



# How to manage common ragweed in crop rotations with sunflower or soybean in France ?

Fanny Vuillemin f.vuillemin@terresinovia.fr Franck Duroueix French technical institute for oil and protein crops

IRS conference 9<sup>th</sup> september 2022 Budapest, Hungary

### Common ragweed is allergenic and... very competitive for sunflower and soybean !



#### Invasive species Major issue in France



Sunflower yield losses are around 0.3 t/ha by step of 10 ragweeds / m<sup>2</sup>

### Introducing winter crops into the crop rotation



### Intercropping management : after winter crop harvest

#### July – August – September : destruction in stubbles and seedbank reduction

	Harvest	Stubble cleaning	Glyphosate or mechanical destruction	Around the 20th of september : cover crop
		Tillage to stimulate r before la	new ragweed emergences ast destruction	
Oilseed rape or	cereal	Potentiel ragwe	eed emergences	Cover crop

**In brown** => objective : destroy growing ragweeds before flowering (> 5cm, drying weather)



**In orange** => objective : stimulate new emergences to reduce soil seedbank (≤ 5 cm, rain required ). *It is necessary to destroy these new seedlings after.* 

#### Intercropping management : before spring crop March – April - May : tillage and sowing date delay of sunflower or soybean



### Trial results on sunflower 2021







Terres Nouvelle-Aquitaine

Less raqueeds in the  $2^{nd}$  sowing than in the  $1^{st}$ .

The mechanical tool had destroyed all the ragweeds so it induced more raqweeds germinations than glyphosate.

No impact of the tool on the quality of sunflower implantation.

### **Trial results on soybean 2016**

	Tillage	Destruction and sowing and	pendiméthaline 920 g/ha	imazamox 50 g/ha	
1st date	18/03 + 13/04	02/05		02/06	
2nd date	18/03 + 13/04		20/05		24/06



Sowing date delay destroys more ragweed and so reduce density in soybean of 64% without weeding.



### Combination of sowing later and Pulsar is more efficient than 1st sowing date + Pulsar.













### Herbicide control programs

	Pre-emergence	Post-emergence
Sunflower	flurochloridone 500 g/ha or metobromuron 750-1000 g/ha (Be careful of doses among types of soil)	<ul> <li>3 solutions :</li> <li>2 applications of imazamox* 25 g/ha at 2-3 sunflower's leaves repeated 8 or 10 days after</li> <li>2 applications of tribenuron-methyl* at 30 g/ha at 2-3 sunflower's leaves repeated 8 or 10 days after</li> <li>1 application of imazamox* at 50 g/ha at 4 sunflower's leaves.</li> </ul>
Soybean	metobromuron 750 g/ha (Be careful of doses among types of soil)	<ul> <li>2 solutions :</li> <li>1 application of bentazone at 870 g/ha at 2-3 soyabean's leaves, then 1 application of imazamox at 25 g/ha 8 or 10 days after</li> <li>2 applications of imazamox at 25 g/ha at 2-3 soyabean's leaves repeated 8 or 10 days after</li> </ul>
	<i>of soll)</i>	• 2 applications of imazamox at 25 g/ha at 2-3 soyabean leaves repeated 8 or 10 days after





### **Recommandations for herbicide use**

If ragweed is present, realise a weeding **program** (= pre-emergence herbicide + post-emergence herbicide).

If not, there is a risk of weeding failure and cases of resistance can appear...

- Always respect the growth stages of application (especially for post-emergence herbicides) :
  - > 4 soybean's or sunflower's leaves (about 1 month after sowing) BUT
  - > 2-3 leaves for the first application in case of splitting weeding in 2 applications
- Combine with other active ingredients in other crops (maize for ex) and agronomic and mecanic methods

It avoids risks of resistance to imazamox or to tribenuron-methyl (HRAC group n°2)





#### New herbicide: halauxifen-méthyl\*

#### halauxifen-methyl (Viballa) Vs imazamox : better efficiency





Registration expected in France for uses in 2023

\* Usable on classical varieties, HRAC group n°4

### Hoeing



Reducing the number of resistant ragweeds, hoeing decreases herbicide selection pressure.







#### Efficiency (%) of 2 weeding programs, with hoeing or not



pendiméthaline 920 g/ha pendiméthaline 920 g/ha then imazamox 50 g/ha then imazamox 50 g/ha Soybean trial 2016 south-west of France + HOEING

On an infestation of 55 ragweeds/m<sup>2</sup> without any weeding Hoeing brought 20% more efficiency

### Harvesting sunflower or soybean

#### It is very important to:

- Avoid late sunflower harvests (to limit seeds propagation)
- Harvest fields borders or high-infested fields AT THE END
- Clean thoroughly the combine after harvesting a field which is infested of ragweeds.







#### To sum up



#### winter crop

After winter crop harvest, destroy present ragweeds by stubble cultivation and induce new germinations by tillage, to reduce soil seedbank (and destroy them). Before sowing sunflower or soybean, practice early tillage (stale seedbed) and destroy germinations chemically or with mechanical tool ; delay sowing date (20 days max) without any change of variety.

Herbicide program : pre + post-emergence

> Choose adapted herbicide program and respect good conditions of application ;
> Hoe (choosing dry period :

soaked soil + no rain expected)



Mix different practices to fight ragweed in sunflower or soybean crops

combine

#### An <u>operational decision-support tool</u> to tackle ragweed issue based on drone and AI



« GEOADVENTICE » service
 (from Telespazio France)







Contact : <u>Francis.Jumel@telespazio.com</u> abdelkrim.bennama@telespazio.com

## Thank you for your attention







IRS 2022 INTERNATIONAL RAGWEED SOCIETY CONFERENCE BUDAPEST, HUNGARY





- Terres Inovia
- Evaluation of the evolution of the infestation at the territory scale
  Elaboration of adapted strategy to fight ragweed (agronomic practices, choices of herbicide program, harvest organization)

17