Ministry of Environment and Food of Denmark
The Danish Agricultural Agency

Implementing Checks by Monitoring in Denmark

MARS
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Topics

- What was monitored in 2019
- Dialogue with the farming organizations and reactions from the farmers
- Our method in 2019
- The results and key figures
- Lessons learned and looking ahead

What was monitored in 2019

No.	Scheme/measure	Target area in hectares (estimated)
1.	Basic Payment Scheme (BPS)	2,575,000
2.	Areas with Natural Constraints (ANC)	41,500
3.	Young Farmers Scheme (YFS)	246,377
4.	Beneficiaries exempted from crops diversification and ecological focus area obligations	198,500

Dialogue with the farming organizations and reactions

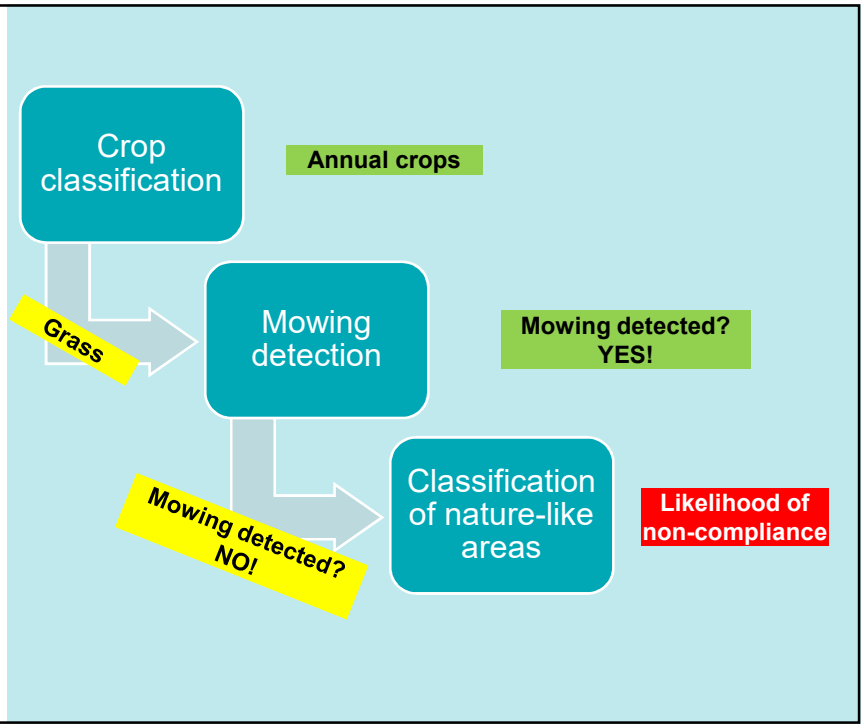
- **Late and fast political decision making process meant that final decision for using checks by monitoring was made November 2018.**
- **Close dialogue with the largest faming organization in Denmark**
- **Very honest communication with the farmers**
- **We anticipated a larger scepticism – it has been very limited**

Our method in 2019

- The model used in 2019 combined monitoring with classical on the spot checks.
- The starting point of our model is crop classification.
- Traffic light displayed in geospatial aid application system already known to the beneficiaries
- Follow up visits on all red parcels

Our method in 2019

The monitoring procedure -Satellite analysis design



Our method in 2019

The monitoring procedure-

Monitoring data & rules for Trafic light

Task 1 (June 25)
Approval of annual crop if there is an applied annual crop & the 1st most likely Random Forest class is an annual crop.

Task 1 (June 25)
Inconclusive annual crop if there is an applied annual crop & 1st most likely Random Forest class crop is not an annual crop. (continue task 2)

Task 2 (June 1- september 25)
Activity detected on applied grasslands using an activity score >0,5 criteria during the season – combination score of coherence and NDVI markers.

Task 2 (June 1- september 25)
Inconclusive Activity not detected on applied grasslands using the activity score >0,5 criteria & non-compliance was not found in task 3

Task 3 (september 25)
Non compliance was found using further screening criteria on the complete data timeseries and a non compliance score > 0,7. The non-compliance score was based on a random forest classification trained on historic non-compliant data (nc score >0,7)

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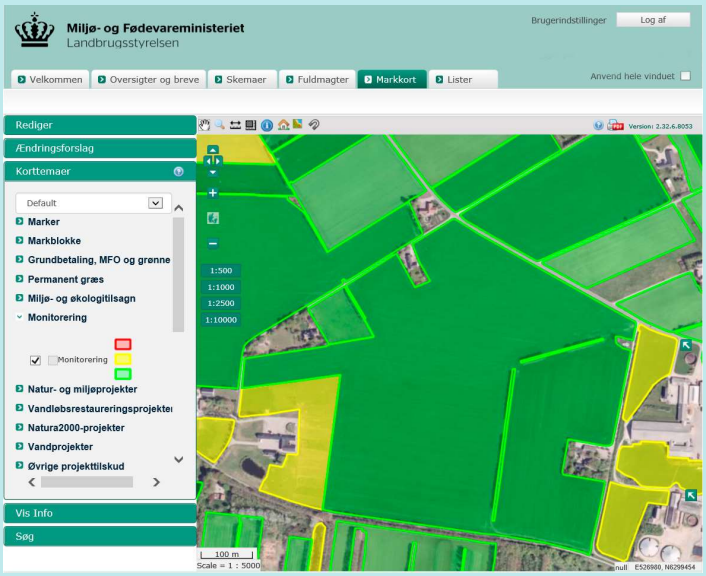
1. **Beneficiaries could see their parcels from 2nd September.**
2. **Only green and yellow parcels until September 25th**
3. **Parcels with the highest probability for non-compliance turned red October 15th.**
4. **Possibility to withdraw red parcels until October 28th**
5. **Starting October 28th - follow-up visit on all red parcels.**



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Results in 2019

By 15 October we displayed 900 red parcels (803 beneficiaries) together with the yellow and green.

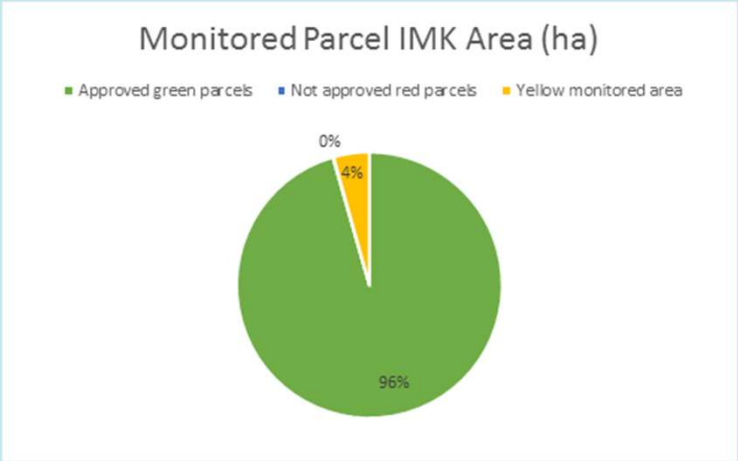
567 yellow parcels were withdrawn by the beneficiaries.

279 of the red parcels has been withdrawn by the beneficiaries.

The remaining red parcels are checked by follow up visits.

182% increase in parcels withdrawn by the beneficiaries compared to last year.

NUDGING WORKS ?

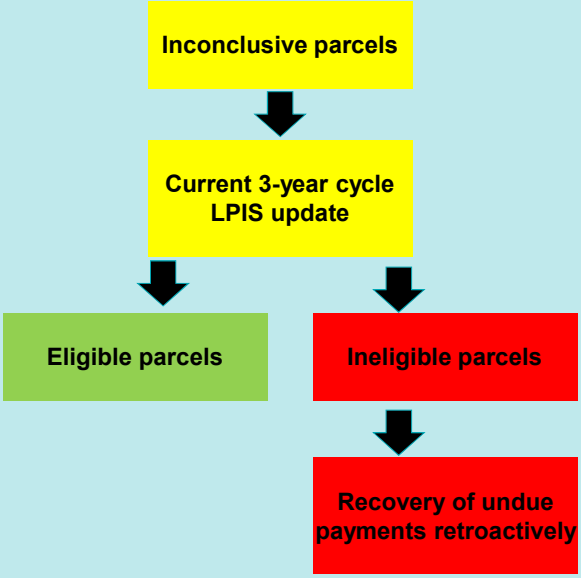


Results in 2019

Condition for applying this procedure in 2019 is:

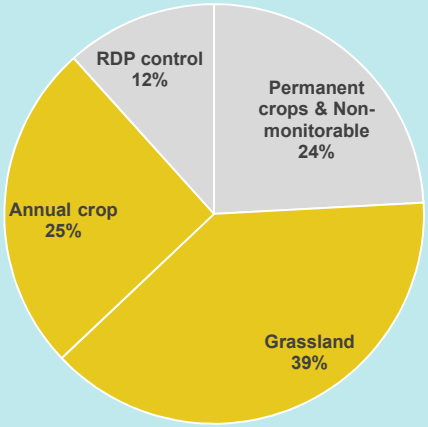
Two annual country-wide 25 cm ortho images are available.

Follow-up activities for inconclusive (yellow) parcels



Lessons learned and looking ahead

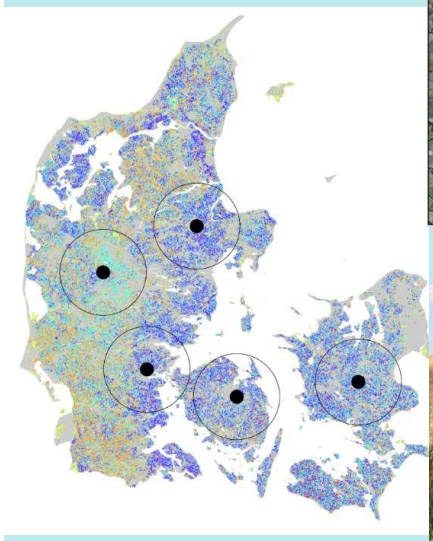
In 2019 the yellow parcels in our external traffic light was a mixture of too many situations



Lessons learned and looking ahead

Test validation of the green parcel-area based on our RFV approach

RFV not optimal for this purpose



Lessons learned and looking ahead

- **In 2020 we separate the physical inspection of conditions that cannot be checked using sentinel data from our classical on the spot checks.**
- **In 2020 we introduce an App for smartphones. The farmers will use the App to take and send geo-tagged photos of red parcels.**
- **We look to expand checks by monitoring in 2021. Most likely to include agri-environment measures for grasslands under pillar II (AECM scheme).**

Thank you

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