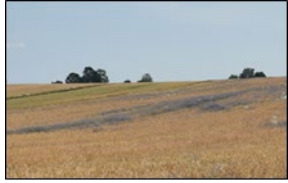
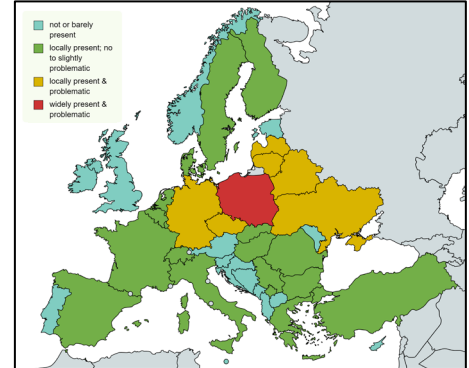


# Weed Fact Sheet

## *Centaurea cyanus*



*Centaurea cyanus* is a common broad-leaved weed species in winter cereals in Poland, Czech Republic, Lithuania, Latvia, Ukraine and Belarus, but it is found regularly also in Eastern Germany. It is a weed problem especially in winter annual crop rotations with only a limited number of different Modes of Action and active substances offering a good control level.



### Weed Biology

EPPO-code (latin/common name)	CENCY ( <i>Centaurea cyanus</i> , cornflower)	Pollination	Cross-pollination, strong self-incompatibility
Life cycle	winter annual	Pollen dispersal	By insects
Germination window	Mostly in the autumn, however spring germination is also noted	Seed shattering	Before harvest
Max. generations/year	1	Fecundity (seeds/plant)	Seeds/plant: 700–1,600 Higher seed production from autumn than spring-germinating plants
Occurrence in crop or cultivation system	Mostly associated with winter cereals, including rye, and in recent years, its frequency has increased in winter oilseed rape. On rare occasions, it is also found in spring cereals, root crops and legumes	Seed dispersal	By wind, crop seeds, animals
Yield loss	~4-36% winter wheat yield loss	Distance of seed dispersal	Several meters from the parent plant
Preferred environmental conditions	Mostly on light acidic soils	Dormancy	Periodic dormancy cycling: dormant seeds max in spring and min in autumn; 20% of non-dormant seeds
Ploidy	Diploid, 2n=24	Seed bank longevity	1–5 years
		Seed decline per year	Viability in soil is very low, with less than 10% after 36 months

### Impact of Agronomic Measures on Occurrence and Spread

#### Soil cultivation

- Shallow tillage increases occurrence and spread
- Mouldboard ploughing decreases but does not eliminate occurrence
- Alternation of ploughing and non-inversion tillage is recommended

#### Crop sowing date & rate

- Consider delaying the sowing date of winter annual crops
- Higher crop seed rate decreases the number of produced seeds and minimises spread and filling of the soil seed bank

#### Crop competitiveness

- Winter wheat competitiveness against *C. cyanus* is significantly dependent on weather and soil conditions
- Fast-growing crop species or varieties with higher biomass production are recommended

#### Crop rotation

- Wheat monocultures or simplified crop rotations based mainly on winter crops favor *C. cyanus* infestation
- Most resistant populations of *C. cyanus* originate from winter wheat, winter triticale and winter oilseed rape
- Crop rotation with alternation of winter and spring crops is recommended

# Weed Fact Sheet

## *Centaurea cyanus*

### Observed Resistance in Europe

- Resistance observed esp. to ALS-inhibitors and to a lower extent to Auxin Mimics in Poland and the problem is increasing.
- In Czech Republic, Germany, Lithuania, Latvia, Ukraine and Belarus *C. cyanus* is locally present and problematic, with occasionally observed cases of resistance..
- Besides ALS-inhibitors and Auxin Mimics there is a limited number of active substances with different Mode of Action (e.g PSII) with which to implement Resistance Management Strategies.

Mode of Action	HRAC	Resistance level
ALS	2 (B)	++
PSII	5 (C2)	n
Auxin Mimics	4 /O)	+

n = no reports

+ = low  
++ = medium  
+++ = high

### Target-site resistance (TSR)

- ALS-inhibitors: mutations known from other weed species not detected yet
- Auxin Mimics: no TSR studied yet

### Non Target-Site Resistance (NTSR)

- Tolerance of Spanish population to tribenuron-methyl due to enhanced metabolic activity of Cyt-P450
- Mechanism of resistance to ALS-inhibitors and Auxin Mimics not known yet

### Best Management Practices



- To prevent and mitigate resistance development, follow the [Guideline to the Management of Herbicide Resistance](#) published by GHRAC.
- Herbicides from different modes of action, mixtures/sequences as well as active ingredients dedicated for various weed developmental stages should be used.
- Reduced herbicide doses should be avoided.
- Crop rotation, especially with spring crops included, is a very effective tool for resistance management of *C. cyanus*. Among spring crops, spring cereals and legumes (for example: alfalfa, red clover, field pea, field bean) are recommended.
- Diversified and alternating soil tillage systems (ploughing and non-ploughing) decrease the infestation of *C. cyanus*.
- Delaying of sowing date should be also considered.
- Due to variation in morphology and biology of *C. cyanus* populations integration of non-chemical control methods is recommended.

# Weed Fact Sheet

## *Centaurea cyanus*



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