

PROBLEMS AND PERSPECTIVES IN PESTS CONTROL OF SEABUCKTHORN IN POLAND

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Methods used to assess entomofauna in sea buckthorn orchards

- Shaking on an entomological sheet – (2 samples for each observation)
- Observations of shoots and leaves – (4 x 25 shoots or leaves)
- Trapping with sticky traps (at least 1 trap per orchard)



Number of trophic groups found per location during the growing season

Site	May	June	July	August	Sept.
Pereszczówka (Eastern Region)	10	22	18	22	5
Przezmark (Northern Region)	10	12	9	14	9
Ostrów Północny (Eastern-Northern Region)	7	5	5	11	3

Families found per location during the growing season

	Site*				Site*				Site*		
	I	II	III		I	II	III		I	II	III
Acanthosomatidae	1			Curculionidae	22	8	6	Pentatomidae	16	8	
Anthicidae	5			Delphacidae		1	1	Phalacridae	8		
Anthocoridae			1	Dolichopodidae		1		Phoridae			1
Aphididae	16			Elateridae	6	2		Pompilidae		2	
Apionidae	2	3		Entomobryidae	4	16		Psyllidae	597	272	
Asilidae			1	Eulophidae	1	1		Pteromalidae	4	1	5
Bibionidae		12	1	Eurytomidae	2			Ptinidae	1		
Blattodea		2		Forficulidae	4			Scarabaeidae	14	21	6
Braconidae	4	3	1	Gracillaridae			1	Sciaridae	1	13	
Bruchidae	1			Ichneumonidae	6	3		Scirtidae	1		
Cantharidae	1			Julidae	19			Sphecidae			1
Chloropidae	2			Lagriidae	1	3		Spiders	40	101	22
Chrysomelidae	4		1	Latridiidae	53	4	12	Stratiomtidae		1	
Cicadellidae	2	5		Lauxaniidae		1		Tachinidae	1		
Cixiidae	3			Lymantriidae	7			Tenthredinidae		29	
Coccinellidae	71	60	15	Membracidae	1			Tephritidae	3	1	
Coleophoridae	1			Miridae	12		2	Tettigoniidae		1	
Crabronidae	1	1		Nabidae	68	19	4	Tortricidae	1		
Crambidae		2	2	Panorpidae	1			Ulidiidae	1	1	

* I – Pereszczówka; II – Przezmark; III – Ostrów Północny

Cacopsylla hippophaes and *Cacopsylla zetterstedti*



Capitophorus hippophaes



Tortricidae and Geometridae



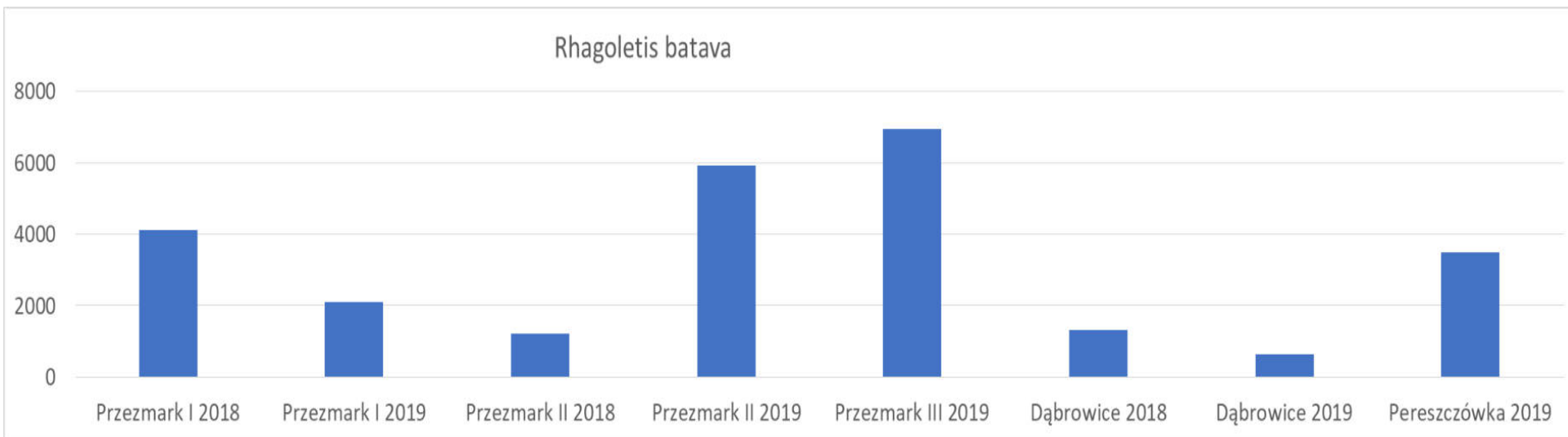
Aceria hippophaena



Rhagoletis batava



Monitoring *R. batava* flight



Monitoring *R. batava* flight

Geographical location	Flight start	Average number of adults caught/trap during the season
Northern	15.06.2018	4920
	22.06.2019	6947
	20.06.2020	3455
	19.07.2021	416
Eastern	13.06.2020	1140
	22.06.2021	709
Central	03.06.2020	87
	14.06.2021	49



Trials with new tools for monitoring *R. batava* flight



Trials with new tools for monitoring *R. batava* flight



Trials to limit *R. batava* population

Mass trapping



Sticky trap (T)



Home made 4% water solution ammonium phosphate fertilizer (A2D or A2H)



Conical with lure for *C. capitata* (ProboDelt) (A3)



Home made ammonia-based attractant with anchovy (A4)

Approx. 80 traps per hectare

Deployed just before the start of the flight

Trials to limit *R. batava* population



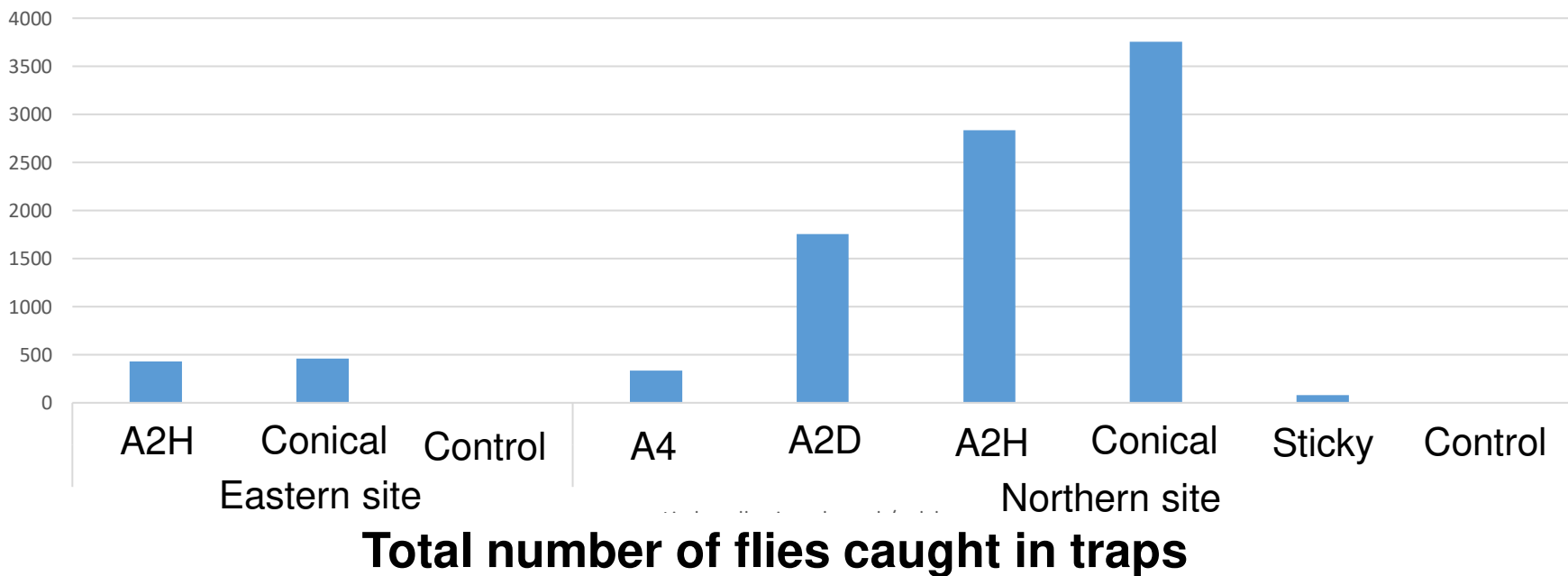
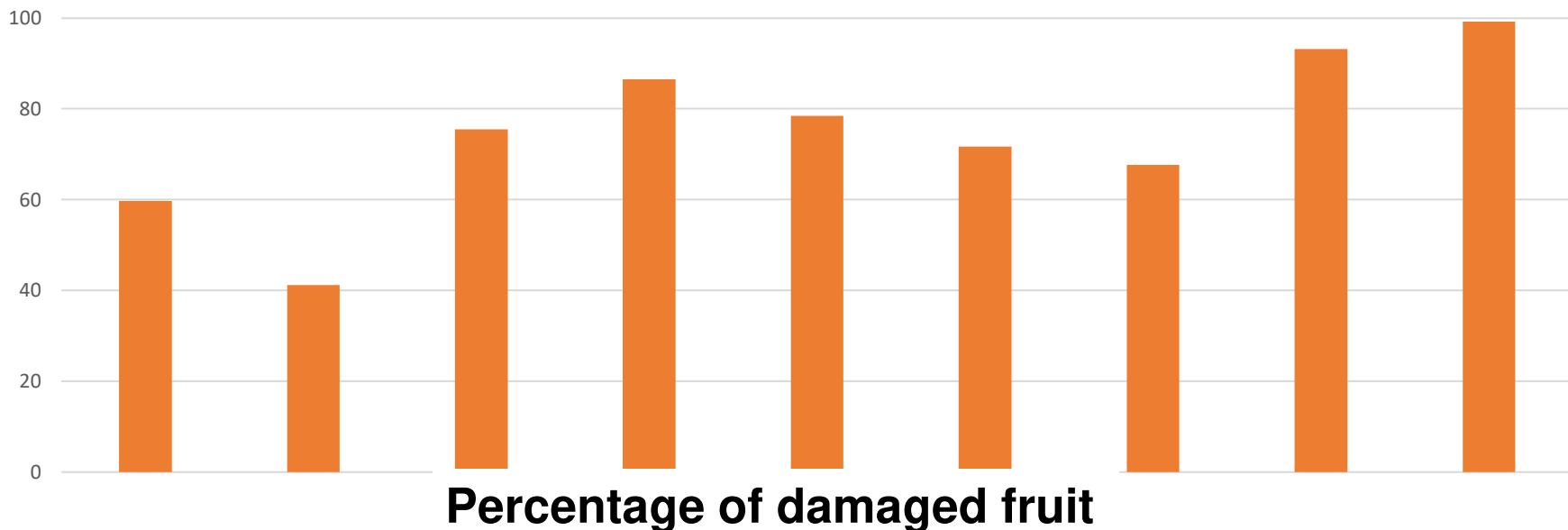
Fruit damage assessed at harvest
(4 samples x 100 fruits)



Assessment of flies caught several times during the season



Trials to limit *R. batava* population



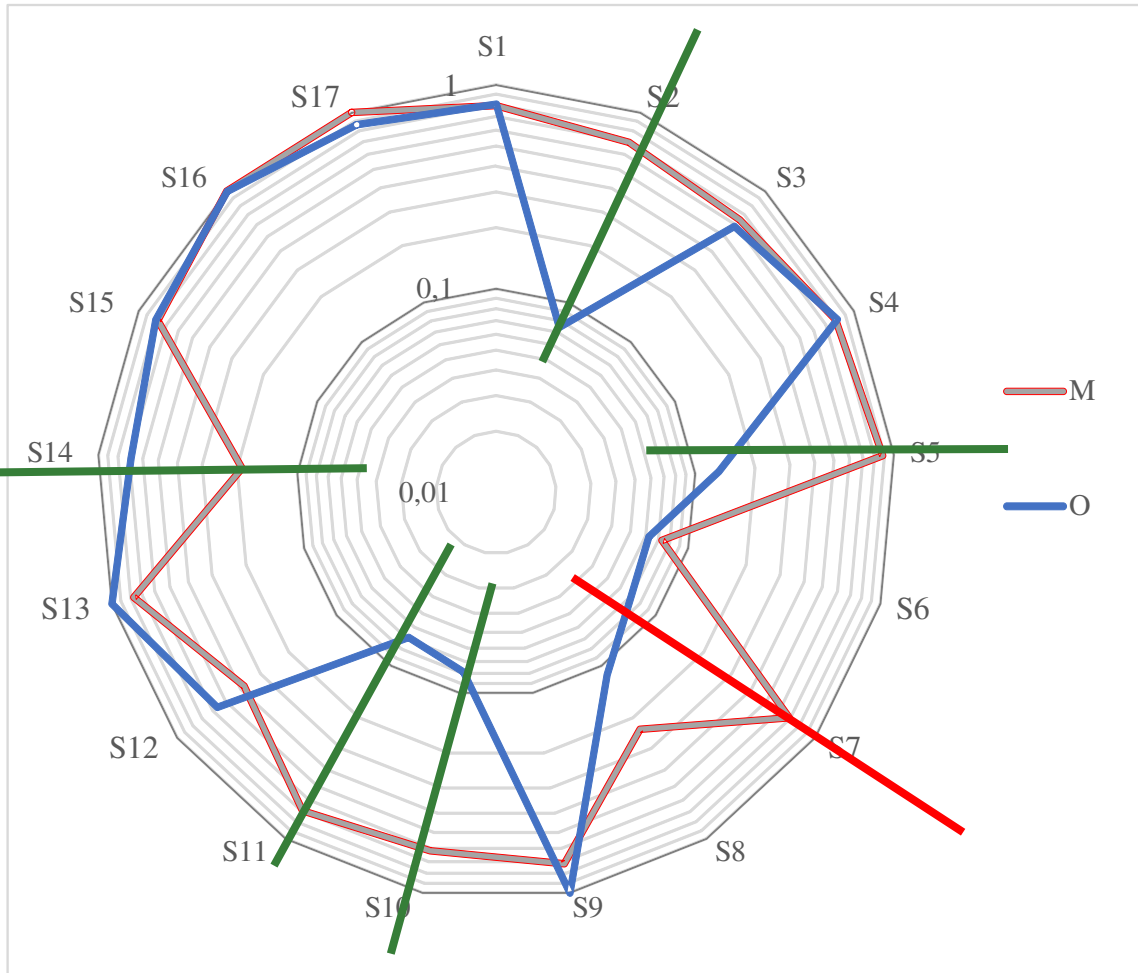
Comparison of trap lures using an electronic nose



C. capitata vs. 4% ammonia fosfate solution



Organic lure (O)
Mineral lure (M).



S2 – NH_3 , H_2S , $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_6\text{H}_5\text{-CH}_3$ 1-30ppm

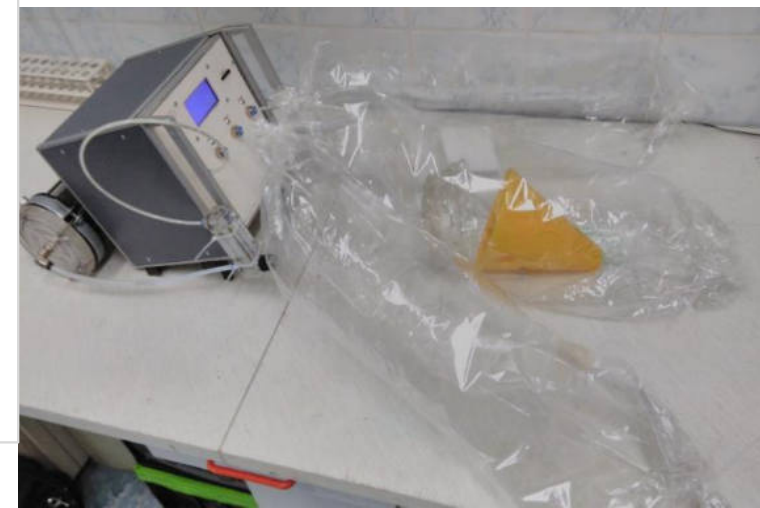
S5 – Ethyl alcohol, 50-5000ppm

S7 – Ammonia 10-100ppm

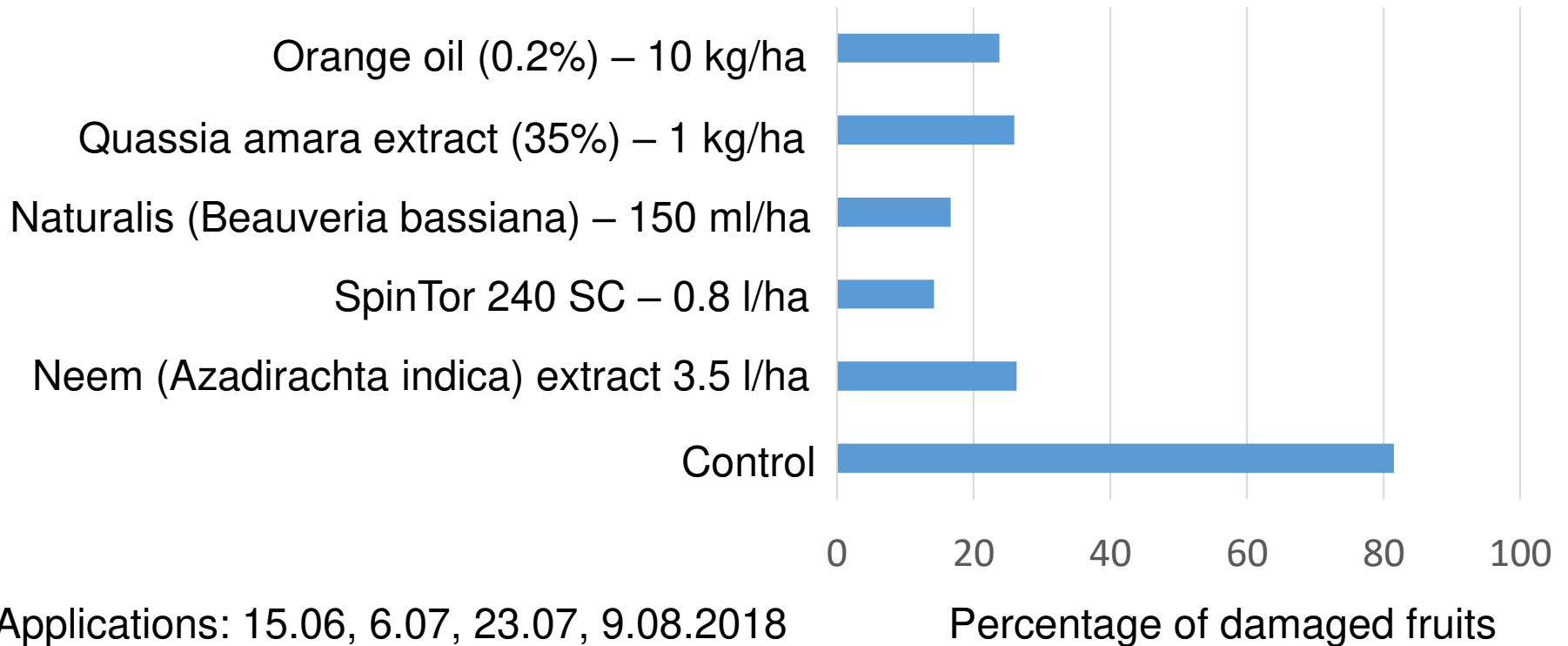
S10 – Hydrogen sulfide 5-100ppm

S11 – flammable gases 500-10000ppm

S14 – Metan, isobutan, hydrogen, CO 100-5000ppm



Control of *R. batava* population



Treatment	Efficacy [%]	
	2018	2019
Control	-	-
NeemAzal - 3.5 l/ha	67,7	0,0
SpinTor 240 SC - 0.8 l/ha	82,6	34,1
Naturalis - 150 ml/ha	79,5	12,9
Citrus oil - 10 kg/ha	70,7	8,0
Quassia - 1 kg/ha	68,1	18,6

New threats from pathogens

Fungal pathogens

From shoots with wilting symptoms

Hymenopleella hippophaeicola

Truncatella angustata

Botrytis cinerea



From leaves with spots

Botrytis cinerea



Fungal pathogens

From wilting flowers

Diaporthe eres

From rotting fruits

Botrytis cinerea

Diaporthe eres



Bacterial pathogens

Pectinolytic species (tissue decomposers)

and

pathogenic species likely *Lelliottia* sp. or *Pseudomonas* spp.



How to effectively deal with these pests and pathogens



Currently, it appears that there are no effective methods to control pests and diseases on sea buckthorn in all cropping systems



**THANK YOU FOR
THE ATTENTION**