeseed and sunflower state subsidies
- Revenue: oildseed rape - 4.1 t / ha, winter wheat - 7.5 t / ha, spring barley - 5.1 t / ha, sunflower - 2.5 t / ha
- **Consumption of Polyversum kg / year - 130 kg = 1.300 hectares (saving around 1.300 liters of chemical fungicides)**
- **5 YEARS NOT chemical fungicide !!!**





**NEW REGISTRATION 2017**  
**POLYGANDRON WP**

**Active substance:** *Pythium oligandrum*

M1, content of oospores  $5 \times 10^5$  /g of product

**Formulation:** WP (wettable powder)





**Target pest:** *Phytophthora infestans* (potato late blight)

**Dosage:** 200 g/ha

The product use is intended for postponing the potato late blight infection and for protection against this disease at its early stages. If the disease develops, treatment by authorised curative products is necessary.



## **POLYGANDRON WP AGAINST PHYTOPHTHORA INFESTANS 2012**

Krásné Údolí, 12bio-kud-polygandron-br-pb1

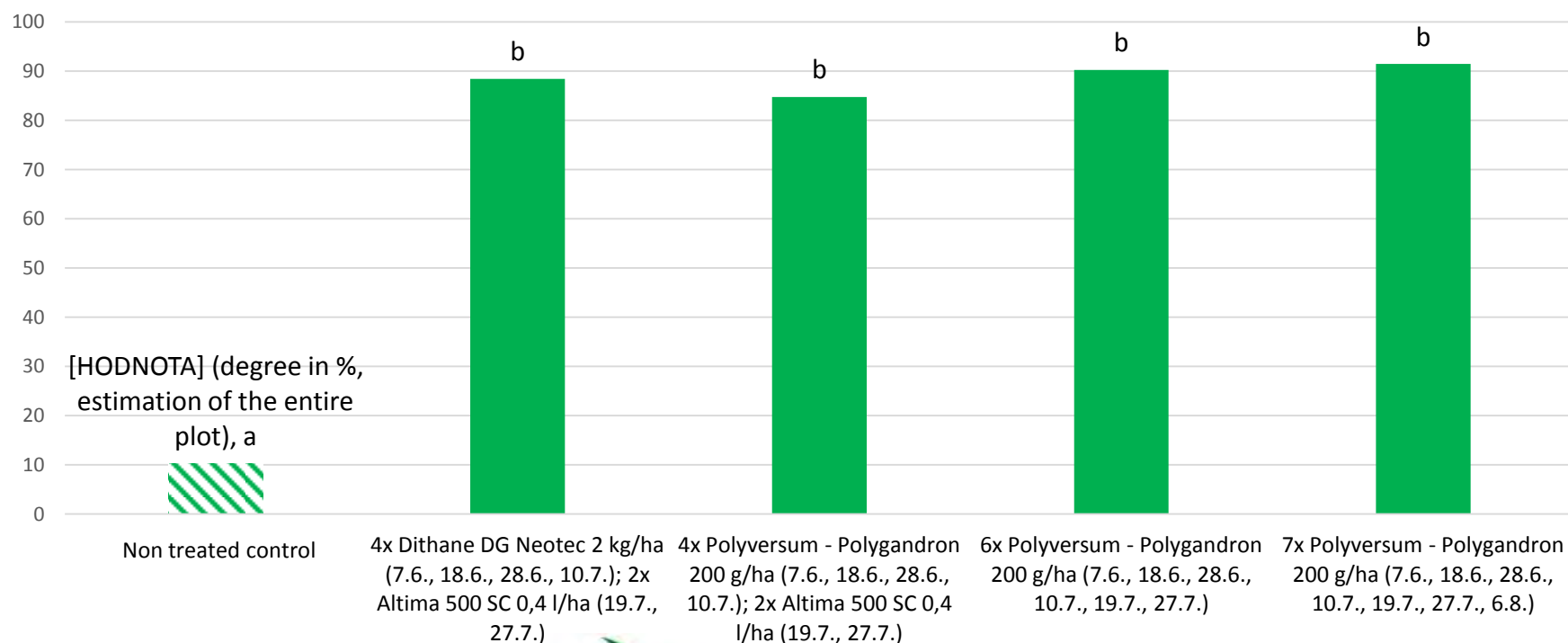
- 1) Non-treated control
- 2) 4x Dithane Neotec 75 WG 2 kg/ha; 2x Altima 500 SC 0,4 l/ha
- 3) 4x Polygandron WP 200 g/ha; 2x Altima 500 SC 0,4 l/ha
- 4) 6x Polygandron WP 200 g/ha
- 5) 7x Polygandron WP 200 g/ha

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Potato - *Phytophthora infestans* - Efficacy (%), Evaluated 18.7.2012, incidence, Variety Belana, Krásné Údolí, 12bio-kud-polygandron-br-pb1



**Biopreparáty, spol. s r.o.**

**We open the door to sustainable crop protection**

**DON'T WORRY, BAN COPPER, AZOLS  
AND OTHER DANGEROUS  
SYNTHETIC FUNGICIDES**

**ADEQUATE SUBSTITUTES EXIST**

Thank you for your attention  
Martin Suchánek CEO

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