



75th EAAP Annual Meeting, Florence, Italy,
1st-5th of September, 2024

WP3 – The use of live insect larvae as feed ingredients for local poultry strains

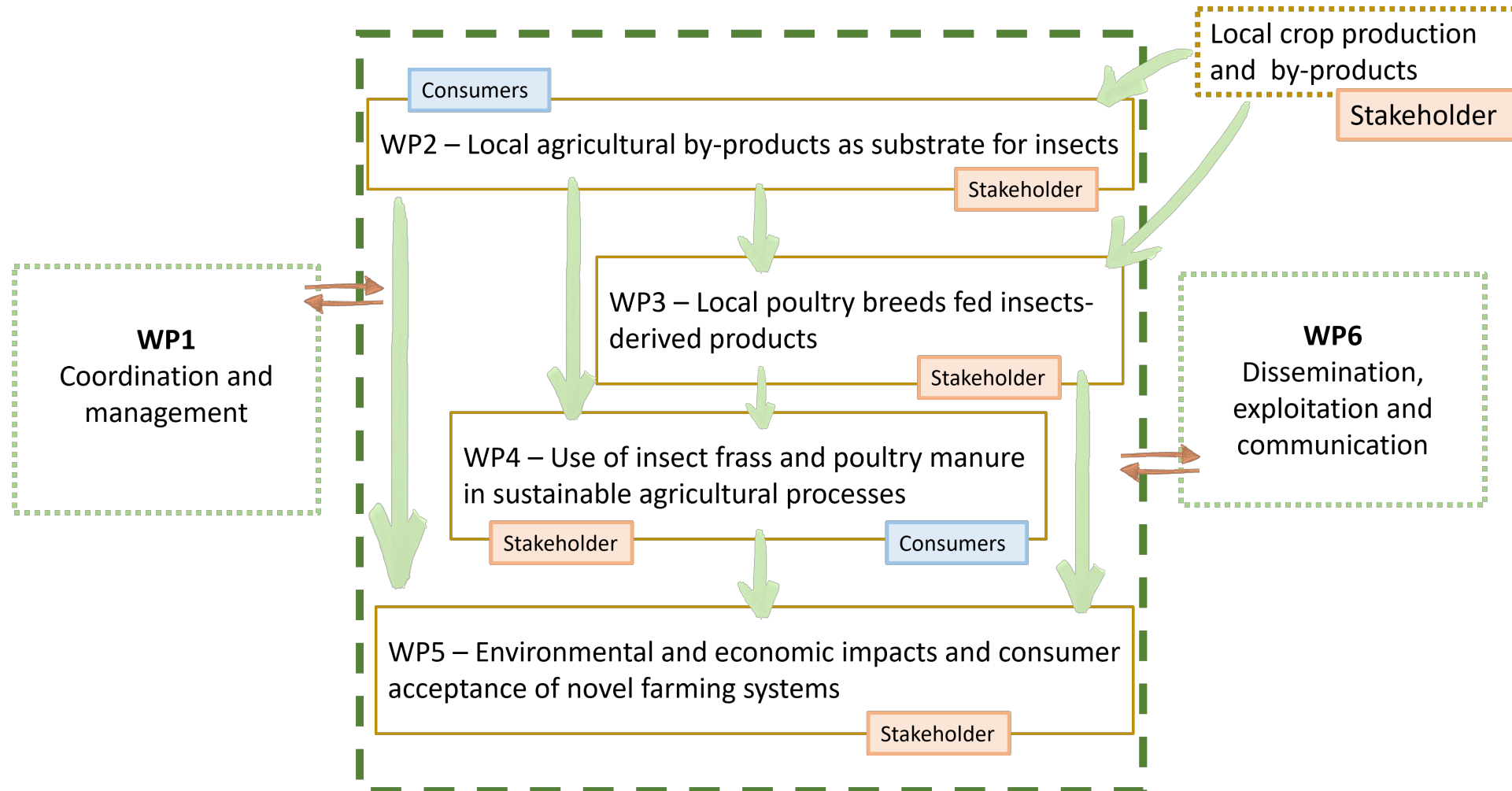
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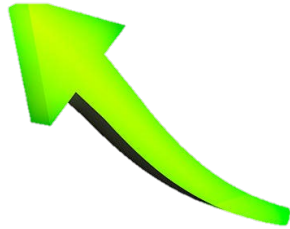


Where are we?

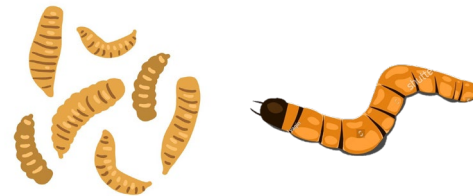




Egg-type strains: Bionda Piemontese (UNITO, TM larvae) and Pita Pinta (SERIDA, HI larvae)



Meat-type strains: Black-Bronze turkey (UTH, TM larvae) and Beldi chicken (USMS, HI larvae)



Evaluation of bird performance, welfare and health + quality and consumer acceptance of eggs and meat





	C	TM5 or HI5	TM10 or HI10
Core diet (%)	90	90	90
Feed mix (%)	10	5	-
Live larvae (%)	-	5 (DFI, DM)	10 (DFI, DM)



QUESTION
1

How can we manage
wet and rationed
larvae vs dry and *ad libitum* feed?

QUESTION
2

How can we formulate
the feed mix ?

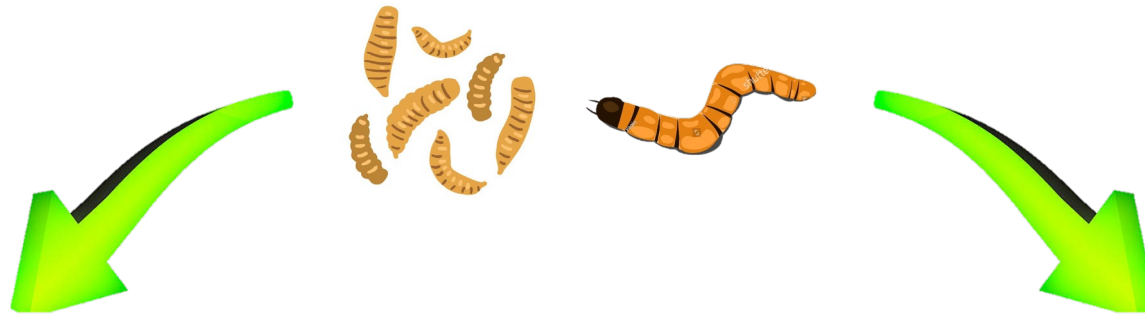
QUESTION
3

How can we formulate
the core feed?



QUESTION

1



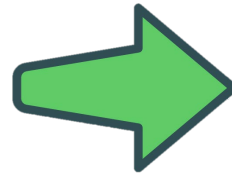
**Consider live larvae
as dry larvae**

**Reliable knowledge
of bird ingestion
curves**

QUESTION

2

NUTRIENTS	% ON DM (LIVE LARVAE)
CP	40,365
EE	35,042
Ash	4,023
CF (chitin)	5,335
AME (kcal/Kg)	5353,555
Ca	0,078
P	0,556
Na	0,152
K	0,763
Cl	0,100
Met	0,620
Lys	2,640
Ala	4,900
Arg	2,940
Asp	4,370
Phen	1,820
Gly	2,760
Glu	5,150
His	1,560
Leu+Iso	2,850
Pro	3,680
Ser	2,360
Tyr	3,900
Val	3,460
Cys	0,550
Try	0,060
Thr	2,140
Linoleic acid	6,400



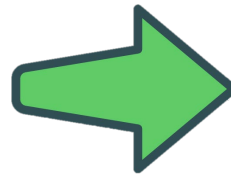
NUTRIENTS	% AS IS (FEED MIX)
DM	94,953
CP	40,000
AME	5353,000
Met	0,620
Met+Cys	0,735
Lys	2,640
Thr	2,140
Try	0,060
Arg	10,470
Iso	1,425
Leu	1,425
Phen	0,276
Tyr	0,193
His	1,560
Val	3,460
Asp	0,167
Ser	0,183
Glu	1,053
Pro	0,411
Gly	2,760
Ala	0,126

**Feed mix
(isoCP, iso
AME and
isoAA for
most of the
essential AA)**

QUESTION

2

NUTRIENTS	% ON DM (LIVE LARVAE)
CP	40,365
EE	35,042
Ash	4,023
CF (chitin)	5,335
AMEn (kcal/Kg)	5353,555
Ca	0,078
P	0,556
Na	0,152
K	0,763
Cl	0,100
Met	0,620
Lys	2,640
Ala	4,900
Arg	2,940
Asp	4,370
Phen	1,820
Gly	2,760
Glu	5,150
His	1,560
Leu+Iso	2,850
Pro	3,680
Ser	2,360
Tyr	3,900
Val	3,460
Cys	0,550
Try	0,060
Thr	2,140
Linoleic acid	6,400



NUTRIENTS	% AS IS (FEED MIX)
EE	47,847
CF	0,258
Total P	0,044
Non-phytate P	0,016
Ca	1,911
K	0,760
Na	0,150
Cl	0,950

**Feed mix (≠
EE, CF, Ca, P
and Cl)**

FEED INGREDIENTS	% AS IS
Pure distilled fatty acids	23,319
Olive distillate fatty acid calcium soap	20,000
Soybean oil	10,00
Pre-gelatinized rice flour	10,00
Wheat gluten	3,682
Soybean protein concentrate	2,980
Potassium carbonate	1,165
Calcium carbonate	1,002
Maize	1,029
L-arginine	10,335
L-valine	3,340
L-lysine	3,131
Pure glycine 99%	2,652
L-threonine	1,989
Histidine HCl 98%	1,966
L-isoleucine 92%	1,318
L-leucine 98%	1,044
DL-methionine	0,530
Sodium bicarbonate	0,518

Use of less sustainable raw materials

FEED INGREDIENTS (% AS IS)	C	TM5	TM10
Maize	41,24	41,24	41,24
Sunflower meal (dehulled)	10	10	10
Corn gluten feed	7,56	7,56	7,56
Dry distillery stillage	16,25	16,25	16,25
<i>Tenebrio molitor</i> live larve (DM)	0	5	10
Pig lard	1,99	1,99	1,99
L-lysine	0,31	0,31	0,31
DL-methionine	0,13	0,13	0,13
Calcium carbonate	9,51	9,51	9,51
Dicalcium phosphate	2,25	2,25	2,25
Vitamin-mineral premix	0,4	0,4	0,4
Phytase	0,06	0,06	0,06
Sodium chloride	0,1	0,1	0,1
Sodium bicarbonate	0,2	0,2	0,2
Feed mix	10	5	0

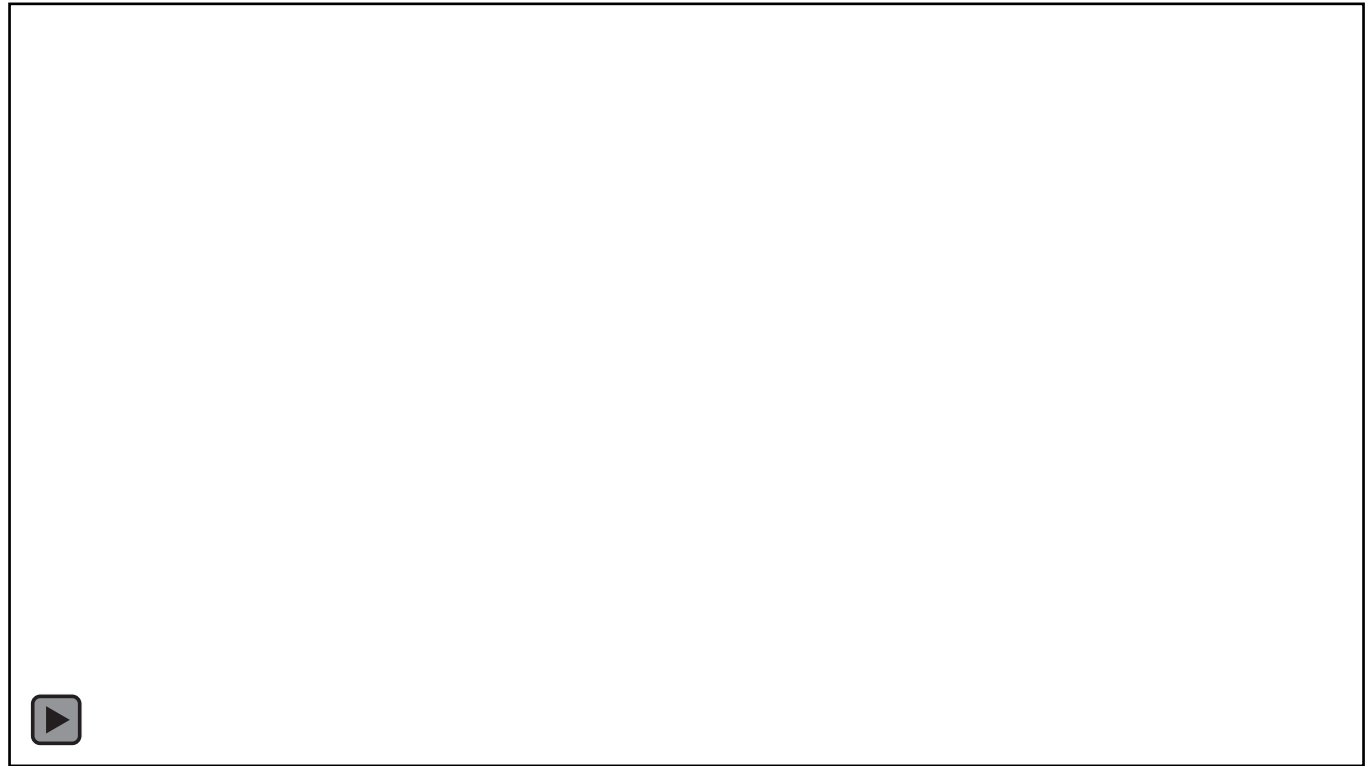
Use of alternative raw materials

NUTRIENTS (% AS IS)	C	TM5	TM10
AMEn (kcal/kg)	2800	2800	2800
CP	17,35	17,36	17,38
EE	9,70	9,10	8,40
CF	6,00	6,30	6,50
Met	0,45	0,45	0,45
Lys	0,92	0,92	0,92
Ca	4,47	4,38	4,29
Total P	0,70	0,73	0,75
Non phytate P	0,50	0,53	0,56

Challenging management
of EE, Ca and P



Animal perspective.. 😊

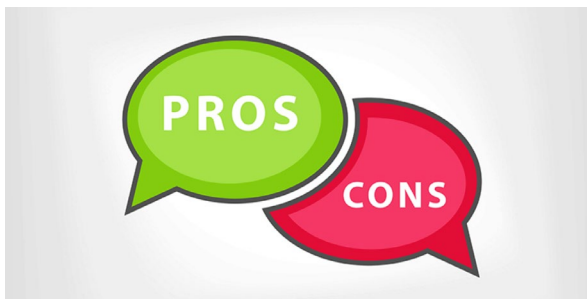




..and scientific perspective ☺

	TM5	TM10
Mash feed (%)	95.11	90.55
Live larvae (%)	4.89	9.45





- ✓ Use of live larvae to replace a single component of the diet
- ✓ Mash feed and larvae intakes very close to the expected values
- ✓ Increased dietary EE content (liver overload)
- ✓ Increased dietary P content (Ca absorption interferences)

..let's try using live larvae as classical feed ingredients 😊



Thank you for your attention 😊

LET'S GET IN TOUCH:



Advagromed



Advagromed project

<https://www.advagromed.com/>



Funded by
the European Union



PRIMA
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IN THE MEDITERRANEAN AREA

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