

Context

A key challenge in improving the sustainability of organic monogastric production is meeting the required levels of nutrients from locally sourced organic feeds. Can a European sourced, 100% organic diet compete with a globally sourced soya based diet?

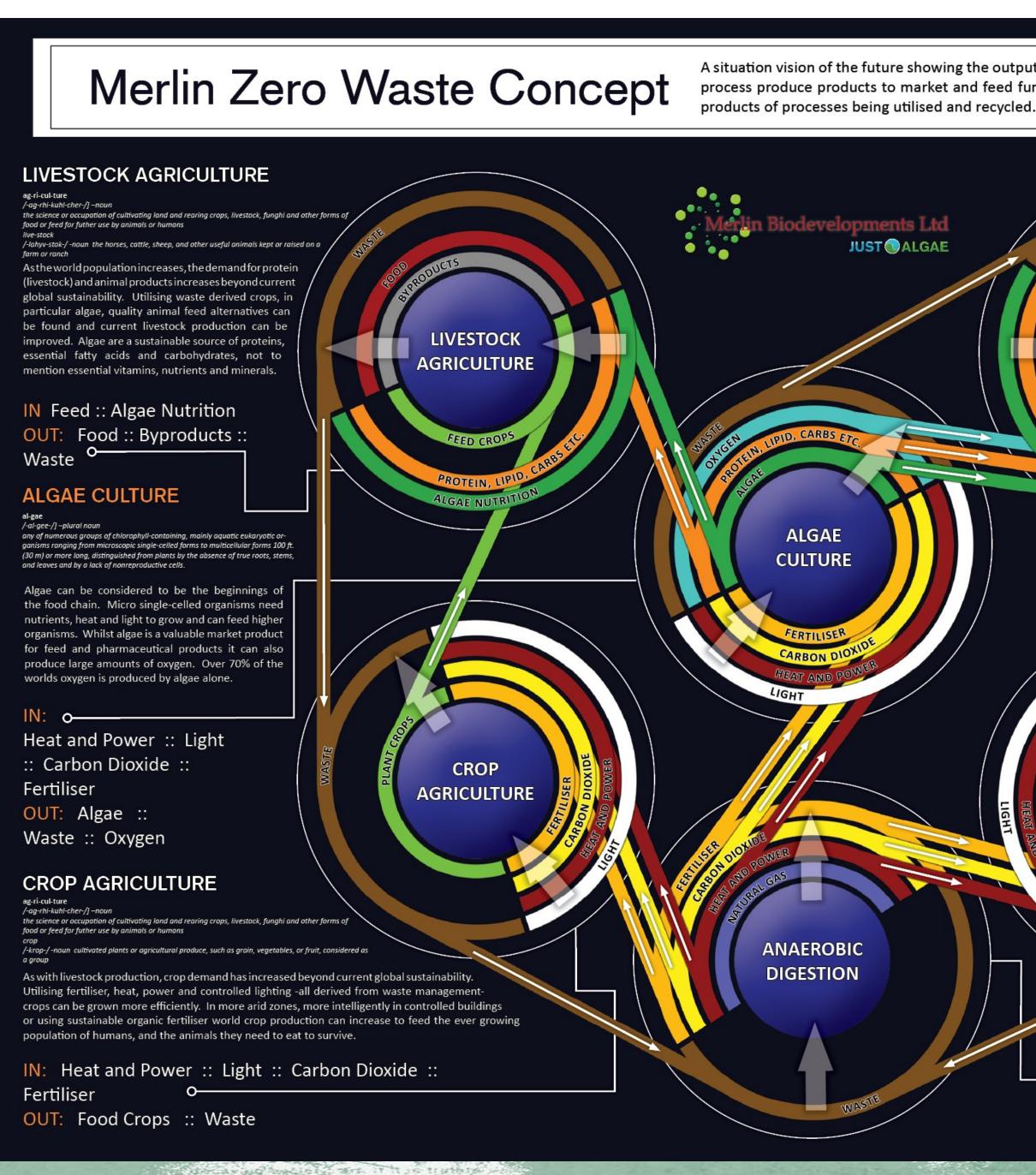
3 Diets

100% Organic, Globally Sourced (Control) 100% Organic, Locally Sourced, no algae 100% Organic Locally Sourced with added **Algae** (*Spirulina*) to ensure good **Methionine** availability

10 Birds per Group, 8 Replicates.

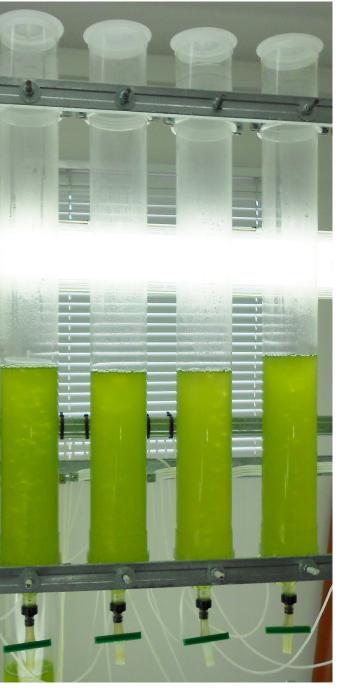
Algae Production

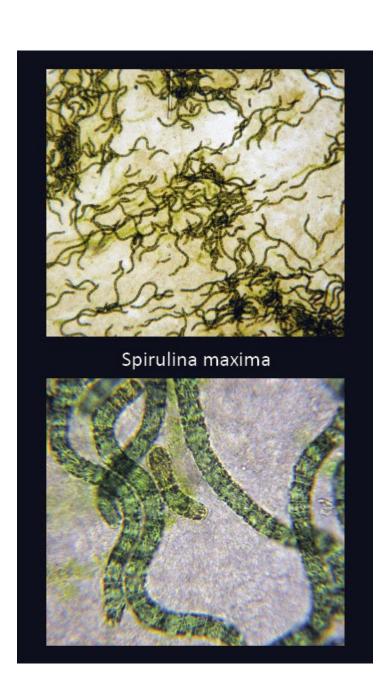
The algae (Spirulina) was grown in North Wales using a production system that creates zero waste. A slurry was produced, freezedried and sent to the feed mill for inclusion in a standard pellet form



100% Local and Organic: Using Algae to Close the Protein Gap for Poultry

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A situation vision of the future showing the outputs of linked symbiotic sustainable commercial applications. The outputs of one process produce products to market and feed further viable commercial enterprises. The situations have zero waste, with all

AOUACULTURE

HYDROPONICS

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AQUACULTURE

nimals and plants, esp. fish, shellfish, and seaweed, in nat e utilises higher organisms to stimulate th omy. Using "from waste" derived at, power and algae as well as food crops, spec ia can replace dietary protein derive o the digester. The oxygen derived from gae culture can also be used to increase tl fish production and stocking densitie N: Heat and Power

Oxygen :: Feed Fresh Fish :: Waste

HYDROPONICS

/-hahy-druh-pon-iks/ -noun (used with a singular ver

ultivation of plants by placing the roots in liquid nutrient solutions rathe than in soil; soilless growth of plant ydroponics uses the waste derived fertiliser fro Digestion processes to feed a liq nese crops can stimulate local communities or be fea arbon dioxide from the Anaerobic digester, along vith heat and power can increase the efficiency and nsities of the crops produced. Waste crops and uttings are recycled back into the digester to recove

> IN: Heat and Power Light :: Carbon Dioxide Fertilise OUT: Food Crops Waste

ANAEROBIC DIGESTION

an-aer-o-bio

/-an-uh-roh-bic/ –adjective (of an organism or tissue) living in the absence of air or free oxygen. Anaerobic digestion is a process for producing valuable products from waste. Kitchen wastes, manures and slurries and waste arable crops can effectively be turned into products to feed a variety of industries. The process converts waste via a bacterial process, into a nutrient rich substrate while at the same time producing natural gas: methane and carbon dioxide. The gases can be burnt to produce heat and electricity. The waste-derived heat can be used for processes mentioned here but there is significant excess heat for further businesses

- IN: Waste OUT: Gas :: Heat and Power :: Carbon Dioxide :: Fertiliser

Ingredients

Ingredients were selected to provide similar nutritional profiles. The local diet ingredients are all sourced from Europe, the control ingredients were globally sourced



Results

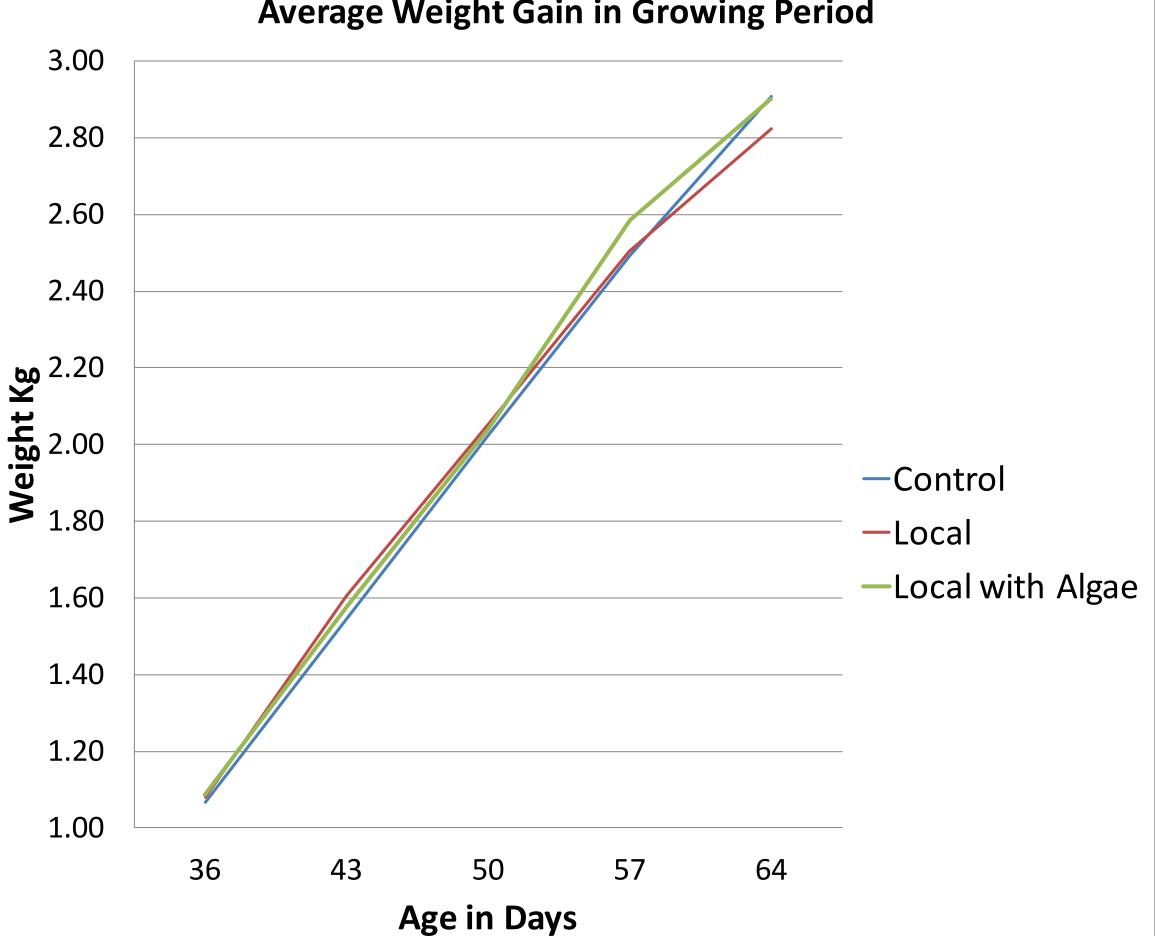
No behavioural or welfare problems were recorded. There appeared to be no physical differences between groups

	Feed Conversion Ratio (FCR)	Total Feed per
Control	2.49	7.022
Local	2.43	7.057
Algae	2.38	6.914

CORE Organic II Funding Bodies, partners of the FP7 ERA-Net project CORE organic II



Control, 100% Organic		100% Organic and Local		100% Organic and Local with Algae	
WHEAT ORGANIC	56.91	WHEAT ORGANIC	30.00	WHEAT ORGANIC	30.29
F.S.SOYA 44/7	22.24	MAIZE ORGANIC	21.37	MAIZE ORGANIC	21.59
SUNFLOWER EXP OR- GANIC	9.78	RAPE EXP ORGANIC	15.00	RAPE EXP ORGANIC	15.00
MAIZE ORGANIC	5.00	SWEET LUPINS OR- GANIC	14.29	SWEET LUPINS OR- GANIC	10.00
MIXER SOYA OIL OR- GANIC	2.01	SUNFLOWER EXP OR- GANIC	12.00	SUNFLOWER EXP OR- GANIC	6.62
DI CAL PHOS	1.45	MIXER SOYA OIL OR- GANIC	2.35	BEANS ORGANIC	5.00
ORG RICE CONCENTRATE 65	1.15	FLAX EXP ORGANIC	2.09	FLAX EXP ORGANIC	3.50
TABLE POULTRY 7.5	0.75	TRUCAL 4 CAL CARBON- ATE	1.20	ALGA	3.00
TRUCAL 4 CAL CARBON- ATE	0.71	TABLE POULTRY 7.5	0.75	MIXER SOYA OIL OR- GANIC	2.50
		PX LUCERNE CONCEN- TRATE	0.50	TRUCAL 4 CAL CAR- BONATE	1.20
		DI CAL PHOS	0.45	TABLE POULTRY 7.5	0.75
				DI CAL PHOS	0.55
CRUDE PROT	20.15	CRUDE PROT	19.50	CRUDE PROT	19.54
LYSINE	0.95	LYSINE	0.85	LYSINE	0.88
METH EQ	0.38	METH EQ	0.37	METH EQ	0.40
	0.33		0.32	METH ME POULTRY	0.35 12.30
ME_POULTRY	12.05	ME_POULTRY	12.20		12.50





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Improved Contribution of Local Feed to Support **100% Organic Feed Supply to Pigs and Poultry**

