

July Interim Report: Annex A

Theme	NZC Issues/Activities	Potential Risk(s)/Benefits	Existing information activity
<p>Regenerative Farming</p> <p>This is conservation and rehabilitation approach to food and farming systems. It is not a specific practice itself but uses a variety of sustainable agriculture techniques in combination.</p> <p>Overall risks: Zoonoses (ZN), Foodborne disease (FBD)*, chemical contamination (CC), antimicrobial residue (AMR)</p>	<ol style="list-style-type: none"> 1. Mixed arable/livestock 2. Rewilding 3. Restoration of wetlands / peat lands to store carbon 4. Actions for soil health (poultry litter/manure, crop rot) 5. Reduced inputs (fertiliser and pesticides) and changing usage. 6. Reduced plastics – link to Food Contact materials work? 7. Anaerobic digestion 	<ol style="list-style-type: none"> 1. Foodborne disease (e.g. E.coli) in arable.(FBD) 2. Tuberculosis in cattle (increase/decrease?)(ZN), Bird Flu (ZN) & livestock eating wild plants.(CC) 3. Changes to water runoff.(CC, ZN, FBD) 4. Use of poultry litter/manure. (FBD, AMR), Biochar(CC), poor crop rotation management leading to mycotoxins (CC), livestock & crop rotations (FBD, CC), more legumes risk of spoilage in storage (CC). 5. Reduced runoff of nutrients and pesticides. 6. More prone to spoilage (FBD, CC) 7. Pathogens risk if it survives process? AMR in feedstock (FBD, AMR) 	<ul style="list-style-type: none"> • FSA has guidance on handling manure/slurry to AMR. • 2009 FSA guidance on farm and food safety on RTE

New Technology Farming

This includes indoor agriculture (IA) and vertical farming -- is a technology-based approach toward food production taking place within an enclosed growing structure such as a greenhouse or plant factory to control growth conditions.

Overall risks:

Zoonoses,
Foodborne
Diseases,
Chemical
Contamination

1. Reuse of water?
2. How will systems age?
3. Less human contact with crop
4. Changes to nutritional profile of crops / plants grown in new systems?
5. Do new entrants / micro businesses require advice / support to avoid food safety issues?

1. On crops? (FBD & CC)
2. Where will there be risks of e.g. biofilms forming. (FBD)
3. Improved hygiene? Can automated systems spot disease potential as quickly? (FBD)
4. How will this change availability of nutrients for consumers?
5. New kind of agriculture which combines traditional farming and industrial design, how do the balance of risks differ from either in alone? (FBD, CC, AMR)

- Current Project consum attitude urban f
- Transfo UK Foo System funding this are (Future Foods): Transfo UK Foo System [latest n funded](#) [Call 2.](#)

Circular Agriculture

This looks to minimise inputs to food production, close nutrient loops and reduce negative discharges to the environment and valorise agri-food waste.

1. Recycling food waste: animal feed
2. Recycling food waste: composting

1. Who regulates? Can existing systems cope with an amplification of existing risks (botulism, swine fever, foot and mouth)?(FBD)
2. Who regulates? What are the new risks? Can existing systems cope with an amplification of existing risks? (FBD), Are recycled additions to compost (such as chitin as a soil conditioner) regulated under existing rule? (CC)

- Existing [quality on com](#) ([WRAP](#))
- Highly regulated feed hu food wa animals

Overall Risks:

Zoonoses,
Foodborne
Diseases,
Chemical
Contamination

Changing Livestock feed

For animals feed innovations are primarily aimed at reducing the carbon footprint of soy as a feed, but also there are initiatives aimed at using food waste and introducing supplements to reduce methane.

1. Replacement proteins (Soy replacement, food waste recycling, insect protein, etc?)
2. Supplements in animal feed, e.g. to reduce methane

Overall Risks:

Chemical contamination

1. Who regulates? Is the existing approvals process working?, Safety issues from the past: BSE, Swine fever, Foot & Mouth, Changed nutritional profile of meat from animals with new feeds / supplements?
2. -

- Success the Adv Commi Animal (ACAF) be in p soon.
- FSA will commis review The Fut Animal (comm by SIT) covering of alter protein animal Implica food sa sustain Policy a regulat implica
- Led by Queens Univers Belfast Sept).
- FSA als underw review prosper novel fo assess be reac new pr over th horizon

Aquaculture

Including active farming of fish and shellfish (salmon farms etc), fishing and harvesting of unfed sea/plants/animals that filter feed.

Overall Risks:
Zoonoses,
Foodborne Diseases,
Radiation(RD),
Chemical Contamination,
Food Intolerance (FI)

1. Fish farming moving away from fishmeal and oil as protein and fat source (respectively) for feed (more source of omega-3).
2. Animal products/by products as a feed ingredient?
3. Cultivating Seaweed/molluscs/etc

1. Industry moved to plant protein concentrates, by-products of other processes. Fish meal is a potential source of salmonella, but this is managed through the feed production process and selection of suppliers.[FBD] Moving from fish meal and oil to other sources for feed reduces risk of heavy metal and POP contamination (CC).
2. Outside UK increasingly animal by-products used in feed. (ZN). Antibiotics may be used on land animals who go into feed, but risk reduced if a suitable withdrawal period is allowed before slaughter.(AMR)
3. Unfed aquaculture use static locations and feed on nutrients in water. Particularly prone to accumulate pollutants, if they are also in the water.[CC, RD] So location is very important.

- Chris M (Marine Habitat Adviser Defra h approach CSAs to overview marine work a HMG in better coordin activities forward
- [English Aquaculture strategy](#) Seafish last year at broad opportu And Sc aquacu strateg

- New products, new methods of production, and existing protein products may be assessed first by ACNFP, going on to market.
- FSA Strategic Insight Commission review of Opportunities and Challenges Presented by Alternative Protein Products for Human Consumption. It will identify key alternative protein market readiness and potential risks. E-mailed March 2021.
- FSA completed a [consumer survey on alternative protein products in 2021](#).
- The Agriculture and Climate Change and Consumer Behavior (ACCB) (CCCB) is a working group considering protein

Labelling implications

Overall Risks:

Allergies

1. Novel Proteins in pre-packed foods.
2. Using product labelling to sell to the consumer as sustainable or green

1. If novel proteins cause allergies this should be labelled on the packaging. (AL)
2. If consumers use Green labelling to choose food products it should be accurate to not mislead

- Existing [Aliment](#) [labelling](#) [standa](#) allergies
- [Interna](#) [literatu](#) [review](#) [allerge](#) [labellin](#) (FSA/FS
- FSA is v with De eco-lab give consist standa define sustain food. V field (s above) what co expect they th sustain food.
- Behavior impact Labelling evidence (compl
- In Food 2 FSA a respons whether check f informa the environ impact when s and if t

Changes to packaging

Reduced or changes to packaging and food contact materials are aimed at achieving net zero and also at achieving many sustainability objectives.

Overall risks:

1. Reduced traditional food packaging materials (e.g. plastic).
2. Changes to packaging materials and food contact materials (for example in pipes).

1. Reduced packaging may not fully protect food from cross contamination (microbiological, chemical and of allergens)(FBD, CC, AL).
2. Alternative food packaging materials may not be as inert or strong so may split and lead to spoilage (FBD, CC), also food contact materials made from allergenic natural sources could trigger food

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Gene Editing / Modification

Overall Risks:

Unknown

1. Of plants or animals
for feed and food

1. Same as with any
modified food or feed: is
it safe to eat, is it
susceptible to particular
diseases etc. Also animal
welfare questions.

- ACNFP
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Food Shortages

Overall Risks:
Nutrition, Allergy

1. Poor harvests or disruption due to climate change
2. New net zero methods turn out not to produce enough food

Both 1&2 could lead to: Increased food prices which may lead to Food Fraud (AL), Food Poverty(N). It may also be tempting in extreme cases to relax safety standards or quality standards.

- FSA tra on food shortages food in its co tracker Food a survey looked part of Covid p of work includin [in a Pa](#)
- FSA are underta further analysi insecur
- The Im Labour Shortage Consum Safety (comm by SIT) aims to the dow impact UK con specific conside food sa and foo availab Ends in '22.
- In the [V Consum Interes](#) project measur consum

* Includes: Campylobacter, Listeria, Salmonella spp, C. botulinum, scrapie and E. coli