Table S1. Agrophysical and agrochemical soil properties

Soil depth, cm	Sand, 0,05-2,0 mm	Silt, 0,002-0,05 мм	Clay, < 0,002 мм	C_{org}, %	pH	Soil density, kg/m³	CEC, meq/100 g	P_2O_5, mg/kg	K_2O, mg/kg
0-25	13	75	12	2,7	6,0	1200	49,0	45,9	324
25-50	11	78	11	1,5	5,5	1400	36,3	14,6	168

Table S2. Main properties and toxicity of herbicides

Pesticide	Property/ Terrestrial ecotoxicology	Value	Interpretation
Haloxyfop-P-methyl	Soil degradation	DT_{50} (typical) = 0,5 days	Non-persistent
	Soil adsorption	-	No data for ester due to rapid hydrolysis
	Mammals	LD_{50}>300 mg kg^{-1}	Moderate
		-	-
	Birds	LD_{50} = 1159 mg kg^{-1}	Moderate
		-	-
	Honeybees	Contact acute LD_{50}>100 μg bee^{-1}	Low
		Oral acute LD_{50} >100 μg bee^{-1}	Low
Imazamox	Soil degradation	DT_{50} (typical) = 200,2 days	Persistent
	Soil adsorption	K_{foc} = 11,6	Very mobile
	Mammals	LD_{50}> 5000 mg kg^{-1}	Low
		NOAEL>1469 mg kg^{-1}	Low
	Birds	LD_{50} > 1846 mg kg^{-1}	Moderate
		NOEL=209,4 mg kg^{-1}	Low
	Honeybees	Contact acute LD_{50}>58 μg bee^{-1}	Moderate
		Oral acute LD_{50} > 40 μg bee^{-1}	Moderate
Imazethapyr	Soil degradation	DT_{50} (typical) = 90 days	Moderately persistent
	Soil adsorption	K_{oc} = 52	Mobile
	Mammals	LD_{50}>5000 mg kg^{-1}	Low
		NOEL=818 mg kg^{-1}	Moderate
	Birds	LD_{50} >2150 mg kg^{-1}	Low
		-	-
	Honeybees	Contact acute LD_{50}>100 μg bee^{-1}	Low
		Oral acute LD_{50} >24,6 μg bee^{-1}	Moderate
Fluazifop-P-butyl	Soil degradation	DT_{50} (typical) = 1 day	Non-persistent
	Soil adsorption	K_{oc} = 3394	Slightly mobile
	Mammals	LD_{50}=2451 mg kg^{-1}	Low
		NOAEL=6,72 mg kg^{-1}	High
	Birds	LD_{50} >3960 mg kg^{-1}	Low
		NOEL=86,8	Moderate
	Honeybees	Contact acute LD_{50}>200 μg bee^{-1}	Low
		Oral acute LD_{50} >200 μg bee^{-1}	Low
Desmedipham	Soil degradation	DT_{50} (typical) = 52 days	Moderately

			persistent
	Soil adsorption	Kf_{oc} = 4124	Non-mobile
	Mammals	LD_{50}>2000 mg kg^{-1}	Low
		NOEL=3 mg kg^{-1}	High
	Birds	LD_{50} >2000 mg kg^{-1}	Low
		NOEL=11 mg kg^{-1}	Moderate
	Honeybees	Contact acute LD_{50}>200 µg bee^{-1}	Low
		Oral acute LD_{50} >100,6 µg bee^{-1}	Low
Phenmedipham	Soil degradation	DT_{50} (typical) = 12 days	Non-persistent
	Soil adsorption	Kf_{oc} = 1775	Slightly mobile
	Mammals	LD_{50}>5000 mg kg^{-1}	Low
		NOAEL=225 mg kg^{-1}	Low
	Birds	LD_{50} >2500 mg kg^{-1}	Low
		NOEL=121 mg kg^{-1}	Moderate
	Honeybees	Contact acute LD_{50}>100 µg bee^{-1}	Low
		Oral acute LD_{50} >104,8 µg bee^{-1}	Low

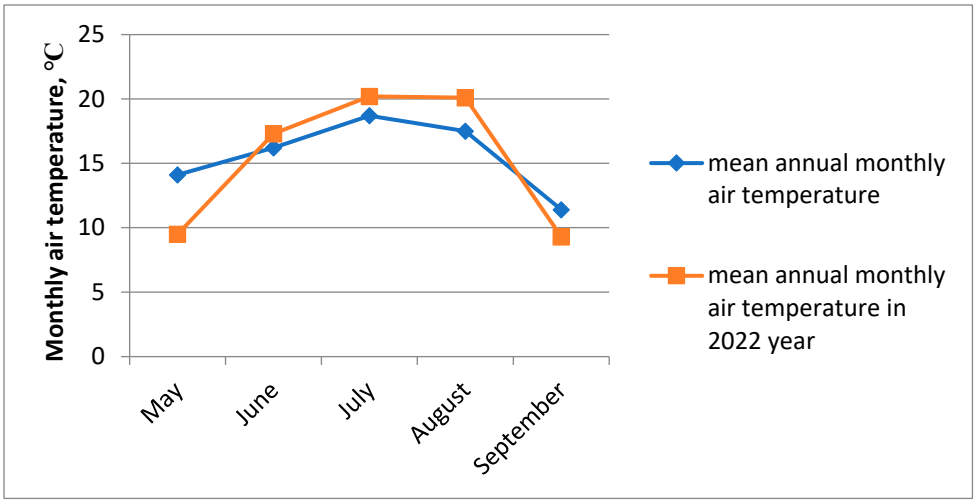

Figure S1. Mean monthly air temperature, ^{0}C

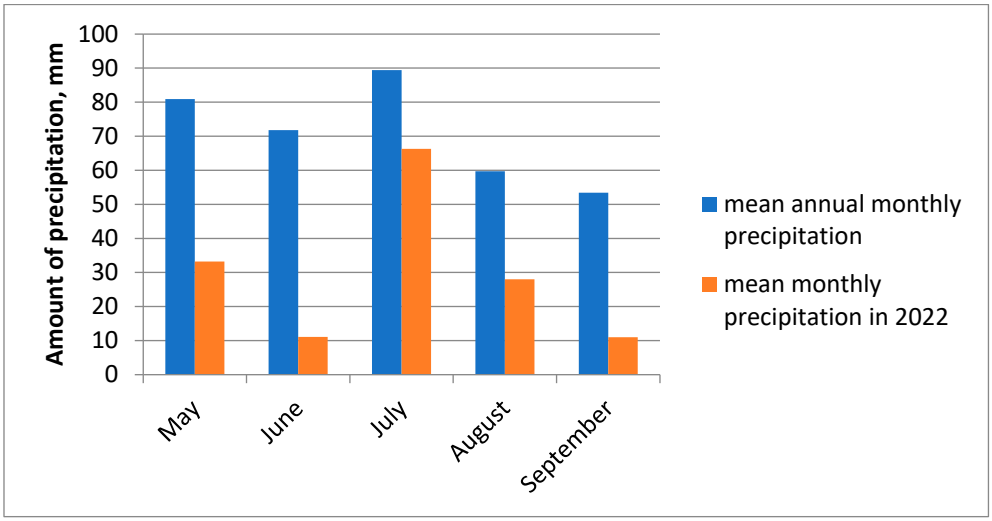

Figure S2. Amount of precipitation, mm.

Table S3. The herbicides completeness from chicory roots samples.

fortification level, mg/kg	extraction efficiency, %	average extraction efficiency (n=5), %	standard deviation (n=5), %
Imazamox			
0,08	96,3 95,2 97,0 95,3 93,6	95,5	1,3
0,008	97,3 96,5 94,3 97,8 90,6	95,3	2,9
Haloxyfop-P-methyl			
0,16	94,6 91,5 89,6 91,4 96,4	92,7	2,7
0,016	97,1 95,0 93,4 92,6 94,3	94,5	1,7
Fluazifop-P-butyl			
0,16	92,3 94,3 90,6 91,9 95,3	92,9	1,9
0,016	94,2 92,2 97,3 91,3 92,3	93,5	2,4
Phenmedipham			
0,32	87,3 85,2 91,6 98,3 94,2	91,3	5,3
0,032	83,6 84,5 87,2 83,2 81,3	84,0	2,2
Desmedifam			
0,32	82,1 86,3 84,5 83,6 82,2	83,7	1,7

0,032	86,3 80,6 82,1 84,5 83,3	83,4	2,2