

WP2 – Local agricultural by-products as substrate for insects: results in Portugal

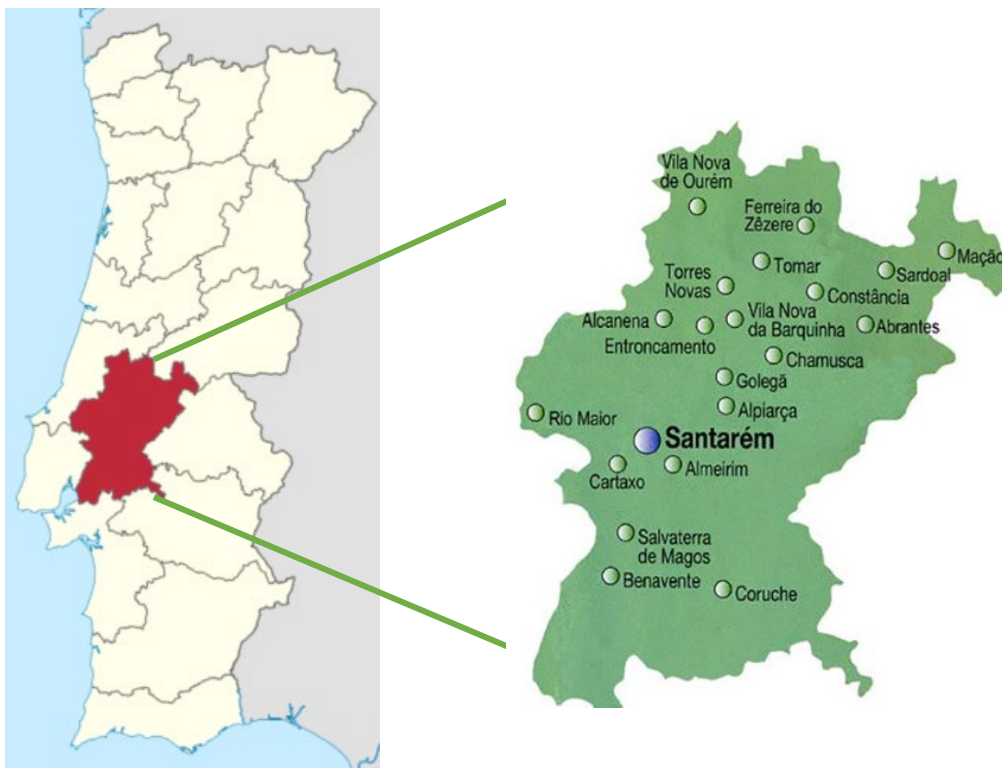


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Task 2.1-Collection and nutritional composition analysis of agricultural by-products on the region of Santarém, Portugal



DESCRIPTION	AVAILABILITY	DRY MATTER	CRUDE PROTEIN	ETHER EXTRACT	ASH	CRUDE FIBER	DISTANCE TO IO
		%					km
Corn cobbs	September/October	94.30	1.59	21.10	1.37	28.60	15.00
Grape by-product (stalk)	September/October	52.40	3.67	1.20	4.28	23.60	10.00
Wheat bren	All year	87.94	15.65	4.40	3.20	8.60	40.00
Carrots	All year	7.70	0.68	0.30	0.47	< 1.00	19.10
Mix of peppers	Mainly in summer	7.30	1.14	0.30	0.41	1.40	19.10
Green peas	Spring	15.10	3.91	0.70	0.55	1.90	19.10
Tomato	Mainly in summer	6.10	1.10	0.40	0.35	1.20	19.10
Green Pepper	Mainly in summer	19.80	3.72	3.10	1.23	7.40	19.10
Mix of peppers with leafs	Mainly in summer	9.00	2.09	5.10	1.31	3.00	19.10
Acorn	Winter	92.20	4.98	9.00	1.82	3.00	50.00
Watermelon	All year	5.40	0.78	0.30	0.31	< 1.00	19.80
Yellow melon	All year	8.00	0.99	0.50	0.50	1.20	19.80
Green melon	All year	5.40	0.71	0.30	0.43	< 1.00	19.80
White melon	All year	7.20	0.65	0.30	0.57	< 1.00	19.80
Zucchini	All year	3.60	1.43	0.30	0.34	1.00	19.10
Broccoli	All year	10.30	3.95	0.50	1.05	1.40	19.10
Olive pomace	From October	23.00	2.28	3.00	1.22	10.30	10.00

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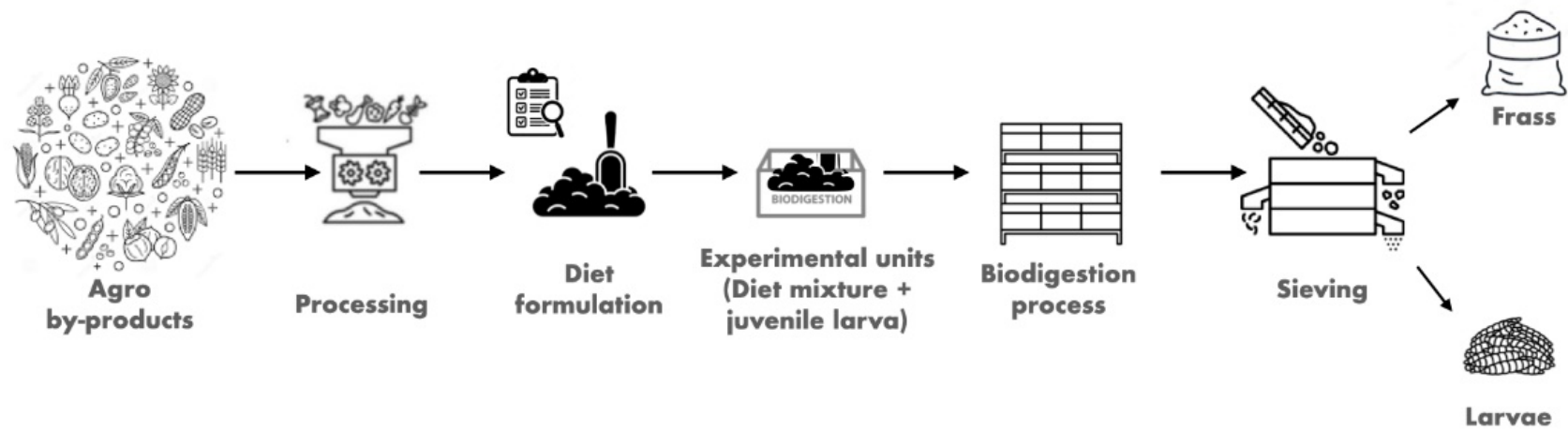


Task 2.2 – Evaluation of agricultural by-products as ingredients of insect diets



Black Soldier Fly – *Hermetia illucens*

Task 2.2 – Evaluation of agricultural by-products as ingredients of insect diets





Task 2.2 – Evaluation of agricultural by-products as ingredients of insect diets

Control

Gainsville

Diet 1



Melon

Diet 2



Broccoli

Diet 3



Olive pomace

Diet 4



Olive pomace +
Melon



Task 2.2 – Evaluation of agricultural by-products as ingredients of insect diets

Diets	Diet 1						Diet 2		Diet 3		Diet 4	
	Ingredient Composition						Nutrient Composition					
	Water	Gainsville	White Melon	Broccoli	Olive pomace	Wheat bran	Relative Humidity	Crude protein	Crude fat	Ashes		
	%						%					
Control	66.0	34.0					70.00	4.27	1.01	2.43		
Diet 1		11.6	72.6			15.8	70.00	4.27	1.23	1.99		
Diet 2		30.6		69.0		0.4	70.00	4.27	1.10	2.40		
Diet 3		6.2			78.5	15.3	70.00	4.27	2.30	2.25		
Diet 4		7.8	21.6		55.2	15.4	70.00	4.27	2.00	2.2		

Control

Gainsville

Diet 1



Diet 2



Diet 3



Diet 4



	Control Diet	Diet 1	Diet 2	Diet 3	Diet 4
Frass (Kg)	2.41 ± 0.04	2.33 ± 0.09	2.78 ± 0.17	3.55 ± 0.02	2.87 ± 0.06
Larvae (Kg)	1.60 ± 0.03	1.82 ± 0.17	1.6 ± 0.36	1.54 ± 0.05	1.80 ± 0.11
Individual Weight (mg)*	76.38 ± 9.20	81.95 ± 8.37	77.80 ± 5.80	73.58 ± 5.68	78.98 ± 4.26
Survival Rate (%)	71.70 ± 7.65	75.80 ± 12.21	69.00 ± 11.64	71.10 ± 5.13	77.00 ± 1.74
FCR	8.42 ± 0.16	7.47 ± 0.75	8.80 ± 2.29	8.77 ± 0.26	7.53 ± 0.49

Task 2.2 – Evaluation of agricultural by-products as ingredients of insect diets

Control

Gainsville

Diet 1



Diet 2



Diet 3



Diet 4

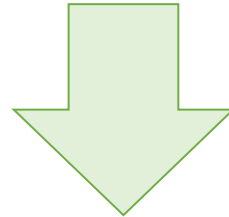


**Selected to
produce larvae to
send to Serida in
order to feed hens**

Diet 4



1800 kg



256 kg



360 kg

Bioconversion duration (days)	9.40 ± 1.52
Frass (Kg)	2.37 ± 0.24
Larvae (Kg)	1.80 ± 0.39
Individual Weight (mg)	128.70 ± 30.10
Survival Rate (%)	87.31 ± 1.75
FCR	7.50 ± 0.67

Thank you for your attetion

