# July Interim Report: Annex A

#### Theme

NZC Issues/Activities

## Potential Risk(s)/Benefits

Existing information activity

### Regenerative Farming

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.

Overall risks: Zoonoses (ZN), Foodborne disease (FBD)\*, chemical contamination (CC), antimicrobial residue (AMR)

- 1. Mixed arable/livestock
- 2. Rewilding
- Restoration of wetlands / peat lands to store carbon
- Actions for soil health (poultry litter/manure, crop rot)
- 5. Reduced inputs (fertiliser and pesticides) and changing usage.
- Reduced plastics link to Food Contact materials work?
- 7. Anaerobic digestion

- Foodborne disease (e.g. E.coli) in arable.(FBD)
- Tuberculosis in cattle (increase/decrease?)(ZN), Bird Flu (ZN) & livestock eating wild plants.(CC)
- 3. Changes to water runoff.(CC, ZN, FBD)
- 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)
- Pathogens risk if it survives process? AMR in feedstock (FBD, AMR)

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## 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?
- Do new entrants / micro businesses require advice / support to avoid food safety issues?

- 1. On crops? (FBD & CC)
- Where will there be risks of e.g. biofilms forming. (FBD)
- Improved hygiene? Can automated systems spot disease potential as quickly? (FBD)
- 4. How will this change availability of nutrients for consumers?
- 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)

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## 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
- Who regulates? Can existing systems cope with an amplification of existing risks (botulism, swine fever, foot and mouth)?(FBD)
- 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 <u>quality</u> <u>on com</u> (WRAP)
- Highly regulat 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.

- Replacement proteins

   (Soy replacement, food waste recycling, insect protein, etc?)
- Supplements in animal feed, e.g. to reduce methane
- 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?
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Overall Risks:

Chemical contamination

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#### 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)

- 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?
- Cultivating Seaweed/molluscs/etc

- Industry moved to plant protein concentrates, byproducts 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).
- 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)
- 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.
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## Labelling implications

Overall Risks:

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- Novel Proteins in prepacked foods.
- Using product labelling to sell to the consumer as sustainable or green
- 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

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## 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**:

- Reduced traditional food packaging materials (e.g. plastic).
- Changes to packaging materials and food contact materials (for example in pipes).
- Reduced packaging may not fully protect food from cross contamination (microbiological, chemical and of allergens)(FBD, CC, AL).
- 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
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## Gene Editing / **Modification**

- 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.

**Overall Risks:** 

Unknown

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#### **Food Shortages**

Overall Risks: Nutrition, Allergy  Poor harvests or disruption due to climate change
 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. \* Includes: Campylobacter, Listeria, Salmonella spp, C. botulinum, scrapie and E. coli