Methane to Markets

The Kindersley Centre, Berkshire

November 29th & 30th 2006

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Department for Environment
Food and Rural Affairs

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Anaerobic Opportunities at farm level

Recycling Waste to Enhance Nutrition of Soils within a whole farm system

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General Manager ~ Sheepdrove Organic Farm

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The Challenge

- Fully sustainable, carbon neutral
- Whole 'farm' approach – through the chain
  primary production, slaughter, processing, distribution, retailing
- All production [& systems] to IFOAM Organic principles
  - Principle of health
  - Ecological principle
  - Principle of fairness
  - Principle of care

Chickens Rule At Sheepdrove
(although there is still time to order your Christmas turkey!)

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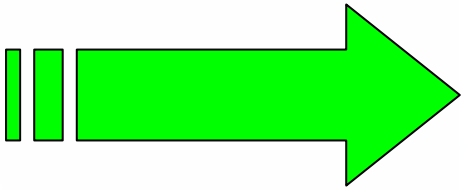
Where are the opportunities?

If chickens are the most important enterprise, how do we address the challenges in that enterprise?

Day 1



Day 77

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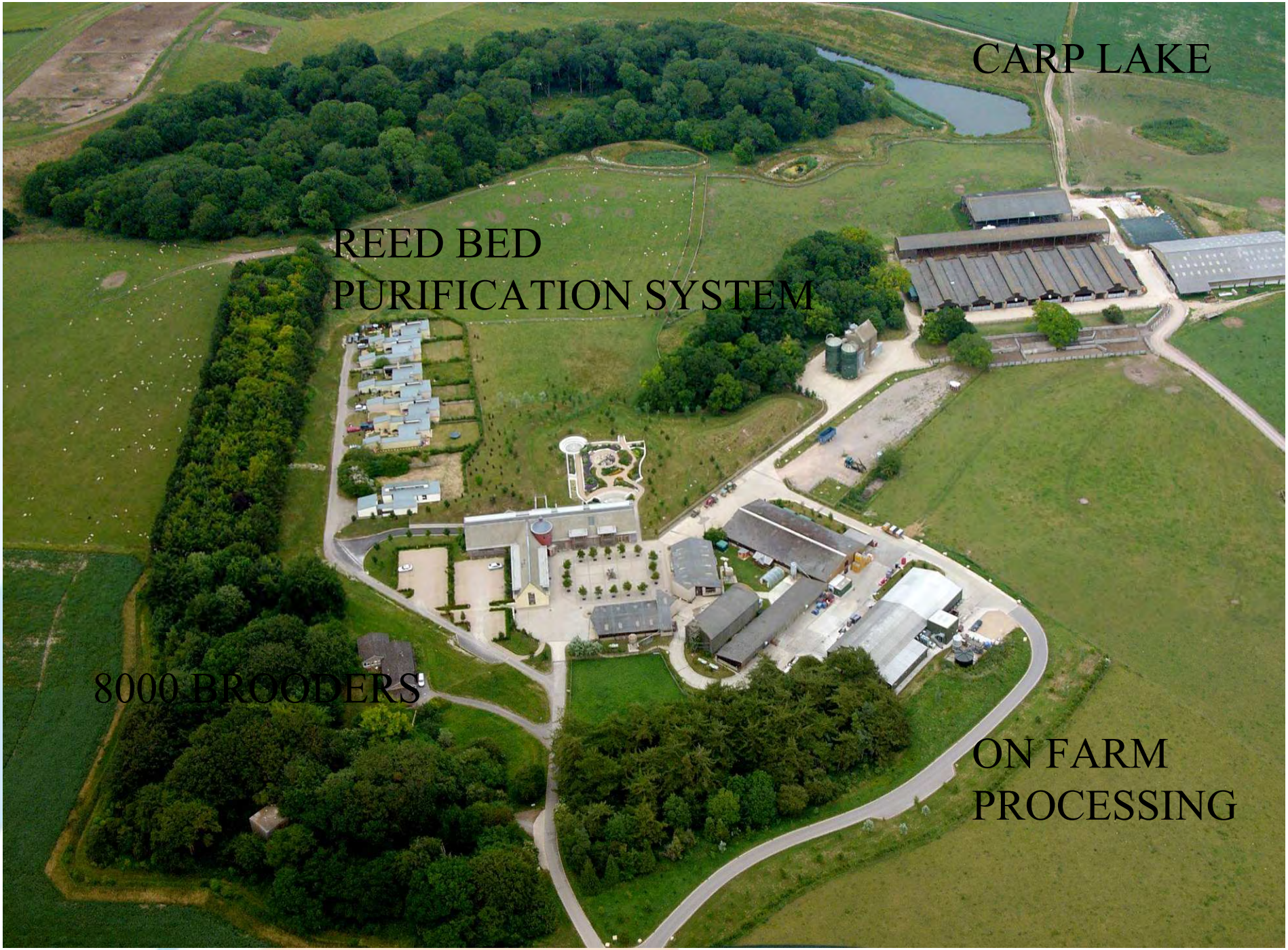
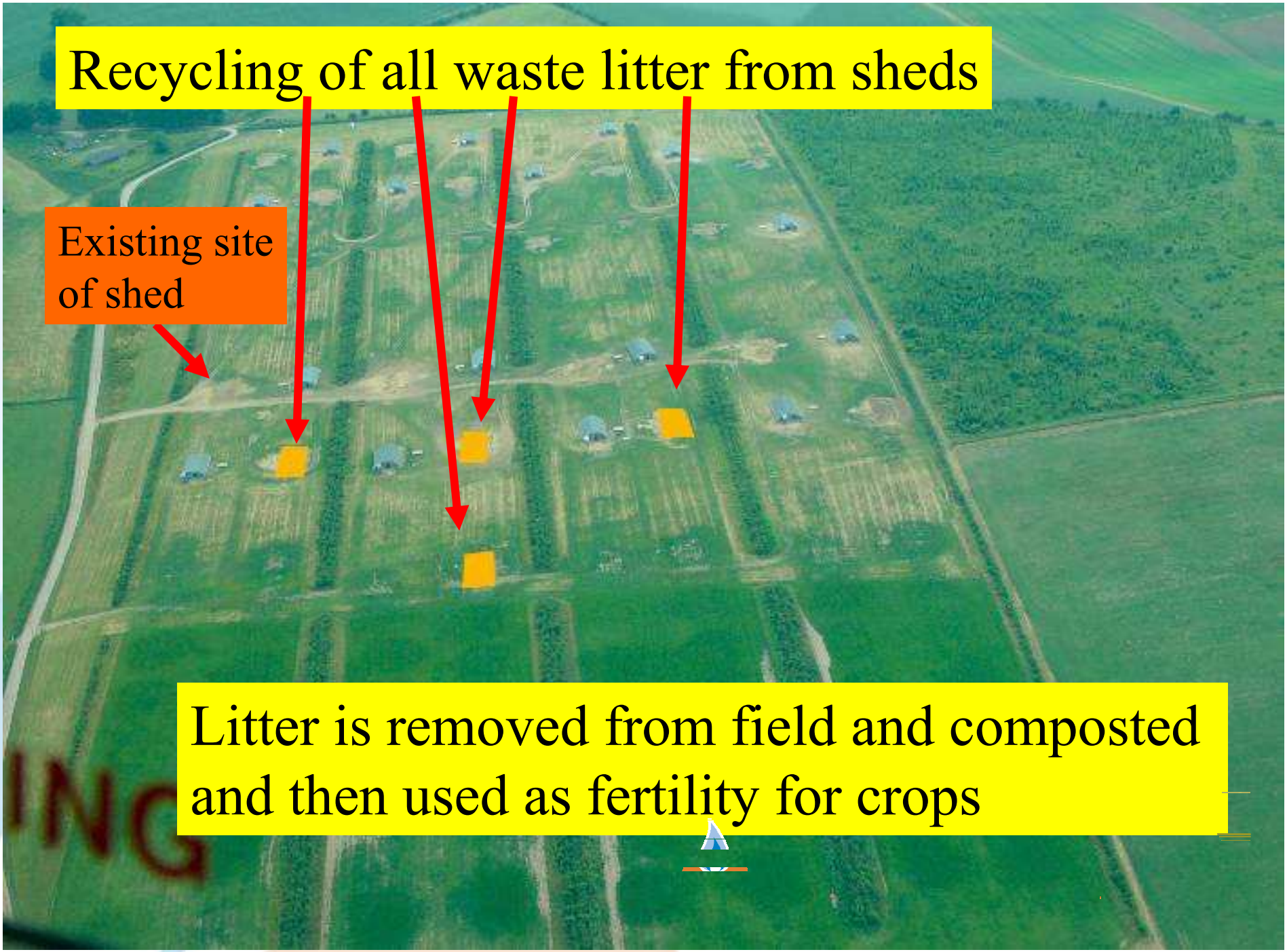
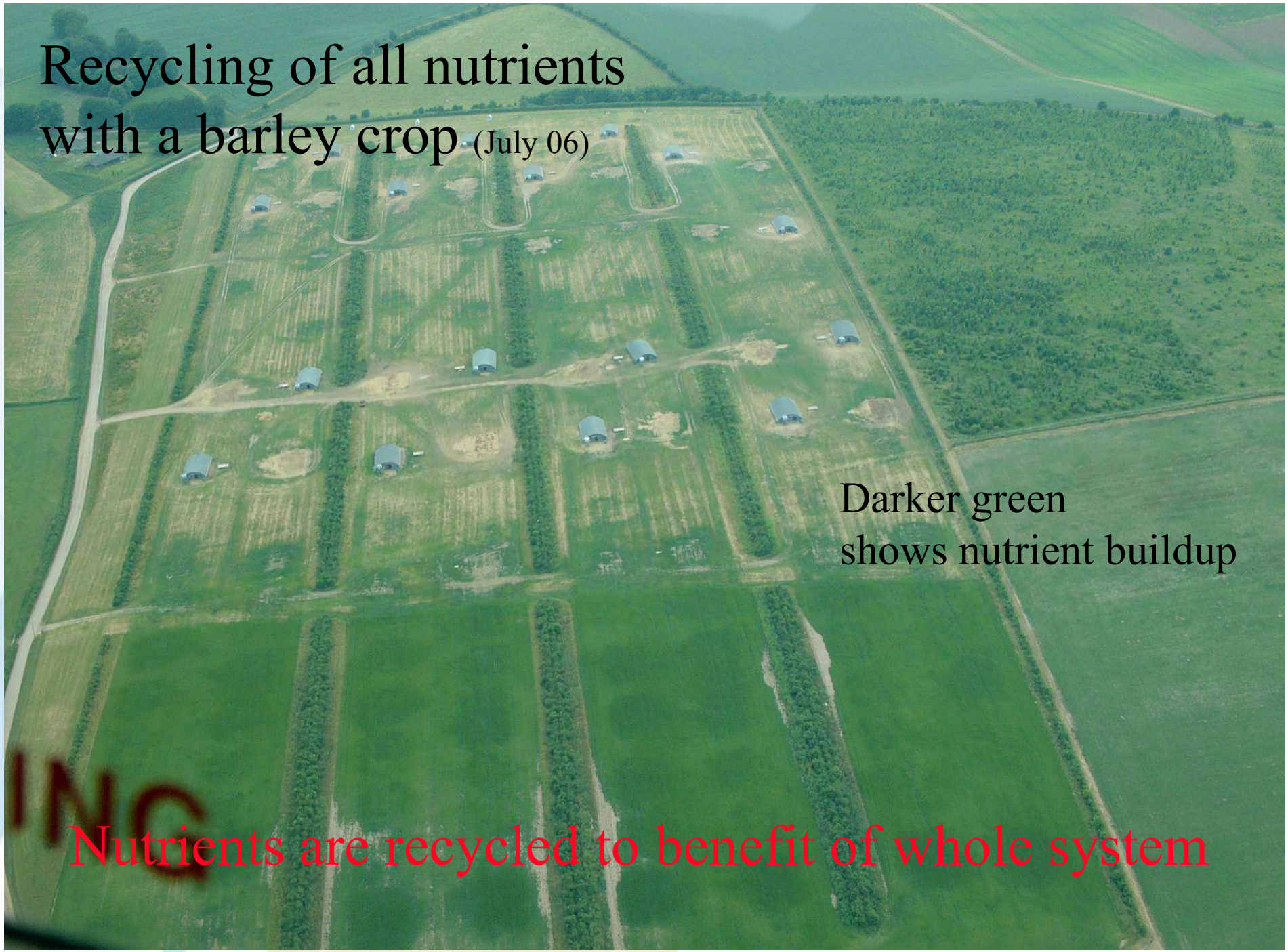
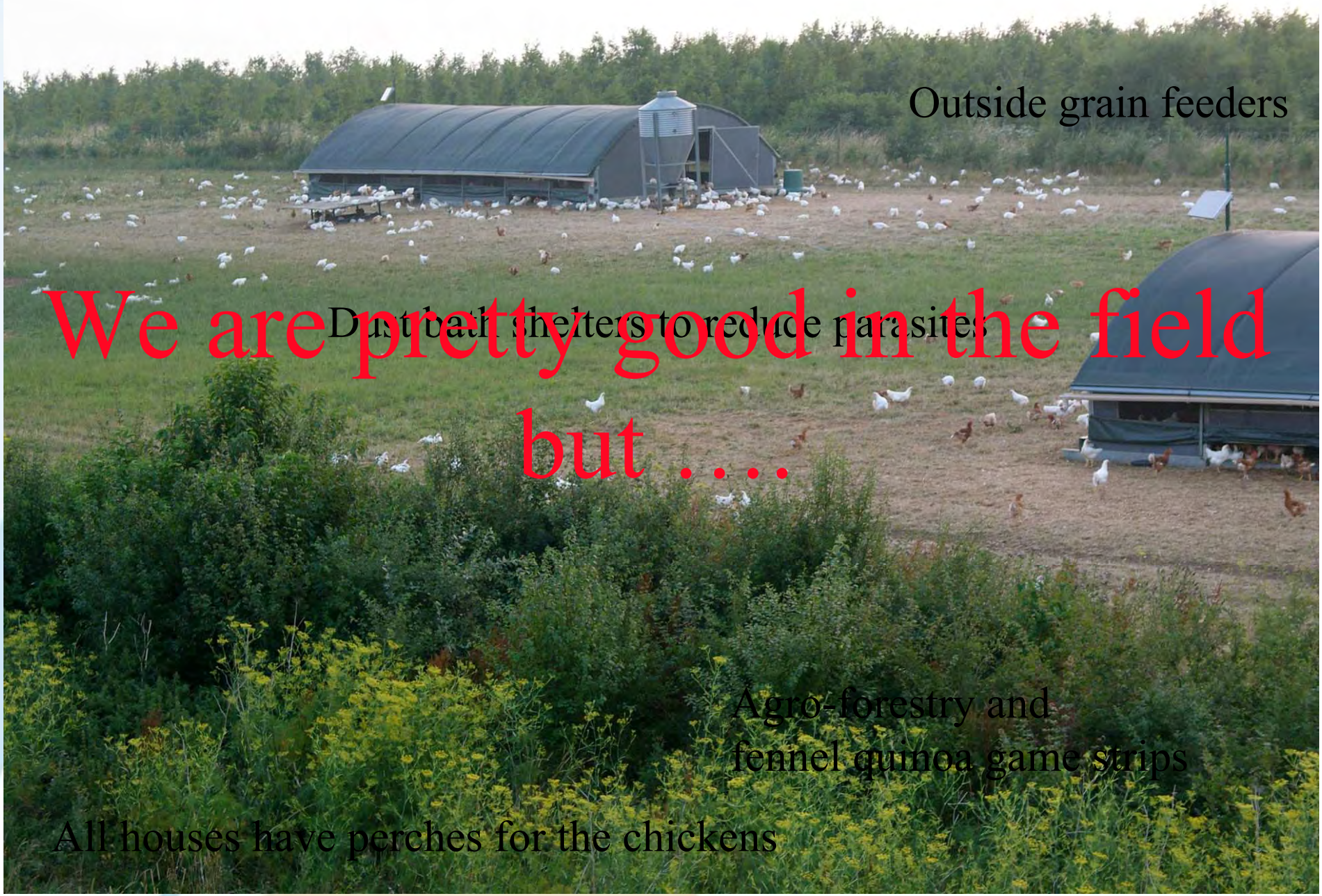

CARP LAKE
REED BED
PURIFICATION SYSTEM
8000 BROODERS
ON FARM
PROCESSING


Recycling of all waste litter from sheds
Existing site of shed
Litter is removed from field and composted and then used as fertility for crops


Recycling of all nutrients
with a barley crop (July 06)
Darker green
shows nutrient buildup
Nutrients are recycled to benefit of whole system

Summer showing mature chickens ranging (July 06)



How can we improve once we get to Chicken Processing

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The Essential Sums

We believe the power generated will just about cover the power needed for Ohmic Heating.

The real opportunity for anaerobic digestion …

	£
Transport	
X 2 Skips (10t capacity) per week @ £250 per skip	500
Disposal cost ~ Landfill or incineration	
£65 per tonne x 20t	1,300
50 weeks per year operation	90,000

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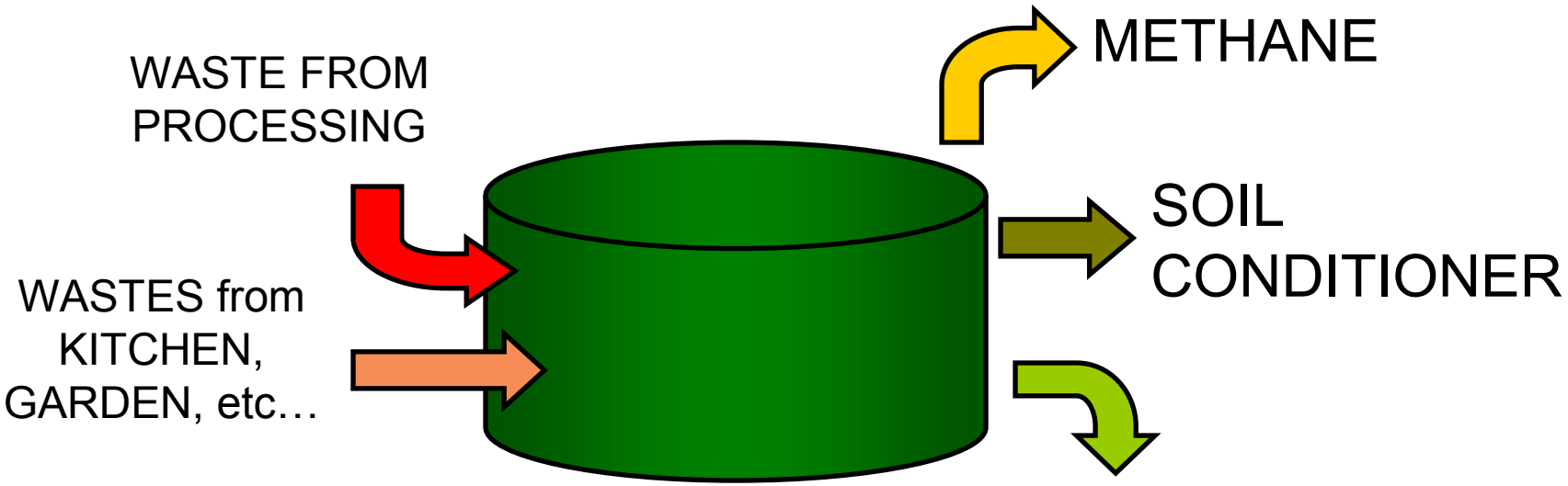
Not just Bio-gas

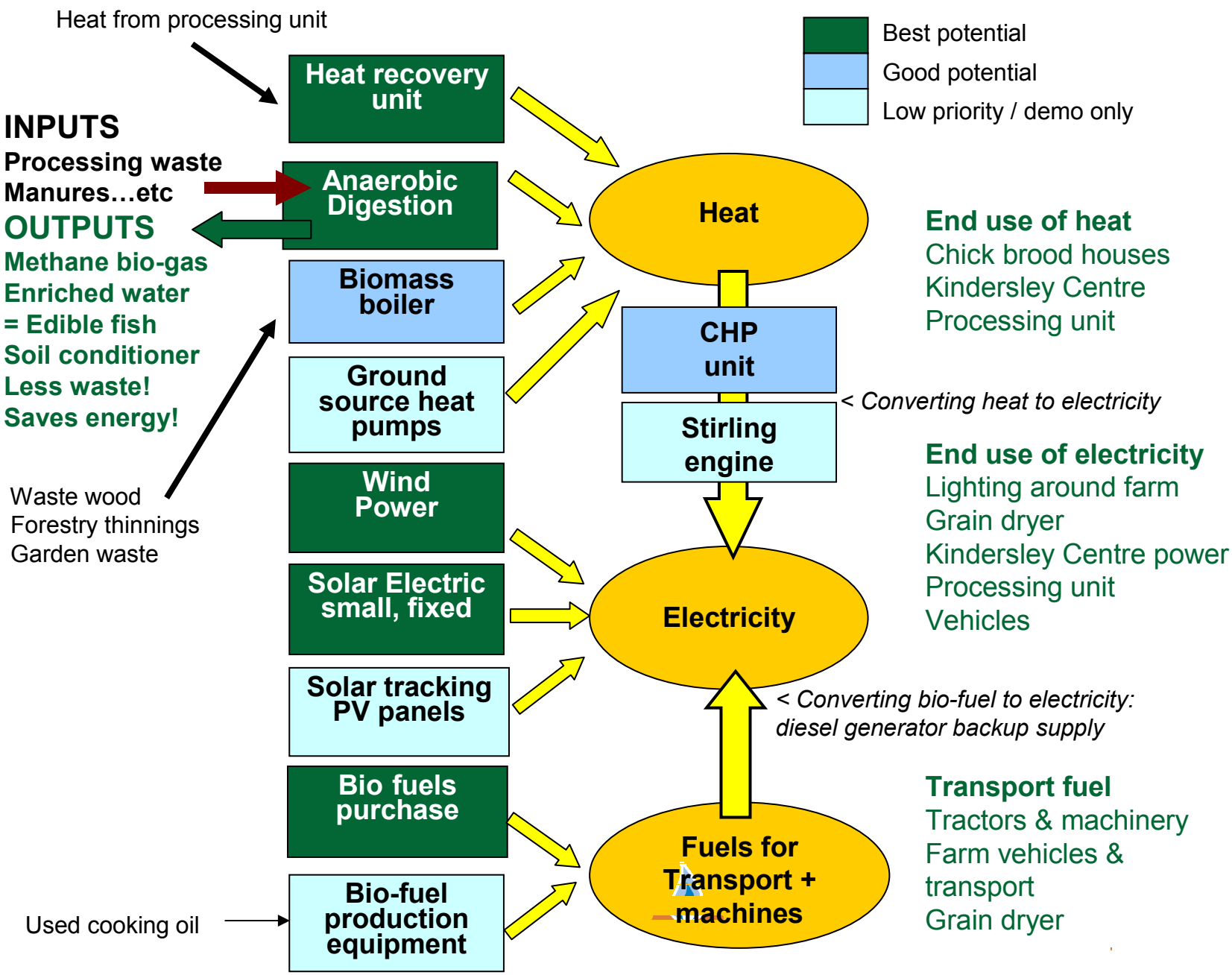


Savings on:

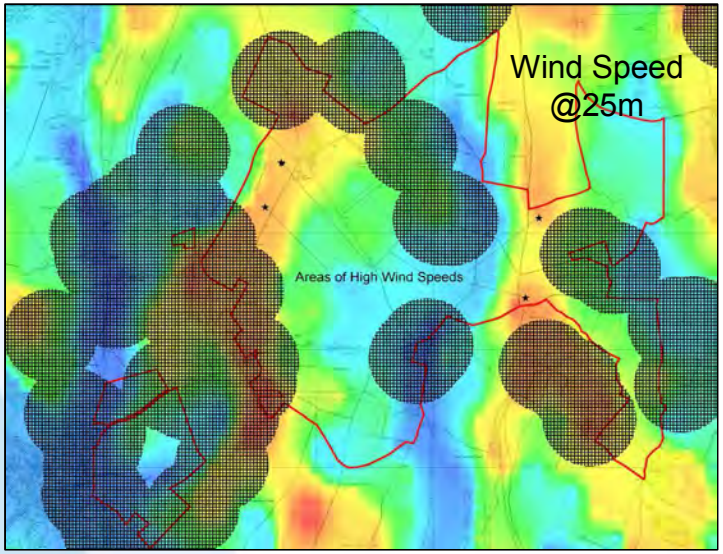
- **Energy for transport** (and costs)
- **Energy for incineration** (and costs)
- **Landfill of ash** (and costs)

FISH..!

FOOD for PEOPLE, POULTRY or PIGS


Heat from processing unit
Best potential
Good potential
Low priority / demo only
INPUTS
Processing waste
Manures…etc
OUTPUTS
Methane bio-gas
Enriched water
= Edible fish
Soil conditioner
Less waste!
Saves energy!
Waste wood
Forestry thinnings
Garden waste
Used cooking oil
Heat recovery unit
Anaerobic Digestion
Biomass boiler
Ground source heat pumps
Wind Power
Solar Electric small, fixed
Solar tracking PV panels
Bio fuels purchase
Bio-fuel production equipment
Heat
CHP unit
Stirling engine
Electricity
Fuels for Transport + machines
End use of heat
Chick brood houses
Kindersley Centre
Processing unit
< Converting heat to electricity
End use of electricity
Lighting around farm
Grain dryer
Kindersley Centre power
Processing unit
Vehicles
< Converting bio-fuel to electricity: diesel generator backup supply
Transport fuel
Tractors & machinery
Farm vehicles & transport
Grain dryer

Wind resource map



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Summary

- The real opportunity lies not in power generation but waste disposal costs, in our system

- For Sheepdrove, anaerobic digestion will fit as part of the wider program including
  - reducing inputs
  - using resources more efficiently and effectively
  - generating power close to point of use

Don't forget your Christmas Turkey!

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