

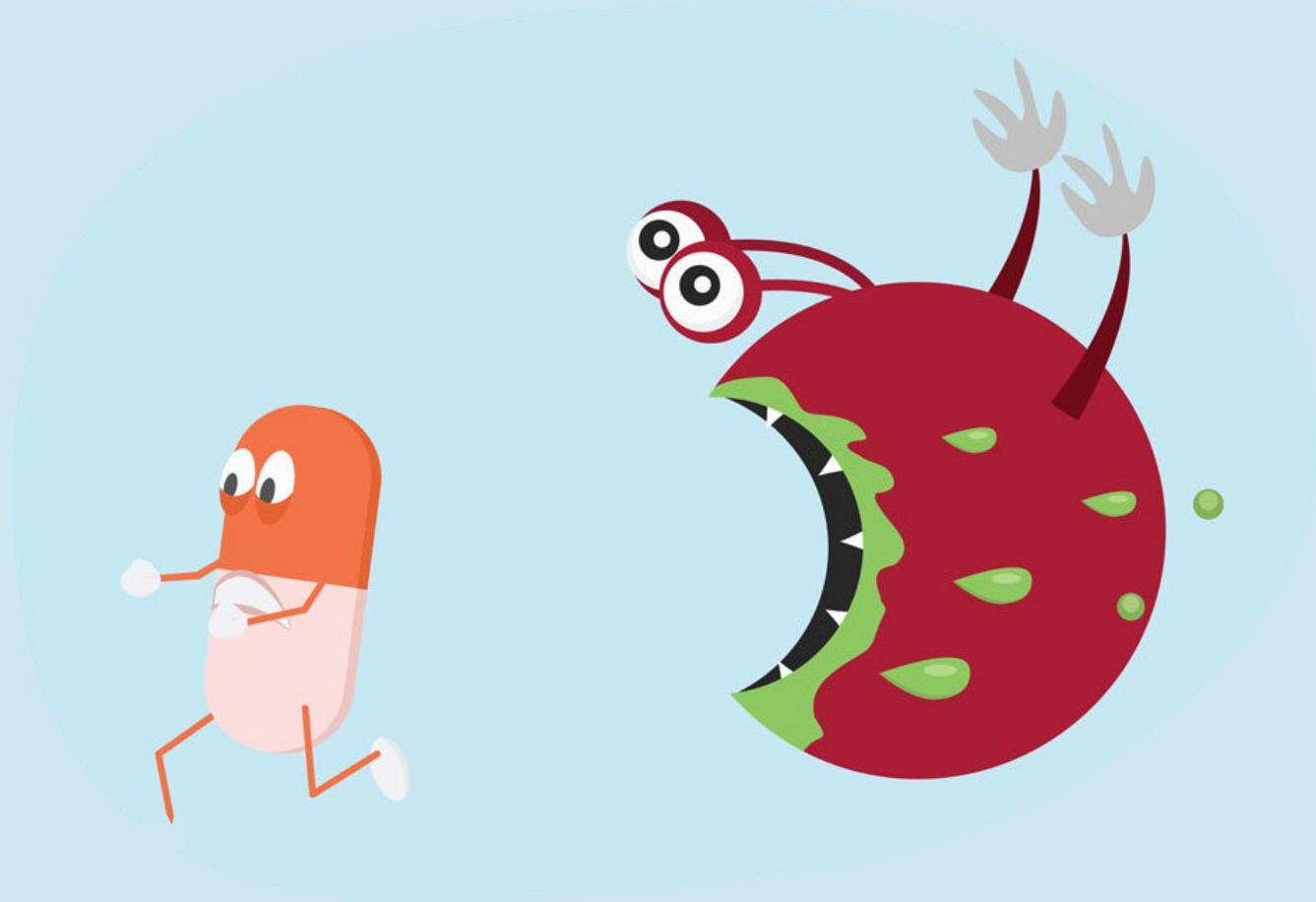
Gunilla Eklund

Ministry of Enterprise and Innovation, Sweden



GLOBAL SYMPOSIUM ON SOIL BIODIVERSITY | 19-22 April 2021

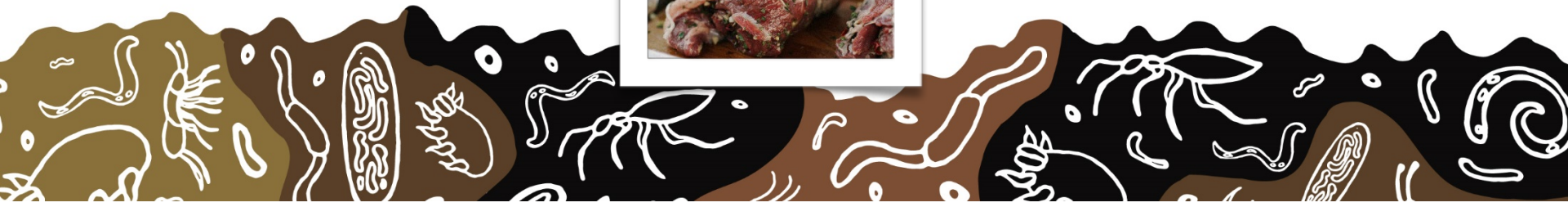
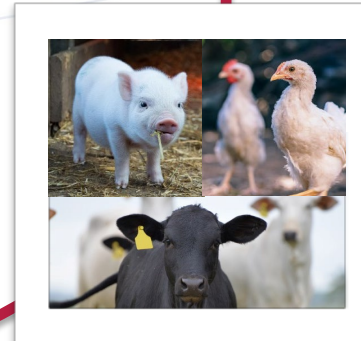
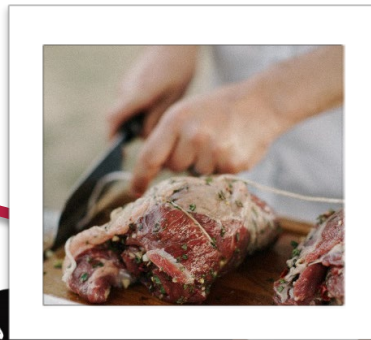
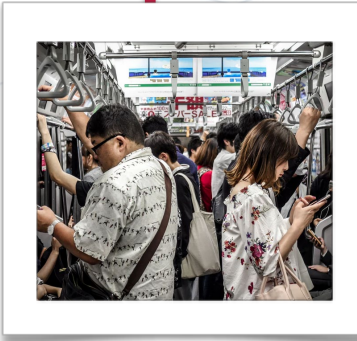
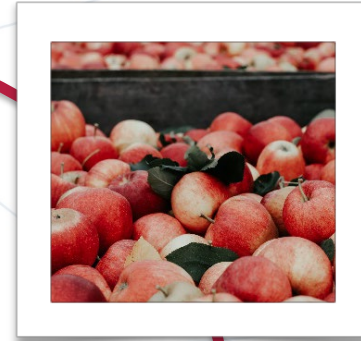
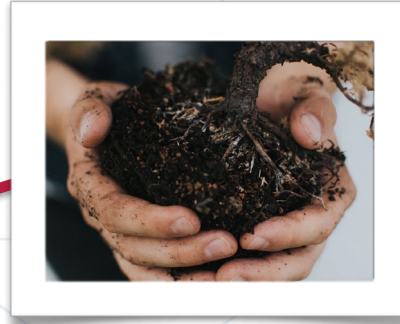
Soil Biodiversity and Antimicrobial Resistance (AMR)



Emergence of Antimicrobial Resistance



AMR is a global challenge that requires global response



What is known?

Soil - a reservoir

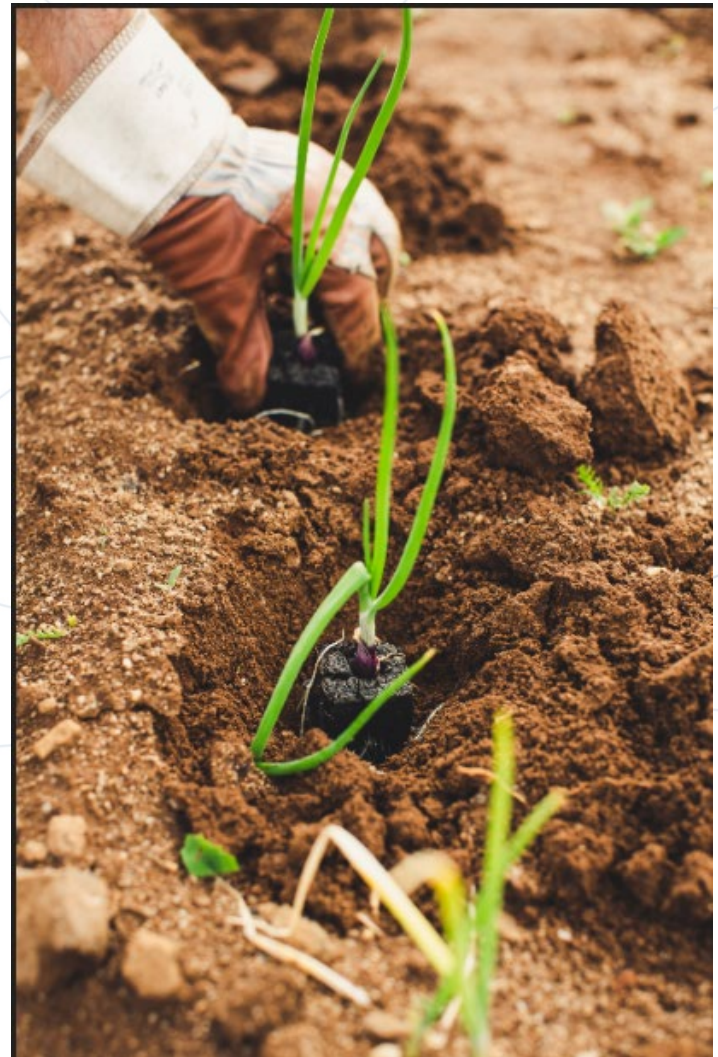
Contaminate plant food

Great biodiversity - less resistance genes

What is needed?

Monitoring data

Methods and techniques - fate





GLOBAL ACTION PLAN
ON ANTIMICROBIAL
RESISTANCE



There is no antibiotic approved as pesticide in the EU.

The [LUCAS](#) soil survey sampled pharmaceutical concentration and **antimicrobial genes** in soil - results expected in 2022.





Food and Agriculture
Organization of the
United Nations



INTERNATIONAL YEAR OF
PLANT HEALTH
2020

Antimicrobial Resistance (AMR) in relation to pesticide use in plant production

Key facts

AMR occurs when microbes become resistant to antimicrobials
Antimicrobials used as pesticides are antibiotics and fungicides applied against plant diseases
Plant Health is important to reduce the need for intervention of antimicrobials used as pesticides
AMR is a natural phenomenon that cannot be eliminated but it must be controlled
AMR is a huge threat to plant, human and animal health and to food security

Background

The Codex Alimentarius defines antimicrobial resistance (AMR) as *"the ability of a microorganism to multiply or persist in the presence of an increased level of an antimicrobial agent relative to the susceptible counterpart of the same species"* (FAO & WHO, 2015). An antimicrobial (AM) agent, in turn, is defined as *"any substance of natural, semi-synthetic, or synthetic origin that at in vivo concentrations kills or inhibits the growth of microorganisms by interacting with a specific target"*. In the context of plant production, some pesticides are used as antimicrobial substances, namely antibiotics (used against bacterial diseases) and fungicides (used against fungal diseases). There is growing concern that some of those select for antimicrobial resistance (AMR) among pathogens important to plant, human and animal health (Snelders, 2012). AMR is a natural

phenomenon that can be exacerbated by the overuse of antimicrobial substances, including antimicrobial used as pesticides or pesticides that are suspected to enhance antibiotic resistant effects (such as herbicides) (Kurenbach et al., 2018).

How is antimicrobial resistance related to plant production?

Antimicrobial resistance in the context of plant production has two implications; first the resistance of plant pathogens against antimicrobials used as pesticides. This is described in the FAO Guidelines on Prevention and Management of Pesticide Resistance (FAO, 2012) as the *"change in the sensitivity of a pest population that is reflected in the repeated failure of a product to achieve the expected level of control when used according to the label recommendation for that pest species"*.



Food and Agriculture
Organization of the
United Nations

LAND AND
WATER
DISCUSSION
PAPER

13

Antimicrobial movement from agricultural areas to the environment: The missing link. A role for nuclear techniques



Thank you for
your attention

