

Freshwater algae as a new protein source for organic broilers



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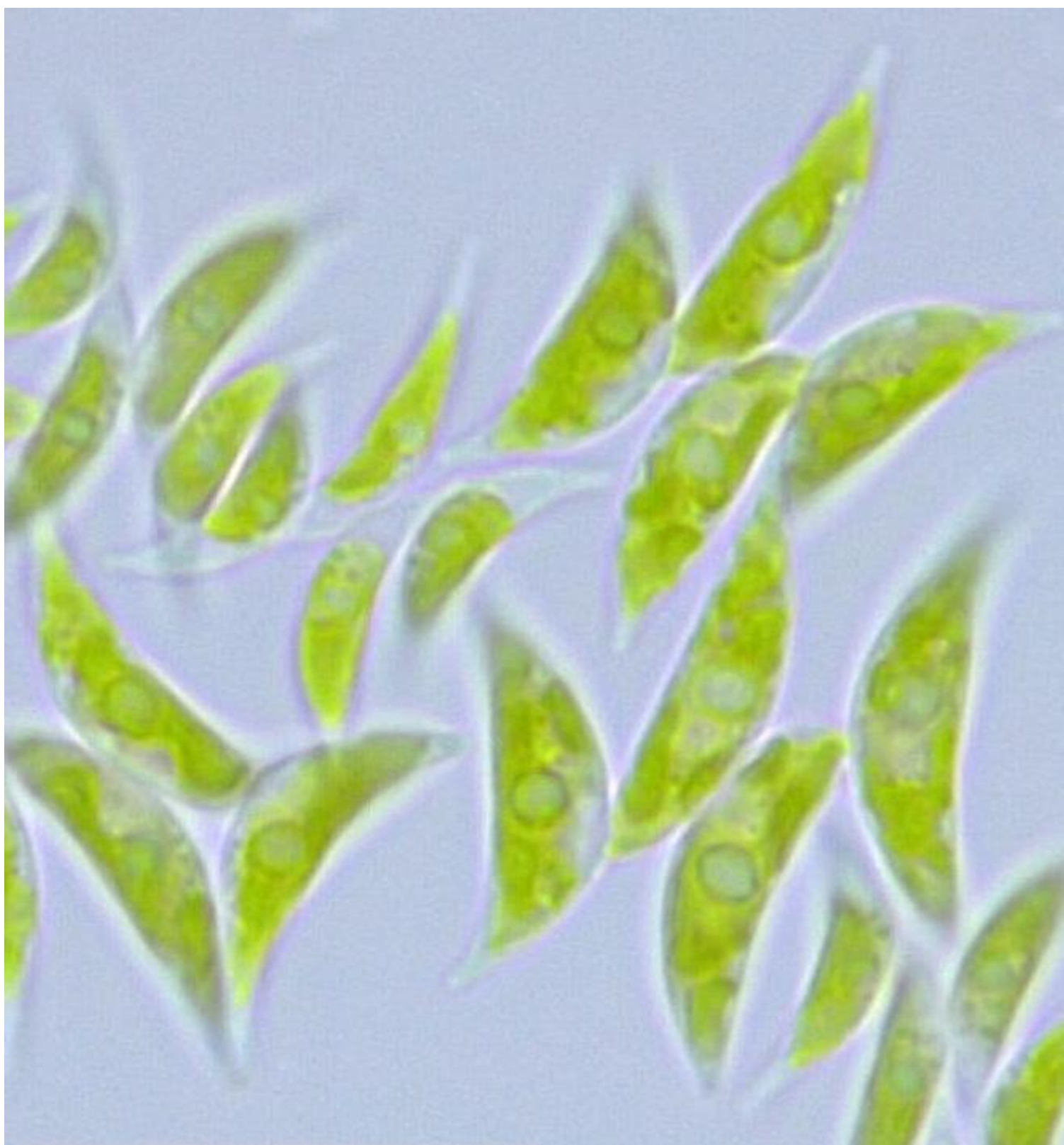
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Background

- Increased need for high-quality protein for organic broiler diets to replace imported soya for a more sustainable production

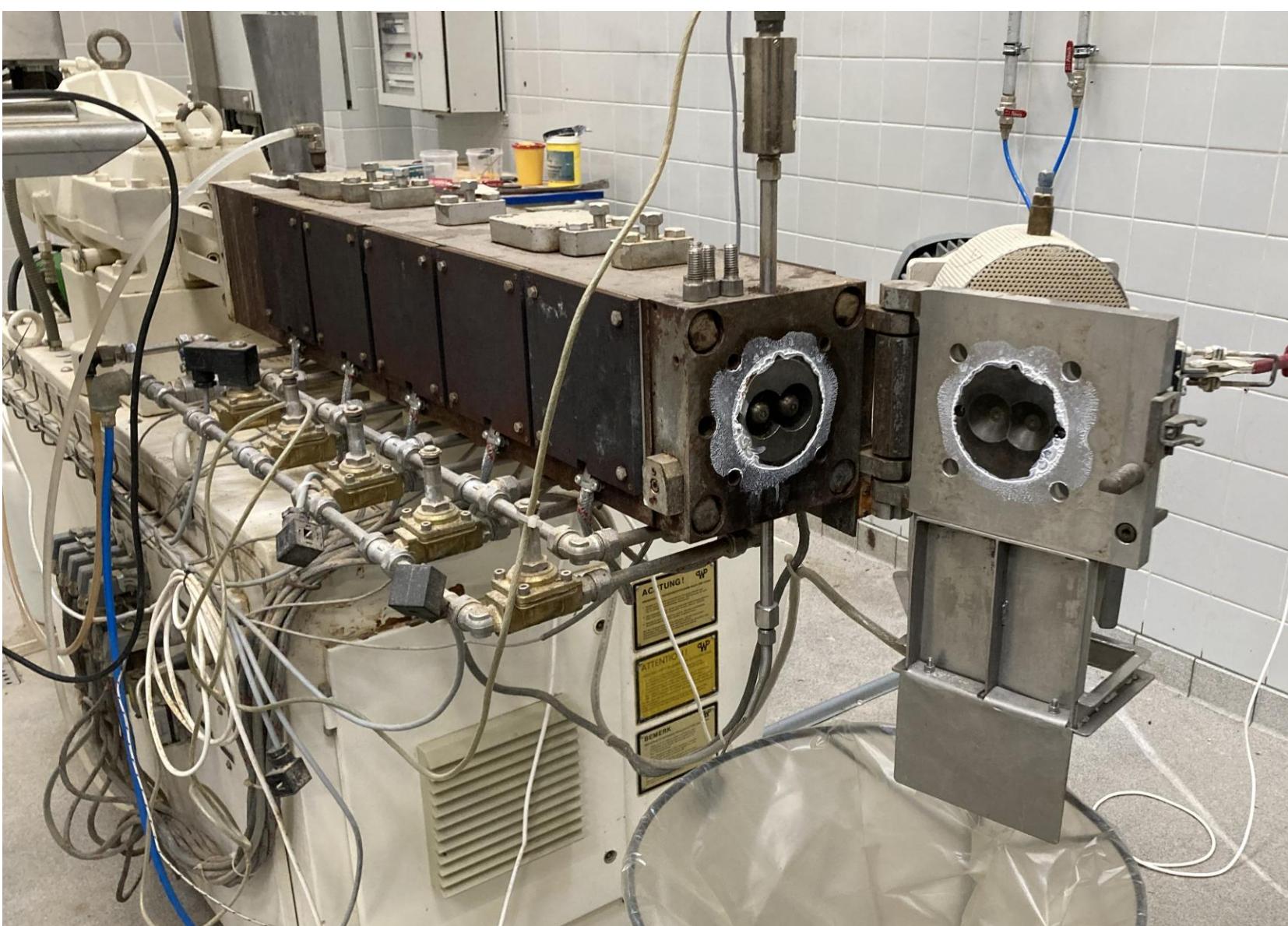
Aim

- To evaluate the freshwater algae *Scenedesmus sp.* as a protein source in organic broiler diets
- Test of different media for optimal cultivation of *Scenedesmus sp.*
- Test of different inclusion levels of a mixture of *Scenedesmus sp.* and peas in diets for broilers and effect on productivity, amino acid digestibility and welfare



Experimental setup

- Outdoor cultivation and harvesting of *Scenedesmus sp.* in tubular photobioreactors
- Dried algae was mixed with pea protein meal (20%/80%) and extruded before being mixed with other ingredients to produce 4 diets: 0, 6, 12 and 18% algae/pea mix, replacing soya. The protein content of the mixture was 55% DM. Extrusion was used as a method to disrupt the rigid cell walls of algae, thereby improving digestibility.
- 288 Ranger Gold broilers (mixed sex) were fed the experimental diets from 21-53 days. A standard starter diet was fed the first 21 days
- Productivity data, quality of plumage and foot pads were obtained every week, digestibility data two times



Results	A (0%)	B (6%)	C (12%)	D (18%)
Weight gain (g)	2443	2424	2372	2344
Feed intake (g)	4022 _{ab}	4115 _a	3979 _{ab}	3877 _b
FCR (g/g)	1.649 _a	1.698 _b	1.678 _{ab}	1.655 _{ab}
Digestibility (%):				
Methionine	86.7	84.3	84.8	87.5
Lysine	83.5 _{ab}	80.9 _b	83.3 _{ab}	86.9 _a
Threonine	80.6 _{ab}	77.7 _b	79.3 _{ab}	83.3 _a

Mortality 1%. No effect of algae on quality of plumage and foot pads

Conclusions:

Using an algae-pea mixture as an alternative protein source in organic broiler diets can potentially reduce the environmental impact of organic broiler production without compromising productivity and welfare, although higher inclusion levels may slightly reduce growth rates.