



ORGANIC
PLUS



NORSØK

Norwegian Centre for Organic Agriculture

What are we doing in the project
«Pathways to phase-out contentious inputs from
organic agriculture in Europe» (Organic-PLUS)?

Anne-Kristin Løes, leader of O+WP5

Partners from 12 European countries

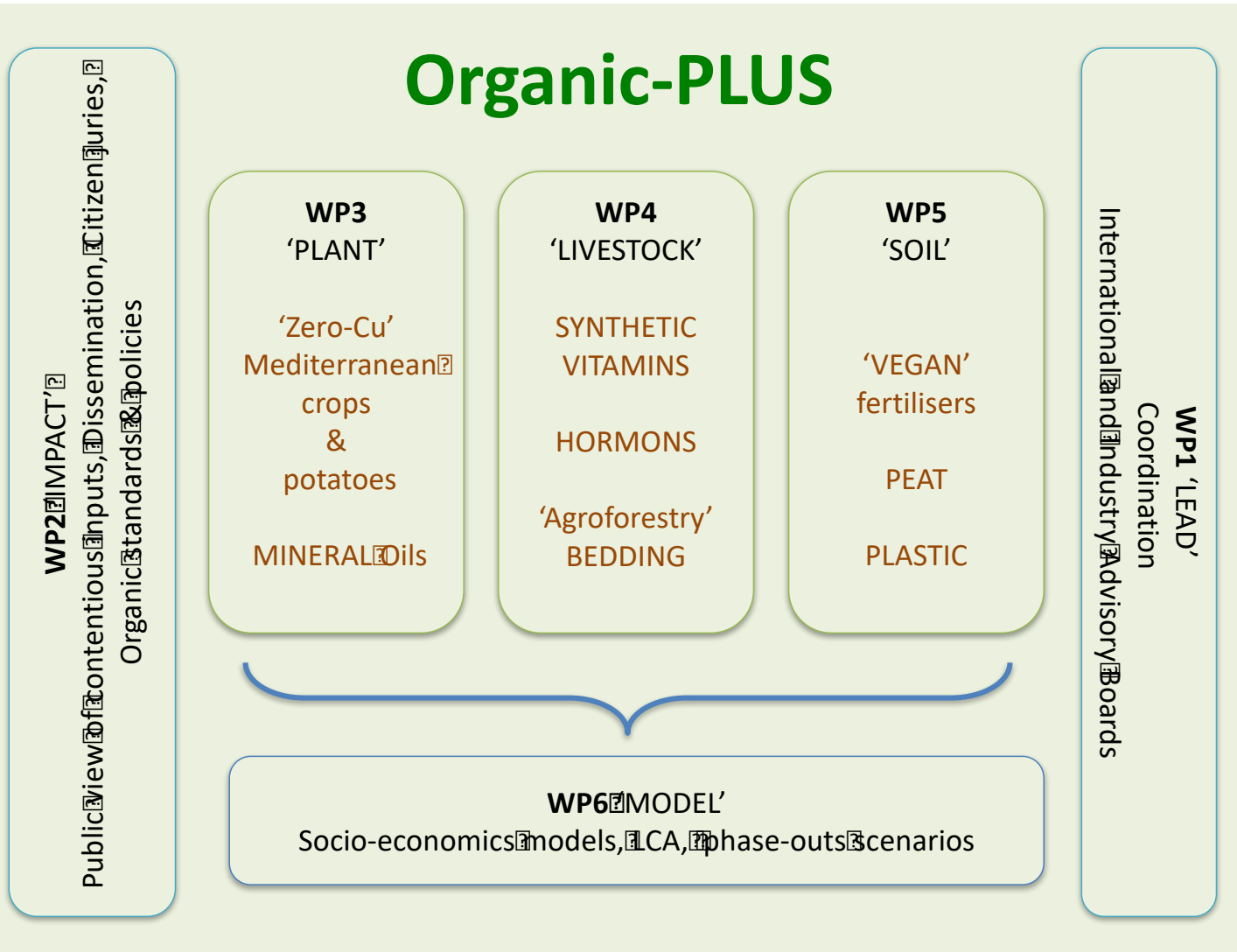


Budget 4.1 mill Euro

Duration 4 years, May 2018-April 2022

Coordinated by Ulrich Schmutz and Judith Conroy, Centre for Agroecology, Water and Resilience; Coventry University, UK

Organisation of the project



- Three «explorative» WPs: 3, 4, 5
 - The project works with consumers: WP2
 - The project works with sustainability assessments: WP6
- Present here:
- Gunnar Vittersø and Hanne Torjusen, large contributions to WP2
 - Nikos Katsoulas leading WP3
 - Anne-Kristin Løes leading WP5
 - Grete Lene Serikstad: Dissemination to Norwegian stakeholders

First step: What is the actual input of contentious inputs to organic growing across Europe?

- WP4, Livestock: Asking individual farmers by web-survey (responses not yet published). Searching the literature for sources of natural vitamins, and alternatives to anthelmintics and antibiotics; factsheets and a report has been published.
- WP3 and 5, Plant + Soil: Co-operated to map use of c. inputs in important crops, asking advisors or farm managers about all inputs used during the growing cycle of important crops. 4-9 crops per country, crops which are important organic crops in that country and where we expected to find use of c. inputs
- WP Plant focussed on **Cu, S, mineral oil**
- WP Soil focussed on **peat, plastic, animal-derived fertilisers**

60 responses for 14 crops across 10 countries

Crops/ Countries	Apple	Broccoli	Cabbage	Carrot	Cereals	Citrus	Cucumber	Eggplant	Lettuce	Olive	Potato	Pepper	Straw-berry	Tomato	SUM
Denmark	1	1			1						1		1	1	6
France				1				1	1	1	1			4	9
Germany			1		2						1			1	5
Greece	1	1				1				1	1			1	6
Italy						3				2	2			2	7
Norway	1			1							1		1	1	5
Poland							1				1		1	1	4
Spain						3				3				3	9
Turkey						1		1		1	1	1	1	1	7
SUM	3	2	1	2	3	8	1	2	1	8	9	1	4	15	60
UK	2	2	2	2					1				1		8

Project deliverables



<https://organic-plus.net/>

Use of copper

- High use of Cu to protect against fungi and bacterial disease (rot), especially in citrus, olive, grapes, potatoes and apples + in greenhouse for tomatoes
- No use of Cu in Denmark; very restricted use in the Netherlands
- Cu allowed in Norway in March 2017; not yet well known among Norwegian stakeholders
- Limit for use in EU: 6 kg/ha and year; for perennial crops the average over the last 5 years < 6. CHANGED?
- Limit for use in Norway : 4 kg/ ha and year
- Toxic to soil organisms and accumulates in soil
- New preparations with less CU? Resistant cultivars? Crop rotation etc.



Use of sulphur and mineral oil

- High use of S, against insects and fungi (mildew), also as a replacement for mineral oil
- Common dose = 10-100 kg ha/year
- Toxic for all insects and impacts beneficial insects
- Cheap product; not much focussed e.g. in the EU to phase this out
- As for Cu, S is an important plant nutrient and use of Cu (or S) as fertiliser may be a masked way to use for plant protection
- Permitted for use in Norway, also before 2017
- Growers call for limesulphur; not allowed in Norway since about 2010



- Mineral oil used against insects and mites, especially in citrus and olive
- May be replaced by organically produced oil (high price)
- Became allowed for use along with copper in Norway in 2017; commercial product Fibro
- Toxic

Use of peat and plastic

- Use of peat (in growing media) and plastic (for mulching) comparable to conventional growing
- Purchasing transplants (from abroad) is very common and peat is a part of most growing media
- Peat also used as a chising layer in growing of mushrooms, and for potted crops (herbs, which are often produced organic)
- Plastic is used for mulching, frost protection, as tunnels or greenhouses in southern Europe
- Also used for solarisation (sanitising the soil), as insect protection, for attaching plants to strings and sticks, and as irrigation tape



► Products Florovit



Florovit pro natura granulated compost

A convenient alternative for all those, who do not have their own cor to enrich and fertilize the soil under their crops. It is especially recom



Florovit pro natura granulated poultry manure

100% natural fertiliser of animal origin. Due to modern processing a this manure retains all humic substances, as well as nutrients and m time it is free of any pathogens and weed seeds.



Florovit pro natura granulated cattle manure

100% natural fertiliser of animal origin. Due to modern processing a this manure retains all humic substances, as well as nutrients and m time it is free of any pathogens and weed seeds.



Florovit pro natura granulated horse manure

100% naturalny nawóz organiczny do roślin ogrodowych. Dzięki now przetwarzania i oczyszczania obornik zachowuje wszystkie substancj mineralne, a jednocześnie pozbawiony jest patogenów oraz nasion c



Florovit pro natura granulated sheep manure

Granulated sheep manure is a 100% natural fertiliser of animal origi humans, animals and plants.



Florovit pro natura universal organic and mineral f

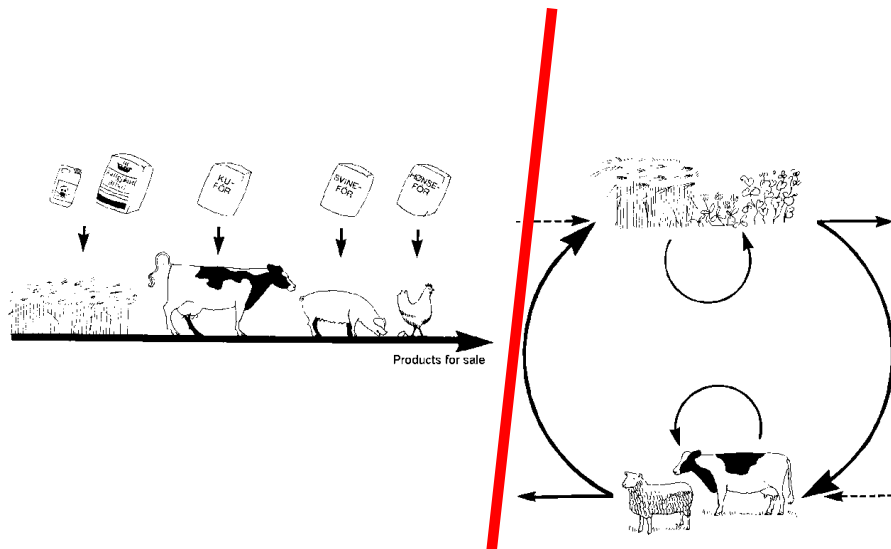
Due to natural humic substances included in the fertiliser, as well as poses on soil and plants, Florovit pro natura universal resembles a c

Use of animal-derived fertilisers

- MANY commercial fertilisers approved for organic growing; e.g. 118 in Norway by May 2019 (Debio)
- Large differences between countries; some use very few, some use many types
- Very many companies produce fertilisers for organic growing
- Information about raw materials often very difficult to find
- Plant-based products often derived from vinasse (production of sugar) or protamylasse (production of potato starch)
- Animal-based products often from hides, less often from horns, feathers, bones (MBM), blood
- Several countries mention fertilisers from seaweed
- Fish-based product only mentioned in UK
- Commercial products from conventional animal manure available in all countries; commonly from poultry with vinasse + MBM; different labels in different countries

Organic growing in 2019: Highly specialised

The statement that organic farmers aims for being self-sufficient in inputs and utilises locally available resources, becomes less and less true over time

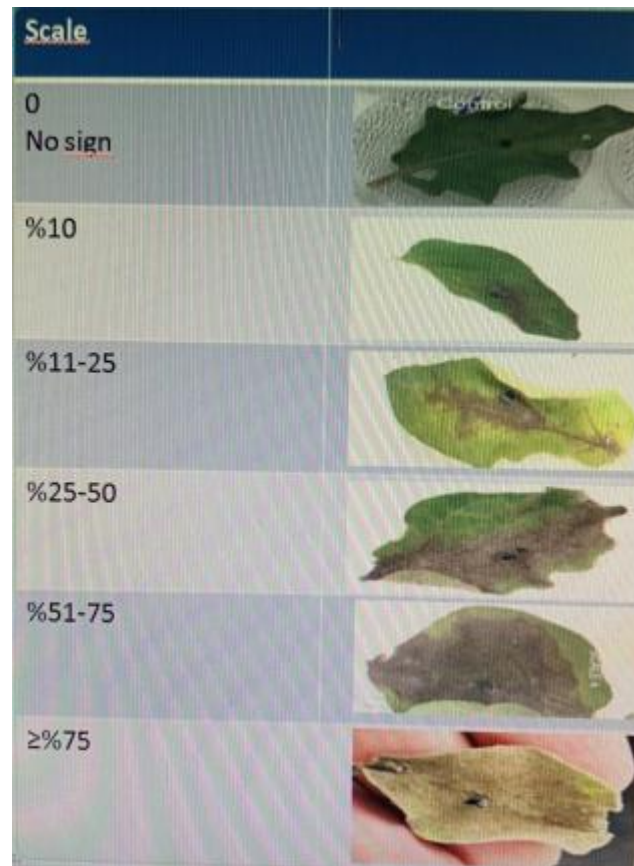


Research gives inputs with less negative effects, used in both organic and conventional growing, e.g. beneficial insects for sale



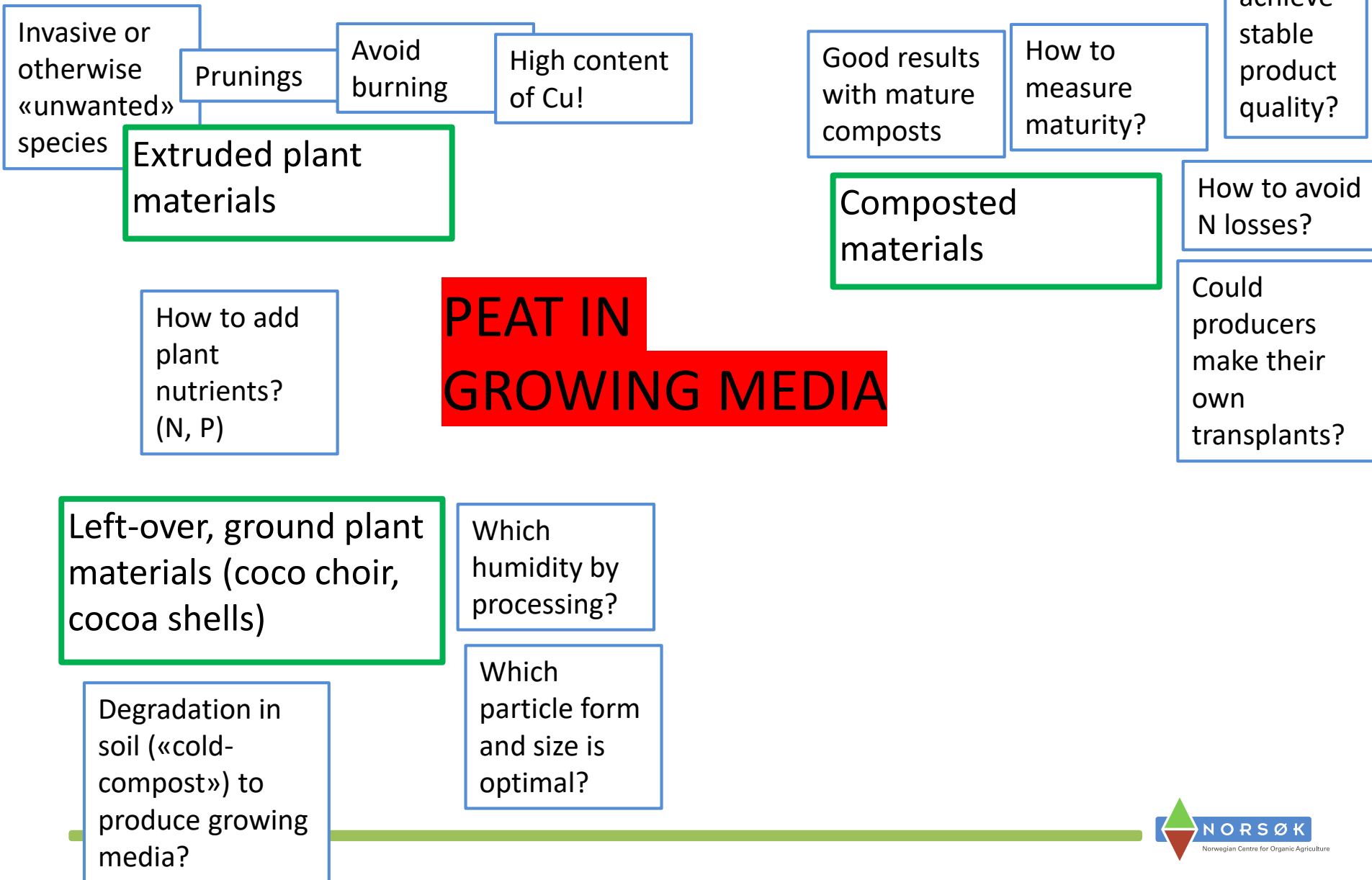
Poser med rovmdia og kort med snylteveps er hengt opp i agurkene. Foto: Annichen Smith Eriksen

Searching for alternatives (WP3), one example



Screening 65 land races of
eggplant (aubergine), Turkey
for resistance towards
Alternaria solani: 21 showed
high resistance
Alev Kir, MFAL

Searching for alternatives (WP5)



Extruded plant material from ATB, Potsdam, Germany



Figure 5 Vine prunings after extrusion and blow drying. Left side (coarser end product) was extruded at 50 % moisture content right side (finer end product) at 40 %. (Source: ATB)



Coconut coir

Searching for alternatives (WP5)

Industry partners *Noweko* from Bielsko-Biała, Poland

www.noweko.pl and

Marma Polskie Folie from Rzeszów

www.marma.com.pl

Innovation idea:

3 layer structure:

- Outer layers with higher mechanical durability and extended biodegradability
- Inner layer with faster biodegradation may be a carrier for fillers (CaCO₃, biochar) and additives (fertilisers)

Breaks too easily

Must stop light

Disintegrates too early

Completely degradable foil from renewable materials, thin but 3 layers



PLASTIC FOR MULCHING



Field trials in UK and Turkey 2019+2020



Searching for alternatives (WP5)



Harvested from the sea?
Seaweed, fish bones

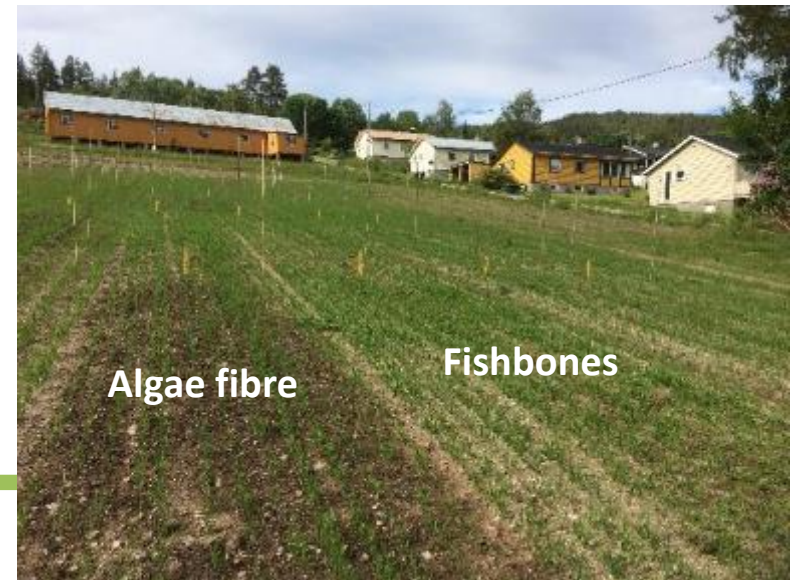
«Best» animal-derived
(cattle manure with straw
bedding, composted)

Field trials in
Germany,
Denmark and
Norway
2019+2020

ANIMAL-DERIVED FERTILISERS

Recycled from
society?
Various digestates,
tofu whey, animal by-
products

Vegan adapted:
clover-grass silage,
clover pellets



Algae fibre

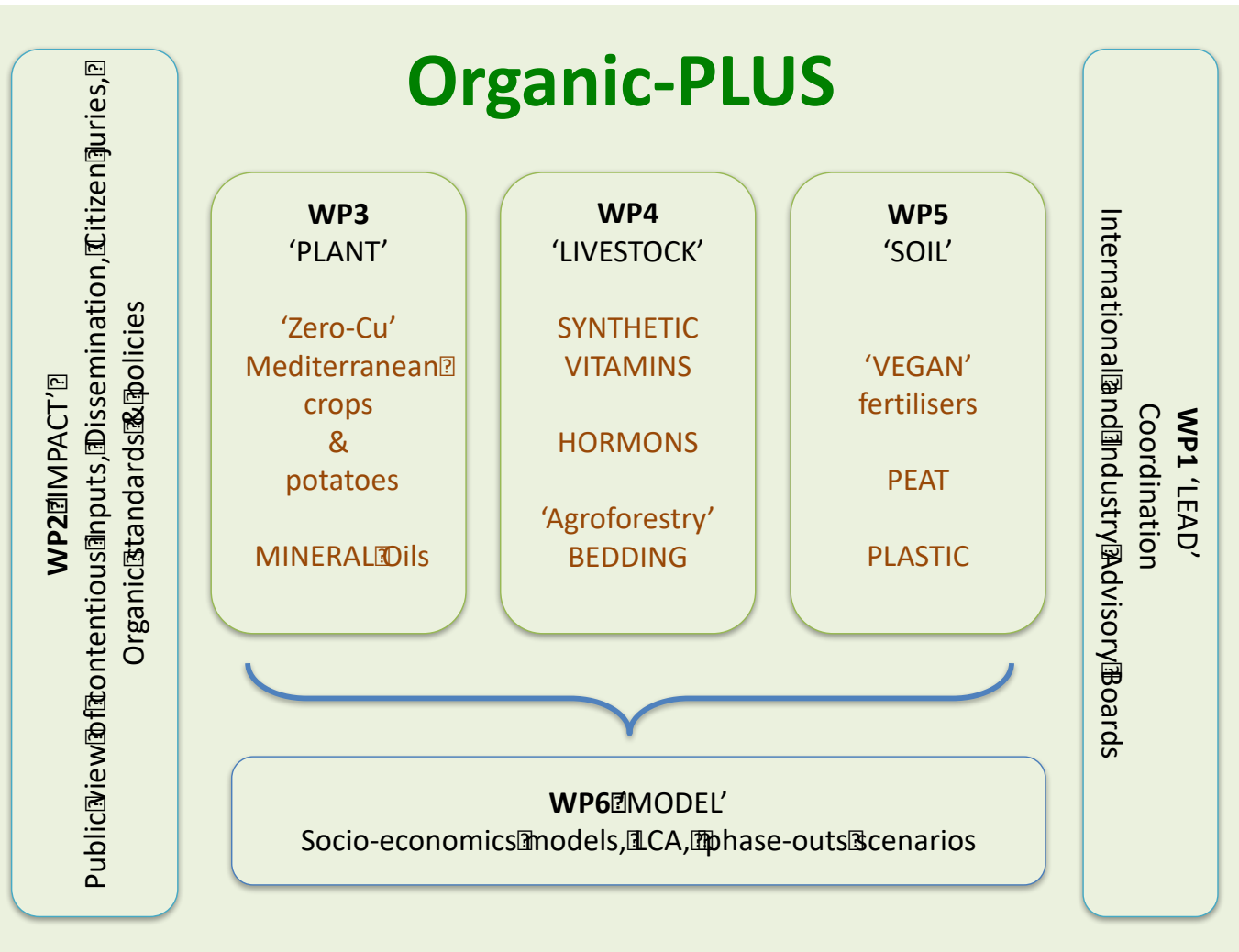
Fishbones

Yields of oats (aboveground canopy), field experiment 2019

Treatment	Yield, ton DM/ha	Additional yield, % of control
Control, no manure	2.7	100
Seaweed fibre	2.5	93
Poultry manure «Grønn Øko»	3.8	141
Fishbones (0.7) + seaweed fibre (0.3)	4.4	163
Fishbones	4.8	178



A lot is going on!!!



Further outputs of the project will be presented now:

- Nikos Katsoulas
- Frank Oudshoorn
- Gunnar Vittersø/Hanne Torjusen

And we will present the situation in Norway with respect to regulations and c. inputs:

- Monica Wear Stubberud
- Kjersti Berge

We want to extract from this meeting:

What do you (Norwegian stakeholders, important for further development of organic production in Norway) think about the project activities and results?

What do you want to communicate to people involved in the project, that may make project results more relevant for Norwegian organic farmers?

This evening, we will discuss in groups, and discussions will be referred:

How can Norway increase the impact in working processes on EU level, related to regulations for organic production? (Hvordan kan Norge få større påvirkningskraft i regelverksarbeidet på EU-nivå?)

How can we increase the use of organic inputs, while reducing the use of contentious inputs (e.g. conventional animal manure, plastic for mulching)? (Hvordan øke bruken av økologiske innsatsmidler, og tilsvarende redusere bruken av konvensjonelle innsatsmidler (f.eks. gjødsel), og uønskede innsatsmidler som f.eks. plast)?

Does the organic regulation hamper or support a development towards organic basic principles (health, ecology, fairness, care)? Regelverk som hinder eller motivasjon for utvikling i retning av grunnleggende prinsipper for økologisk landbruk (helse, økologi, rettferdighet og omsorg)?

What is the potential for development of regulations supporting environmental benefits such as non-fossil energy consumption, reduced pollution, climate mitigation, biodiversity? Hvilke muligheter har vi for å utvikle regler knytta til miljøeffekter som f.eks. energi, forurensing, klima, biologisk mangfold?

Try to make at least ½ page with answers to the question you discuss, and further important issues that you agreed, or disagreed, on!

Tomorrow the discussion goes on the other way round: The situation in organic production in Norway is presented by NLR advisors; project researchers listen, reflect and discuss

Gunnar, Hanne, AK and Grete Lene will write a summarising paper in English + Norwegian=)



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