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

Organic-PLUS

WP3 ‘PLANT’
‘Zero-Cu’ Mediterranean crops & potatoes
MINERAL Oils

WP4 ‘LIVESTOCK’
SYNTHETIC VITAMINS
HORMONS
‘Agroforestry’ BEDDING

WP5 ‘SOIL’
‘VEGAN’ fertilisers
PEAT
PLASTIC

WP6 ‘MODEL’
Socio-economics models, LCA, phase-outs scenarios

WP2 ‘IMPACT’
Public view of contentious inputs, Dissemination, Citizen Juries, Organic standards & policies

WP1 ‘LEAD’
International and Industry Advisory Boards

• 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

https://organic-plus.net/
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 anthelminthics 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

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<th>Carrot</th>
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<th>Citrus</th>
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<th>Lettuce</th>
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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

Further reading: https://prosjekt.fylkesmannen.no/Okologiske-foregangsfylker/Okologisk-frukt-og-bar/Nyheter/Okologisk-plantevern/
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 chasing 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
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.

https://veksthus.nlr.no/fagartikler/utsett-av-nyttedyr/
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)

- Invasive or otherwise «unwanted» species
- Prunings
- Avoid burning
- High content of Cu!
- Good results with mature composts
- How to measure maturity?
- Extruded plant materials
- Composted materials
- How to achieve stable product quality?
- How to avoid N losses?
- Could producers make their own transplants?
- How to add plant nutrients? (N, P)
- How to measure maturity?
- How to avoid N losses?
- Could producers make their own transplants?
- Degradation in soil («cold-compost») to produce growing media?
- Which humidity by processing?
- Which particle form and size is optimal?

PEAT IN GROWING MEDIA

Left-over, ground plant materials (coco choir, cocoa shells)
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 choir
Searching for alternatives (WP5)

Breaks too easily
Must stop light
Disintegrates too early

Completely degradable foil from renewable materials, thin but 3 layers

PLASTIC FOR MULCHING

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)

Field trials in UK and Turkey 2019+2020
Searching for alternatives (WP5)

ANIMAL-DERIVED FERTILISERS

Harvested from the sea?
Seaweed, fish bones

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

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

Vegan adapted:
clover-grass silage, clover pellets

Field trials in Germany, Denmark and Norway 2019+2020

Algae fibre
Fishbones
Yields of oats (aboveground canopy), field experiment 2019

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield, ton DM/ha</th>
<th>Additional yield, % of control</th>
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<tbody>
<tr>
<td>Control, no manure</td>
<td>2.7</td>
<td>100</td>
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<tr>
<td>Seaweed fibre</td>
<td>2.5</td>
<td>93</td>
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<tr>
<td>Poultry manure «Grønn Øko»</td>
<td>3.8</td>
<td>141</td>
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<tr>
<td>Fishbones (0.7) + seaweed fibre (0.3)</td>
<td>4.4</td>
<td>163</td>
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<td>Fishbones</td>
<td>4.8</td>
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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 konvensionelle 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 prinsipp 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 to write a summarising paper in English + Norwegian=)