Analysis of potential herbicide savings using experience and data from the RoboWeedMaPS project

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Summary

In 2017-2020, The Danish Innovation Fund funded design and construction of a new IPM ‘product chain’, which starts with photographing fields and ends up with field- or site-specific herbicide application. Initially, high speed cameras were designed and constructed, which can take sufficiently good pictures, to enable people with some agro-botanical experience to determine weeds by ‘virtual field inspections’ (VFI) of the pictures.

An online platform was designed and constructed, which can receive and manage uploads of huge amounts of geo-tagged pictures. Facilities were included, which enable execution of VFI in pictures of a particular upload, e.g. pictures taken in one field. Research in ‘machine learning’ (ML) was executed to automatically identify various objects on pictures, and ML-training was made by using data extracts from the VFI. Initially irrelevant objects such as bare soil, stones, dead plant material etc. was made auto detectable. Later also crop and weed plants, the latter now as mono- and dicot weeds, respectively. A total of 76 ML trainings were executed

As systematic close-up fotograping of fields generates really ‘big data’, research was also executed to identify requirements to sampling strategies, which can properly represent spatial variability of weeds in Danish fields. This resulted in a now standardised sampling method. To collect pictures, both drones and ATVs were tested to carry the high speed camera. In terms of capacity and cost, ATVs driving 40-60 km/h mounted with a dual-camera system, significantly outcompeted drones. When pictures have been uploaded from a field, thumbnail pictures, which include weeds, will automatically be cut out and auto sorted according to weed size and yet in 2 groups, mono- and dicot. By use of VFI, which may become a new service for persons with agro-botanical skills, additional training of ML will be achieved and instructions/treatment maps will be returned to the farmer.

In 84 photographed fields, where the crop was cereals and maize, the potential of the RWM-chain was compared to the farmer’s already planned/executed treatments on the whole-field level.This showed average savings of 246 dkk = 33 Euro/ha, equal to 57-73% in different cereal crops. Significant savings were also registered for two environmental indexes. These potentials arise mainly from a systematic exploitation of the fact that needs for weed control and susceptibility to herbicides differ strongly between crops and weed species. Additional factors such as weed size, temperatures, drought stress and herbicide resistance are also considered. The RWM can manage this complexity, including customization to national conditions while simultaneously addressing 7 of 8 general principles on ‘Integrated Pest Management’ (IPM). Initial potentials of site-specific weed control were also calculated. In the 84 fields, considerable but yet not exactly quantifiable potential was observed. This potential arises from leaving spots untreated, where species-specific threshold values of weed density have not been exceeded. However, to demonstrate functionality, exact quantification has been made for 1 weed species, Cirsium arvense. According to VFI, this weed occurred in 13 fields, and aditionally 88% reduction of herbicide input was calculated.

Later in 2021, the RWM-consortium expects to release a version of ML, which can also auto detect weeds on the species level. Upon that more exact calculations will be made on potentials for also site-specific use of the RWM-chain. Within 2 years, the RWM-consortium expects to release a real-time concept on combined photographing, ML-recognition and site-specific weed control.

Introduction

The report is co-authored by, Datalogisk, Patriotisk Selskab, IPM Consult, I-GIS, and Aarhus University (AU-ECE), which are all residing in Denmark.

The report includes the incorporation state-of-the-art results from automatic image recognition of weeds, delivered by AU-ECE, which is referred to as 'machine learning' (ML). This version of ML became operational on the 23rd of December 2020.

Due to Christmas holidays and the complex nature of the calculations, an initial version of this report was delivered January 4th 2021. However, this version (2) of the report is more comprehensive.

The additions to version 2 of this report are:

- Documentation of weed populations found during 'virtual field inspections' (VFI)
- Economic potential calculations divided into crops, seasons, years and classifications of timeliness according to weed size
- Calculation of potential for reduction of Treatment Frequency Index (TFI) and the Danish Environmental Load Index (ELI)
- A professional quality that also enables international publishing

The Purpose of the Project

The research and development in previous projects that evaluate potentials of Decision Support Systems (DSS) for Integrated Weed Management (IWM), have shown that it is possible to reduce herbicide consumption by an average of 20-40%[2], when carrying out field-specific treatments and in some cases as much as 80-90%, when site-specific treatments[1] are carried out.

The purpose of the RoboWeedMaPS, RWM, project is to further analyze the potential for reducing the amount of herbicide used in different crops. This is based on existing data from previous data collections through 4 growing seasons from the RWM project, plus another 2 years from previous projects.

In the project, the following will be highlighted:

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[1]- Somerville, G.J. et al., 2019. Marrying futuristic weed mapping with current herbicide sprayer capacities. In Precision agriculture '19. 28. Wageningen Academic Publishers, pp. 231–237.
- Strickler, J., 2020. Blue River Technology Uses Facebook AI For Weed Control. Forbes Magazine. Available at: https://www.forbes.com/sites/jordanstrickler/2020/08/07/facebook-ai-is-getting-into-agriculture
- Christensen, S. et al., 2009. Site-specific weed control technologies. *Weed research*, 49(3), pp.233–241.
- [2] Miljøstyrelsen, 2007. Vurdering af Planteværn Onlines økonomiske og miljømæssige potentiale.

- What is the economy for the farmer?
- What pesticide amounts expressed as Treatment Frequency Index (TFI) and Danish Environmental Load Index (ELI) should be used?
- What is the scenario upscaled to the Danish winter grain area?

This study is supplemented by a further project in 2021-2022, which is also sponsored by the Danish Environmental Protection Agency's (Danish EPA) ‘Partnership for Precision Spraying', where the weed quality of the RWM product chain will be investigated in full scale fields experiments.

Description of Method and Data

In the RoboweedMaPS (RWM) project, systematic image recording and weed identification has been carried out on 23 farms, 84 fields and 1,278 ha. Approximately ¼ million images have been recorded that contain 6.0 million small ‘thumbnail’ images of monocot and dicot weeds. It should be noted that the project has collected images from many more fields and the 84 fields are a selection of the participating fields in RWM.

The 84 fields were distributed geographically as shown in Table 1.

Table 1: Distribution of 84 fields between regions in Denmark

Region	**Number Of fields**
Jutland, North	26
Jutland, Center	4
Jylland, South	3
Funen	30
Zealand	21
Total	**84**

Image Capture and Generation of Weed Maps

The pictures were taken with a 5 Mpixel camera with flash covering ~ 0.25 m^2 and in some cases 0.4 m^2. They have been acquired through the GUDP project, RoboWeedSupport, and the Innovationsfond project, RoboWeeMaPS. There is an image density of between 5 and 10 m, corresponding to ~ 400 or ~ 100 images per ha. These values of image density were chosen based on previous analyzes of weed spots[2].

For example, at 400 images / ha where each image covers 0.25 m^2: 400 images / ha x 0.25 m^2 / image / 10,000 m^2 / ha = 100 m^2 / 10,000 m^2 = 0.01 = 1% of the area.

This creates a need for storage, transmission and processing of significant amounts of data, e.g.:

- In a field of 30 ha: 30 ha x 400 images / ha x 5 mB / image = 60,000 mB = 60 TB
- For the preliminary 1,278 ha: 1,278 ha x 400 images / ha x 5mB / image = 2,556,000 mB = 2,556 TB (It should be noted that the density increased over the 4 years from ~ 100 to ~ 400 images / ha)

It is thus 'big data', with consequent capacity requirements.

After developing and testing different camera prototypes, where the focus was on achieving a good balance between high quality requirements for images and low time consumption for image recordings, a 'Dual-HighVelocityCAMera' (HVCam) was developed. When installing 2 x HVCam on an ATV, as illustrated in Figure 1, a capacity of 30-40 ha / hour is achieved when maintaining a velocity of 40 - 50 km/h.

Figure 1: *Overview of components in the Dual-HVCAM-system. Honda ATV including explanatory labels.*

The weed detection model (RoboWeedMaps Annotation Model version 76 (RWM_AM76)), which was ready for production on December 23, 2020, has been trained on ~ 29,000 manually annotated weed images through a machine learning method (ML) (Current name: EfficientDet V5), containing a total of ~ 900,000

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[2] Somerville, G.J. et al., Submitted December 2019. Analysing the number of images needed to create robust variable spray maps. Journal of Precision Agriculture. Available at: 12ECPA PRAG2612_19-385.

automatically framed weed objects, which were also automatically classified as being monocot or dicot weeds.

The trained RWM_AM76 is then used to detect weeds in the above-mentioned ¼ million images, as well as classify the framed weed objects monocot or dicot weeds.

The populations found in the measuring points (images of 0.25-0.40 m^2) are then interpolated together into a surface-covering weed map. A weighted inverse distance interpolation with a grid size of 5 m was used (Figure 2).

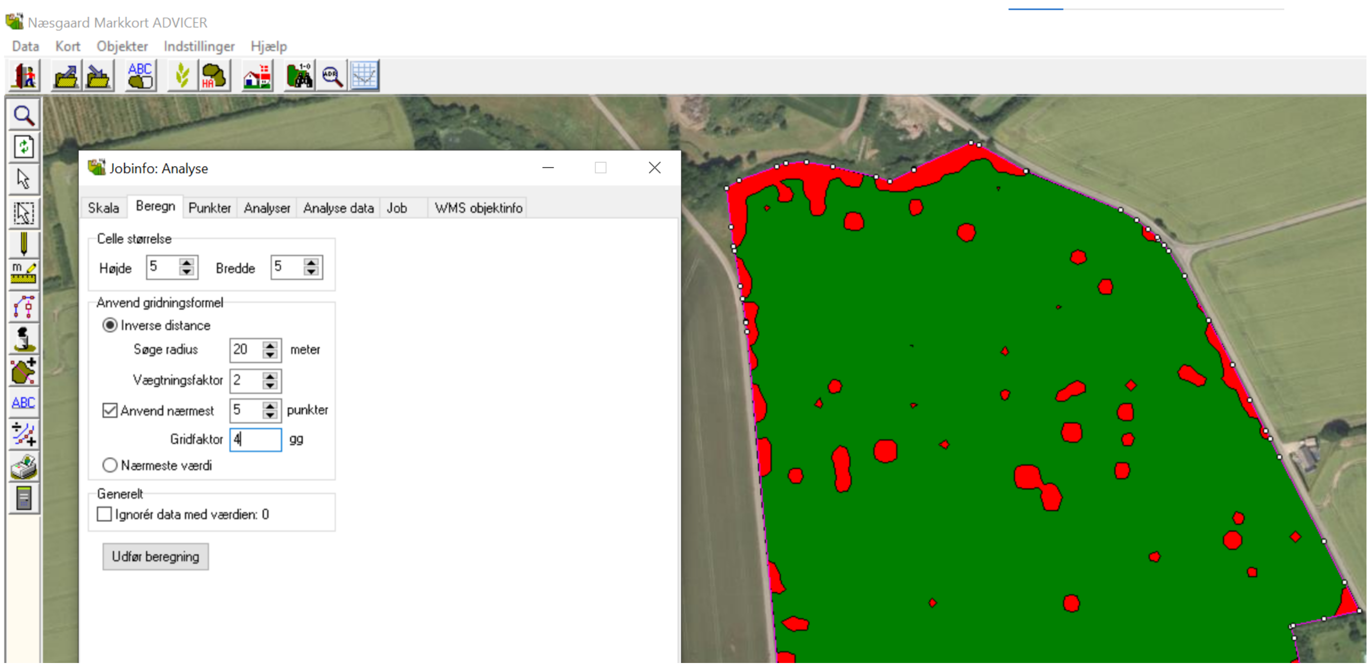

Figure 2: *Left side: example of settings used for interpolation calculations in a spot-spray map as in the Farm Management System (FMS) 'Naesgaard MARK'. Pictures have been collected by the dual HVCAM, each covering ¼ m2 of the soil surface. Right side, example of a treatment map, where areas needing treatment are shown in red colour.*

Virtual Field Inspections for Determining Weed Species and Classes of Size

The RoboWeedMaPS system allows users to make 'virtual field inspections', where they can browse the recorded images online. Thumbnail images will be automatically cut out, which are automatically classified as monocot or dicot weeds.

This gives the user an impression of how effective and safe the latest version of ‘machine learning’, called RWM_AM76, has been in terms of automatically recognizing both irrelevant objects, crop plants and monocot or dicot weeds. In addition, the user can see which species of weeds are found in the field.

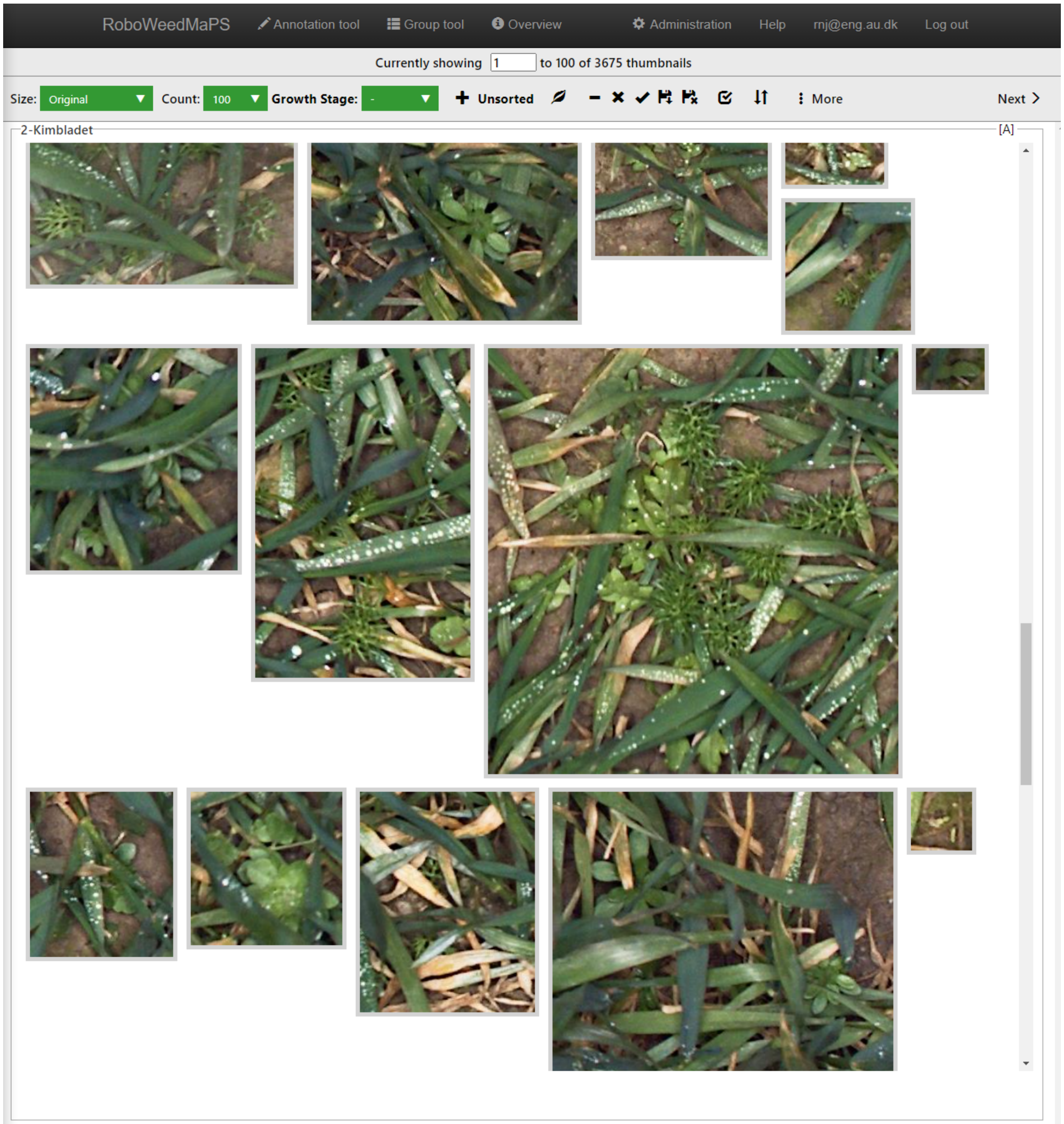

Figure 4: *Example of autodetected and auto cut-out thumbnail pictures, which include dicot weed plants, before auto sorting for descending weed size, by ‘Machine Learning’ (ML), version 2019. Real pictures and video may be studied here: https://photos.app.goo.gl/H3RTnSectQTstxD77. The ML vesion used in this report is considerably better than the model used in July 2019.*

In each field, all monocot and dicot weed objects were automatically sorted by decreasing size of weeds and manually inspected to determine species, until the objects became so small that this was no longer possible.

For example, weed maps were generated for *Cirsium arvense,* by use of ‘virtual field inspection’ (VFI). This resulted in spot spray maps, when using trigger (= threshold) weed density >= 0.10 pl./m^2. This analysis was included at the request of the crop advisor, ‘Patriotisk’, in order to increase the effectiveness of the control of the *Cirsium arvense* by using spot spraying, while saving chemicals and decreasing costs.

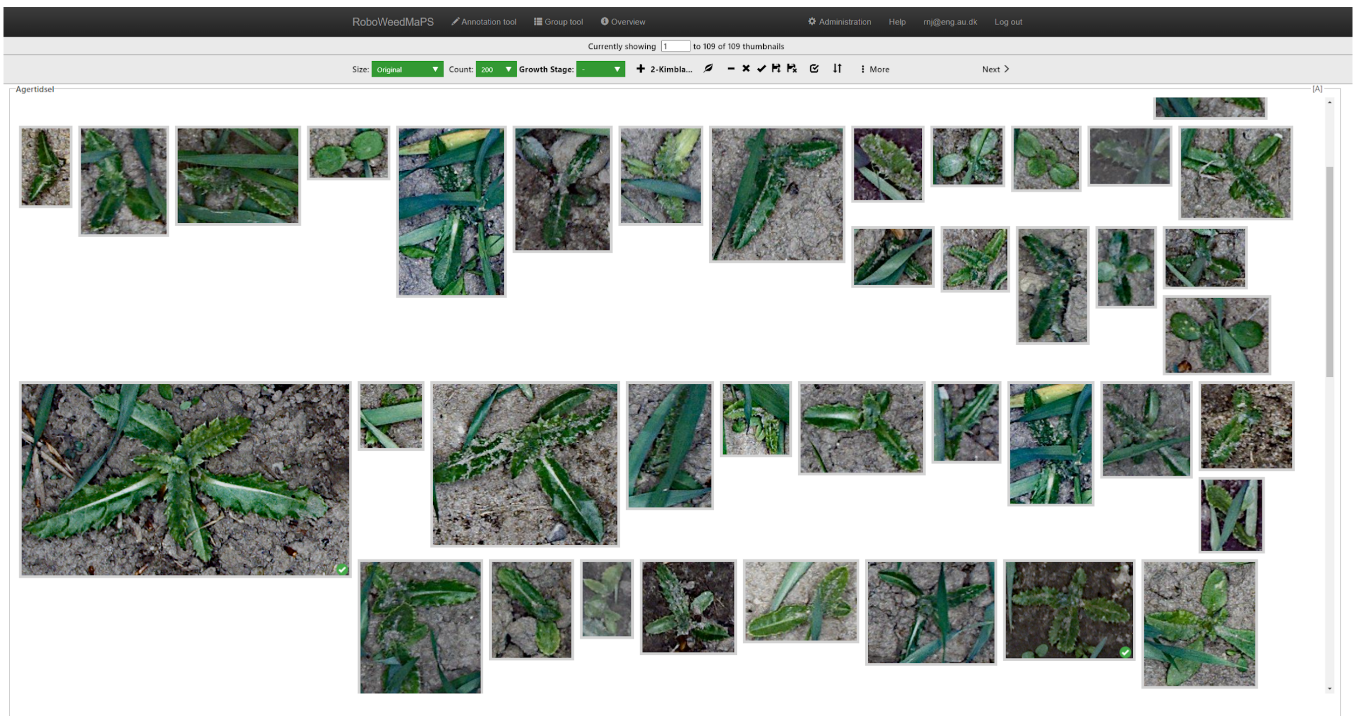

Figure 5: *Examples of thumbnails, determined by VFI as Cirsium arvense, to be used for training the classification model as expert approval. The green flagged thumbs like the lower left, indicates approval for ML model training.*

VFIs were carried out systematically as illustrated in Figure 2 in all 84 fields. 4 samples of 100 automatically cut thumbnail images were automatically selected and manually analyzed. These thumbnails were already automatically classified and sorted by weed size and as being monocot or dicot weeds, respectively.

In the total number of auto sorted thumbnail images in each field, 4 samples were taken at approximately 0%, 25%, 50% and 75% percentiles, respectively. In some of the image recordings with the early prototypes of HVCam, the image quality was relatively poor for determining species, and therefore only the most useful images were analyzed.

During the 4 years of the RoboWeedMaPS project, the image quality has improved significantly. Images are now delivered in such high quality that there are good opportunities to manually recognize various botanical characteristics of even rather small weeds, using the SEGES PVO Weed Key.

Determining grass species is particularly challenging, because it is often necessary to study particular botanical characteristics, which often require special focussing and use of a magnifying glass. A particularly easily recognizable and at the same time very widespread monocot species in Denmark is *Poa annua*, provided it has reached a certain size. Other ‘indeterminate grasses’, are hereafter perceived as being *Lolium perenne*. This species is chosen as a default representative in subsequent RWM calculations, because accoriding to the integrated DSS for IWM, this species is among the most difficult and expensive to control, and thus also a relatively safe representative, in terms of achieving sufficiently safe control, as long as ML cannot yet automatically determine monocot weeds at species level.

In Table 4, it shows that *Lolium perenne* has thus been selected for IPMwise calculations in 27 of the 84 fields (32%), which is probably an overestimation, and thus a contribution to a systematic erosion of the RWM chain's prelimenary, economic and environmental potentials.

During the virtual field inspections, species and number of times they were found, were manually recorded in the weed size classes, which are also used at the integrated DSS, called ‘IPMwise’. These counts were then used as ratios for use in distributing the automatically counted number of monocot and dicot plants, respectively, to species and connected classes of sizes. This procedure was performed on the assumption that the 4 samples of each 100 thumbnail images in both monocot and dicot weeds (800 thumbnails total) in 4 percentiles in the already auto-sorted thumbnail images are reasonably representative at the whole-field level. It is a significantly more intensive sampling, than can be achieved by manual field inspection.

The average calculated density of each weed species plus an estimated value of approximately 75% weed size percentiles was then used to find treatment at the whole-field level using IPMwise. The use of 75% percentiles, instead of average, systematically contributes to increasing the safety of achieving adequate weed control.

Generation of treatment maps

For the purpose of generating treatment maps for monocot and dicot weeds, herbicides and doses found by IPMwise were used, with the following settings:

- Crops and seasons, by reuse of storings in the FMS, Naesgaard Mark
- Crop development steps, BBCH scale steps:
  - Spring and winter cereals, spring: 30
  - Winter cereals, autumn: 12
  - Sillage-maize: 15
- Optimization (minimization) and sorting of total cost of herbicides
- No occurrence of already herbicide-resistant weeds
- No consideration for prevention of new development of herbicide resistance

These crop stages were chosen because 1) the obtained spray journal information, used as reference treatment, did not contain crop stage information on the day of spraying and 2) because these crop stages provide access to most of the registered herbicide solutions.For all fields, several possible spot spray maps were generated for monocot weeds (grass), by using the spray trigger densities >=1, >=2, >=5, and >=10 plants/m^2. For dicot weeds, the spray trigger density >=1 plant/m^2 was used. In this way, the farmers supported by advisors, e.g. Patriotisk can decide how courageous they are, especially with regard to controlling grassy weeds. Trigger densities, which are considered proper for general use, will be selected, when results from full scale field validation trials have been achieved.

This report does not provide results on how robust the RWM has been to meet values of efficacy targets stored in IPMwise. These values originate from DSS prototypes, and results from field validations of these back from the 1980-1990s, i.e. representing use on the whole field level. The agronomic robustness of the RWM, where these values of efficacy targets are used also for site-specific control, will be tested in winter wheat in 2 large-scale trials in 2021-2022, where treatments are made according to RWM in both autumn and spring. Also this project will be sponsored by the Danish Environmental Protection Agency's (Danish EPA) ‘Partnership for Precision Spraying’.

As dicots weeds are not yet classified at a lower hierarchical level (ultimately species level), the least risky spray trigger density of >=1, prepared for use against the most noxious dicot weeds, was selected. The crop advisor, Patriotic, recommends that *Cirsium arvense* shall be controlled, as soon as they are seen in the a field. As the image collection is relatively sparse (approximately 1% of the area, cf. above), *Cirsium arvense* may easily ‘slip through’ the image analyzes. Therefore, the spray trigger density is set quite low, i.e. >=0.10 C*irsium arvense* / m^2. As a result, spray spots become considerably enlarged, when there is just 1 image with 1 plant of *Cirsium arvense*. See example in Figure 3.

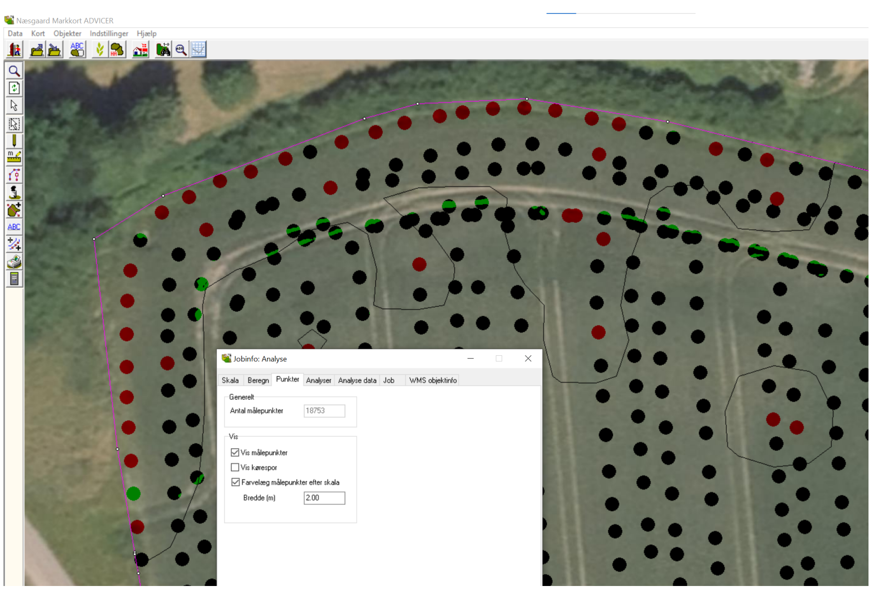

Figure 3: *Contour spot-spray map for Cirsium arvense, as stored in the FMS Naesgaard MARK including markings, where pictures have been taken. Red markings indicate >=0.25 Cirsium arvense plants/*m^2*, and black markings indicate fewer/no Cirsium arvense plants.*

Calculation of Herbicide Requirements and Associated Treatment Options with Herbicides at the Whole-Field Level

Calculation of herbicide requirements for weed control was done using IPMwise, which is a 4th generation tool for both weed calculations and IT. IPM Consult developed IPMwise in 2014.

Using a weed count report as input, IPMwise uses the ‘Consultation’ tool to quantify the amount of weed control needed and associated treatment options with herbicides. Both can be used at the whole-field level and at the site-specific level.

IPMwise is also integrated with the Næsgaard Mark FMS. In this way IPMwise can access current field information and automatically load saved registrations. Thereby, it has become an integral part of the RWM solution.

In IPMwise, historical versions cannot be restored. Therefore, even though images were recorded in 2015-2020, all calculations with IPMwise were performed with the operating version of January 26, 2021.

The virtual field inspections in 84 fields was used also as a reality check of IPMwise in terms of detecting specific inconveniences in relation to the identified weed infestations. Accordingly, the following adjustments were made, before calculations of possible options for control and connected potentials were initiated:

- for *Equisetum arvense*, the threshold value for control was increased in all crops except cereals, because this perennial species is relatively easy and cheap to control in cereal and difficult and expensive to control in other crops
- After dissapperance of some previously registered herbicides in both spring- and winter cereals, control of large infestations of *Poa annua* is no longer feasible. Therefore, thresholds values have been increased and efficacy target values decreased, to levels which are achievable.

In 67 of the 84 photographed fields, the farmer’s records in their spray journals in the Naesgaard Mark field management system, as recorded in the actual years and growing seasons was used as reference. These excluding special treatments against *Avena fatua* and *Agropyron repens*, which require separate herbicide applications Patriotisk, achieved permissions from the participating farmers, which are all kept confidential. In 15 fields, where spray journal records could not be provided, Patriotisk provided instead ‘best practice’ recommendations. Two fields had so complex weed infestations that IPMwise could not suggest options for control, and these fields were therefore excluded from calculations of potentials on the whole-field level. As weeds grow bigger and infestations grow more complex, there will always be limits to identify suitable options for control, both by IPMwise and advisors.

Results

Automatic Recognition of Weeds in Pictures

It was quite challenging to achieve a ML model version, which can deliver sufficiently robust automatic recognition of weeds on the 1.278 ha, which have been photographed during the RWM project. The ML model version RWM-AM76 of 23 December 2020, which indicates that this model version is no. 76 in the line of trained ML model versions. Unfortunately, this version was too late for upgrade of the official and commercial version before termination of year 2020. Early in 2021, this installation was completed.

A considerable challenge in earlier ML model versions has been occurence of false weed detections, particularly in quite dense or damaged crops. This resulted in an unnecessary high ‘noise level’, which prevented delivery of realistic electronic field maps for spot spraying - in particular for monocot weeds.

Figure 6: *Example of automatic placement by RWM_AM76 (ML version 76) of frames, which include one single weed plant. Pictures are from a frost damaged field with winter cereal in the early spring. Use digital zoom to additionally enlarge and visualize the frames. Frames in blue colour show auto-determined dicot weed plants, while frames in red colour show auto-determinded monocot weed plants.*

RWM_AM76 has resolved this problem. In a few cases of particularly high weed density, or quite large monocot weed plants, the density was underestimated. However, accompanying manual inspection revealed that this problem has now been solved.

Figure 7: *Example, where RWM_AM76 underestimates in particular occurrences of Stellaria media, as the automatic determination like human 'annotators' find it quite difficult to auto-place weed frames around single plants of this species. Zoom in to better see the frames. Frames in blue colour are dicots, while frames in red colour are monocots.*

Weed scouting by ‘virtual field inspection’ (VFI)

Table 2 shows combinations of crops, growing seasons and numbers of hectares, which included in the 84 photographed fields.

Table 2: *Crops, seasons, nos. of fields and nos. of ha, where pictures have been collected for the RWM project*, *and where IPMwise could also find options for treatment*

Crop	Season	No. of fields	No. of ha
Winter barley	Autumn	2	30
Winter barley	Spring	7	95
Winter wheat	Autumn	19	323
Winter wheat	Spring	23	337
Winter rye	Autumn	0	0
Winter rye	Spring	10	105
Spring barley	Spring	14	285
Maize, silage	Spring	7	61
Sum		**82**	**1.278**

In Enclosure 1, results are presented from VFIs in 84 fields.

In Table 3, results of average and minimum and maximum values of the auto counted densities of monocots and dicots in 84 fields by use of ML. This table shows that the densities of monocots varied from 0.9 to 135.6 pl/m^2, and for dicots from 5.5 to 282.8 pl/m^2, which is a considerable variability.

Table 3: Auto-counted densities of mono- and dicots.

Weed type	Average (no./m^2)	Minimum (no./m^2)	Maksimum (no./m^2)
monocot	26.6	0.9	135.6
dicot	71.8	5.5	282.8
Totals	**49.1**	**0.9**	**282.8**

Tabel 4a shows which species of weeds that were found by use of VFIs, and the frequency of these in 84 fields. Across a total of 620 occurrences, a total of 42 weed species were detected.

Table 4a: *Weed species and numbers of occurrences in 84 fields as determined by VFI. Sorted by weed name in Latin.*

Weed name in Latin	**EPPO-code**	**Weed name in Danish**	**Count**
Anchusa arvensis	LYCAR	Krumhals	2
Aphanes arvensis L.	APHAR	Dværgløvefod	1
Artemisia vulgaris L.	ARTVU	Bynke, grå	8
Artemisia vulgaris L.	ACHMI	Røllike, alm	2
Atriplex patula L.	ATRPA	Mælde, svine	1
Brassica napus L.	BRSNN	Raps	54
Capsella bursa-pastoris	CAPBP	Hyrdetaske	34
Chenopodium album L.	CHEAL	Gåsefod, hvidmelet	18
Cirsium arvense	CIRAR	Tidsel, ager	14
Convolvulus arvensis L.	CONAR	Snerle, ager	1
Equisetum arvense L.	EQUAR	Padderokke, ager	8
Erodium cicutarium	EROCI	Hejrenæb	13
Euphorbia helioscopia L.	EPHHE	Vortemælk, skærm	1
Festuca rubra L.	FESRU	Svingel, rød	1
Fumaria officinalis L.	FUMOF	Jordrøg, læge	7
Galeopsis spp.	GAESS	Hanekro	1
Galium aparine L.	GALAP	Burre-snerre	24
Geranium sp.	GERSS	Storkenæb, blød	27
Lamium spp.	LAMPU	Tvetand	10
Lapsana communis	LAPCO	Haremad	2
Lolium perenne L.	LOLPE	Rajgræs, alm	27
Myosotis arvensis	MYOAR	Forglemmigej, mark	7
Papaver rhoeas L.	PAPRH	Valmue, korn	7
Plantago lanceolata L.	PLALA	Vejbred, lancet	1
Poa annua L.	POAAN	Rapgræs, enårig	72
Polygonum aviculare L.	POLAV	Pileurt, vej	3
Polygonum convolvulus L.	POLCO	Pileurt, snerle	13
Polygonum lapathifolium L.	POLLA	Pileurt, bleg	1
Polygonum persicaria L.	POLPE	Pileurt, fersken	25
Ranunculus repens L.	RANRE	Ranunkel, lav	3
Rumex crispus L.	RUMCR	Skræppe, kruset	2

Senecio vulgaris L.	SENVU	Brandbæger, alm	1
Sinapis arvensis L.	SINAR	Sennep, ager	5
Solanum nigrum	SOLNI	Natskygge, sort	4
Spinacia oleracea	SPIOL	Spinat	5
Stellaria media	STEME	Fuglegræs, alm.	54
Taraxacum officinale	TAROF	Mælkebøtte	16
Tripleurospermum inodorum L.	MATIN	Kamille, lugtløs	48
Urtica urens L.	URTUR	Nælde, liden	8
Veronica persica	VERPE	Ærenpris, storkronet	52
Vicia faba	VICFA	Hestebønne	2
Viola arvensis	VIOAR	Stedmoder, ager	35
Total	**42**	**Total**	620

The crop advisor company, Patritotisk, has expressed a particular interest in site-specific control of *Cirsium arvense*, as this species due to primary propagation by root shoots, often occurs in sharply demarcated colonies. Table 4a shows that *Cirsium arvense* was detected in 14 of the 84 fields.

In conjunction, Table 3, 4a and 4b show the variability in terms of weed species and connected classes of weed growth stages and weed density.

Table 4b: *Counts by 'virtual field inspections' of various classes of weed size in 84 fields*

	Up to numbers of true leaves				
	1	**2**	**4**	**8**	**>8**
Counts	4	220	450	178	6

According to IPMwise, combinations of these 3 parameters has huge impact in terms of 1) quantification of needs for weed control and 2) optimizing compositions of herbicides and dose rates to meet these needs, because:

- Combinations of crops, weed species and weed density determine, wheather treatment shall be made or not. In all 84 photographed fields, at least one weed species required control. With increasing weed density, values of species specific values of target efficacy will be gradually increased, leading to up to around 2 times higher dose rates, when >600 pl/m^2 of a species occur
- Some weed species require up to 10 times higher herbicide dose rates than others
- Weeds with, for example, 5-8 leaves requires up to 3 times higher herbicide dose rates, as compared to small weed plants with only 2 leaves

In theory, the economic and environmental potentials of the RWM product chain arise from optimization (minimisation) in different spatial resolutions of herbicide treatments according to these 3 parameters plus subsequent optimization of herbicide tank-mixtures.

As a first step, adoptions may be made to field-specific conditions, and a second step may be adoption to site-specific conditions.

Potential savings on the field-specific level

To convert economic savings from Danish Crowns (DKK) to Euro, an exchange rate of 1 Euro = 7.45 dkk has been used.

The 84 fields shown in Table 1 were selected with a focus on being representative for the major part of Denmark. The participating farmers were selected among customers to the Naesgaard Mark FMS, which had also already expressed particular interest in contributing to additional development of ‘precision agriculture’.

Calculations of potential saving are based on a ‘what if the RWM system was used’, instead of the farmers already planned/executed treatments against weeds as accorded in FMS. This was achieved in 65 fields, alternatively by ‘best practice standard treatments’ provided by Patriotisk, which was used on 17 fields. Additional 2 fields were excluded, because no options for weed control could be found by IPMwise.

Enclosure 3 contains calculated economic and environmental potential savings in 82 separate fields, while Table 5 shows average results for these 82 fields.

In Table 5, average potential savings are presented, as divided between crops, growth seasons (autumn/spring), timeliness in picture collection according growth stages of weeds, as detected by VFI, where ‘timely’ was defined as weeds having max 4 true leaves in autumn and in spring barley and silage-maize in spring. For identification of supplement weed control options in winter cereals at springtime, all weed growth stages were considered timely.

Table 5, part 1: *Savings of cost, Treatment Frequency Index (TFI) and Environmental Load Index (ELI) on herbicides used in 82 fields: results from RWM-product chain minus the farmers planned/executed treatments. Alternatively, best standard treatments as provided by the advisory company Patriotisk. In Enclosure 3, results from single fields are provided.*

Crop	Season	Timely	Year	No.	Cost, average			TFI, average			ELI, average		
		picture		of	Ref.	Saved	Saved	Ref.	Saved	Saved	Ref.	Saved	Saved
		collection?		fields	(dkk/ha)	(dkk/ha)	(%)		(TFI/ha)	(%)		(ELI)	(%)
Winter barley	Autumn	Yes/No	2015-20	2	139	-556	-401%	0,36	-0,92	-259%	0,60	-1,74	-293%
			2015	2	139	-556	-401%	0,36	-0,92	-259%	0,60	-1,74	-293%
		Yes	2015-20	2	139	-556	-401%	0,36	-0,92	-259%	0,60	-1,74	-293%
			2015	2	139	-556	-401%	0,36	-0,92	-259%	0,60	-1,74	-293%
	Spring	Yes/No	2015-20	7	161	118	73%	0,86	0,45	52%	0,14	0,07	52%
			2017	7	161	118	73%	0,86	0,45	52%	0,14	0,07	52%
		Yes	2015-20	**7**	161	**118**	**73%**	0,86	**0,45**	**52%**	0,14	**0,07**	**52%**
			2017	7	161	118	73%	0,86	0,45	52%	0,14	0,07	52%
Winter wheat	Autumn	Yes/No	2015-20	19	302	160	53%	0,95	0,31	32%	1,15	0,98	85%
			2015	5	297	161	54%	0,93	0,30	32%	1,29	1,13	87%
			2016	3	190	16	8%	0,71	-0,07	-10%	0,65	0,46	71%
			2017	1	190	173	91%	0,71	0,48	68%	0,65	0,60	92%
			2019	2	480	314	65%	2,02	1,25	62%	1,69	1,52	90%
			2020	7	341	192	56%	0,81	0,17	21%	1,34	1,15	86%
		Yes	2015-20	**17**	288	**149**	**52%**	0,97	**0,33**	**34%**	1,11	**0,94**	**85%**
			2015	5	297	161	54%	0,93	0,30	32%	1,29	1,13	87%
			2016	3	190	16	8%	0,71	-0,07	-10%	0,65	0,46	71%
			2017	1	190	173	91%	0,71	0,48	68%	0,65	0,60	92%
			2019	2	480	314	65%	2,02	1,25	62%	1,69	1,52	90%
			2020	5	307	168	55%	0,82	0,19	23%	1,26	1,07	85%
		No	2015-20	2	425	251	59%	0,79	0,12	15%	1,52	1,36	90%
			2020	2	425	251	59%	0,79	0,12	15%	1,52	1,36	90%
	Spring	Yes/No	2015-20	23	253	193	76%	1,35	0,85	63%	0,14	0,12	90%
			2017	8	289	237	82%	1,54	1,10	71%	0,18	0,15	86%
			2018	6	174	98	57%	1,00	0,62	62%	0,05	0,03	52%
			2019	4	247	168	68%	1,30	0,73	56%	0,09	-0,04	-37%
			2020	5	305	256	84%	1,55	0,84	54%	0,23	0,32	141%
		Yes	2015-20	**23**	253	**193**	**76%**	1,35	**0,85**	**63%**	0,14	**0,12**	**90%**
			2017	8	289	237	82%	1,54	1,10	71%	0,18	0,15	86%
			2018	6	174	98	57%	1,00	0,62	62%	0,05	0,03	52%
			2019	4	247	168	68%	1,30	0,73	56%	0,09	-0,04	-37%
			2020	5	305	256	84%	1,55	0,84	54%	0,23	0,32	141%

Table 5, part 2: *Savings of cost, Treatment Frequency Index (TFI) and Environmental Load Index (ELI) on herbicides used in 82 fields: results from RWM-product chain minus the farmers planned/executed treatments. Alternatively, best standard treatments as provided by the advisory company Patriotisk. In Enlosure 3, results from single fields are provided.*

Crop	Season	Timely picture collection?	Year	No. of fields	Cost, average			TFI, average			ELI, average		
					Ref. (dkk/ha)	Saved (dkk/ha)	Saved (%)	Ref.	Saved [TFI/ha]	Saved (%)	Ref.	Saved (ELI)	Saved (%)
Winter rye	Spring	Yes/No	2015-20	10	98	56	57%	0,44	0,10	24%	0,04	0,00	6%
			2018	2	116	74	64%	0,66	0,32	49%	0,03	-0,04	-131%
			2019	8	93	51	55%	0,39	0,05	13%	0,05	0,01	29%
		Yes	2015-20	**10**	98	**56**	**57%**	0,44	**0,10**	**24%**	0,04	**0,00**	**6%**
			2018	2	116	74	64%	0,66	0,32	49%	0,03	-0,04	-131%
			2019	8	93	51	55%	0,39	0,05	13%	0,05	0,01	29%
Spring barley		Yes/No	2015-20	14	301	204	68%	1,58	0,66	42%	1,09	0,95	87%
			2018	10	334	231	69%	1,70	0,65	39%	1,27	1,20	94%
			2019	3	227	153	67%	1,13	0,57	51%	0,59	0,35	60%
			2020	1	115	98	85%	1,34	0,97	72%	0,24	0,24	100%
		Yes	2015-20	**4**	293	**212**	**72%**	1,65	**0,81**	**49%**	1,09	**1,03**	**95%**
			2018	3	352	250	71%	1,75	0,76	43%	1,37	1,30	95%
			2020	1	115	98	85%	1,34	0,97	72%	0,24	0,24	100%
		No	2015-20	10	305	202	66%	1,55	0,60	38%	1,08	0,91	84%
			2018	7	327	222	68%	1,67	0,61	36%	1,23	1,16	94%
			2019	3	227	153	67%	1,13	0,57	51%	0,59	0,35	60%
Maize, silage	Spring	Yes/No	2015-20	7	354	-210	-59%	1,31	-0,42	-32%	0,22	-0,14	-62%
			2020	7	354	-210	-59%	1,31	-0,42	-32%	0,22	-0,14	-62%
		Yes	2015-20	**5**	354	**-149**	**-42%**	1,31	**-0,30**	**-23%**	0,22	**-0,15**	**-70%**
			2020	5	354	-149	-42%	1,31	-0,30	-23%	0,22	-0,15	-70%
		No	2015-20	2	354	-362	-102%	1,31	-0,74	-57%	0,22	-0,09	-43%
			2020	2	354	-362	-102%	1,31	-0,74	-57%	0,22	-0,09	-43%

Discussion of potential savings in the field level

In Table 5, the average savings, where a minimum 4 fields have been included, are marked in bold letters.

In general, for results using percent as a unit, calculated values must be interpreted with increasing caution, when values are approaching the value zero. Which is in particular relevant for calculated values of Treatment Frequency Index (TFI) and Environmental Load Index (ELI), where reference values are often in the range 0-3.

As described in the method section, compositions and dose rates of herbicides have been calculated to minimize cost of herbicides plus adjuvants. As both cost and TFI have a linear relation to dose rates, it must be generally expected that relative savings of cost will be larger than relative savings of TFI. Relative average savings of ELI can be expected to be both higher and lower as compared to cost, because a random effect is in force for values of this index.

Winter barley, treated in autumn
The average of 2 fields in 2015 shows negative savings of cost, TFI and ELI. This may be caused by detection of ‘indeterminate’ monocot weeds, which were therefore considered to be *Lolium perenne* (worst-case representative) where, unfortunately, only few and relatively expensive herbicides are currently available.

Winter barley, treated in spring
The average of 7 fields in 2017 shows a saving of 118 dkk/ha (73%), 0.45 TFI (52%) and 0.07 ELI (52%).

Winter wheat, treated in autumn
The average of 17 fields in 2015-20 shows a saving of 149 dkk/ha (52%), 0.33 TFI (34%) and 0.94 ELI (85%).

Winter wheat, treated in spring
The average of 23 fields in 2017-2020 shows a saving of 193 dkk/ha (76%), 0.85 TFI (63%) and 0.12 ELI (90%)

Winter wheat, treated in autumn plus spring
By use of combined treatments in autumn and spring, total savings of 149+193=342 dkk/ha (66%), 0.33+0.85=1.18 TFI (51%) and 0.94+0.12=1.06 ELI (88%) were achieved. These savings were calculated as a weighted mean of 17 autumn and 23 spring treatments, which in no cases were the same field in both seasons.

Winter rye, treated in autumn.
No pictures were taken.

Winter rye, treated in spring
In 10 fields treated in 2018-19 an average saving of 56 dkk/ha (57%), 0.20 TFI (24%) and 0.00 ELI (6%), was achieved. Compared to winter wheat, these savings are relatively small, which may be due to the fact that the involved farmers and Patriotisk were already aware that winter rye competes more efficiently with weeds as compared to other winter cereals, why relatively smaller input of herbicides is often sufficient.

Spring barley
In 4 fields in 2018-19 the average saving was 212 dkk/ha (72%), 0.82 TFI (49%) and 1.03 ELI (95%).

In 10 fields in 2018-19, where the weeds were bigger than the stages of weeds defined as ‘timely’, as expected, the achieved savings were smaller.

Silage-maize
Irrespective of classifications for timeliness in 7 fields, negative average savings have been achieved on cost, TFI and ELI. These fields were infested by relatively big weed plants and species, which are relatively

difficult to control, including massive infestations on several perennial species, which are generally somewhat difficult to control sufficiently. In addition, the applied ‘timing strategy’, including also multiple treatments and accompanying picture collections, were affected by some random effects. Accordingly, additional and more strict tests in silage-maize in terms of time-strategy are still required.

Overall, in these crops and growing seasons, the achieved savings of cost, TFI and ELI are somewhat higher as compared to previous measurements of the earlier DSS for integrated weed management, named Crop Protection online - weeds. (Report from Danish EPA, 2007, footnote 2 on page 3). These differences may be caused by various conditions, in particular that:

- Product assortments of herbicides and reference dose rates of TFI has changed considerably in these 13 years
- Fields have been selected more randomly as compared to the trials designed and executed by the Danish Agricultural Advisory Service (now SEGES), which form the basis for the report in 2007, which were executed in fields, where particular big or complex weed infestations were expected
- SEGES’ field trials often include huge variation in weed size on the time of treatment
- Etc.

In the calculations of potentials to reduce cost, TFI and ELI of the RWM system, a complete traceability and transparency is included. This means that all results in Table 5 can be stepwise traced back through:

- RWM calculations in 82 fields of potential savings (Enclosure 3)
- Results from ‘virtual field inspections’ in 84 fields (Enclosure 1)
- Auto-cut-out of thumbnail pictures of weeds in 84 fields (requires login to the online RWM-platform)

In addition, in all calculations of potentials in 84 fields, where RWM have been tested, it should additionally be tested whether reference treatments provided adequate control on the weed infestations found by ML/VFI.

Such checks can be executed by comparing:

1. Printouts from tool ‘Consultation’ in IPMwise, which show minimum requirements to efficacy on the weed infestation found on pictures during ‘virtual field inspections’
2. Printouts from tool ‘Mixture’ in IPMwise, which show expected efficacy of the reference treatments

Upon that results from the 82 fields could be further analyzed in 2 groups:

1. Where all weed infestations (combinations of weed species, -size and -density) can be expected to be controlled as a minimum on the level of efficacy specified by IPMwise
2. Where minimum 1 weed species could not be controlled sufficiently

These results have been planned for publication in an international journal, when also statistical analyses have been made.

In figure 8-10, initial histogrammes of the distributions of saved cost, TFI and ELI across crops, crop seasons in 82 fields, are presented.

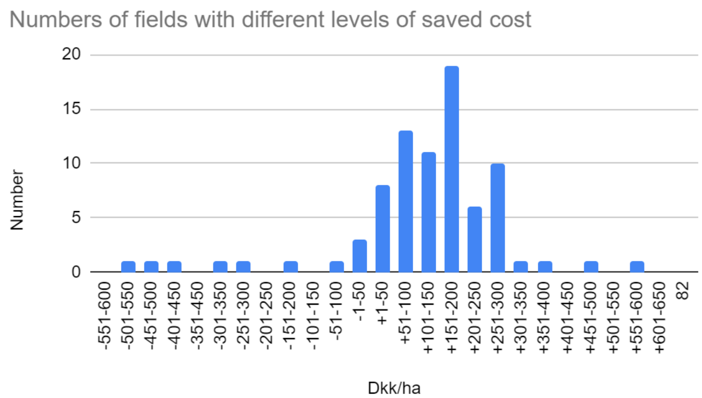

Figure 8: Distribution of saved cost (dkk/ha) *in 82 fields.*

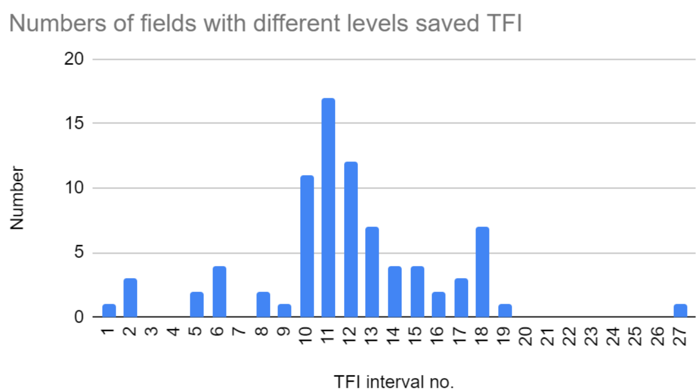

Figure 9: *Distribution of saved TFI in 82 fields*

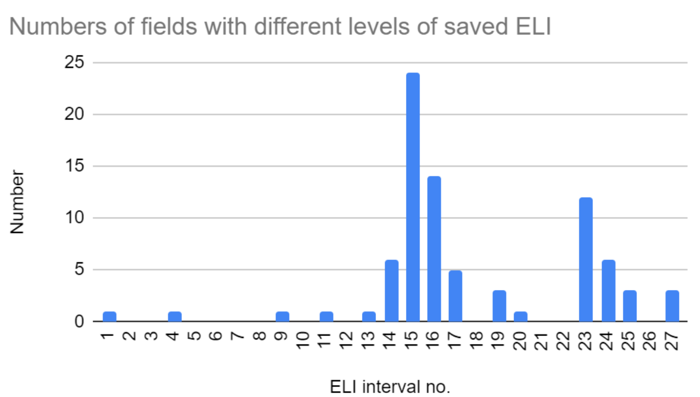

Figure 10: *Distribution of saved ELI in 82 fields*

Figure 8 shows cost savings, grouped in intervals of 50 dkk/ha. This resulted in 27 intervals. Upon that also distributions of TFI and ELI were divided in 27 intervals. After that the distributions of cost, TFI and ELI can be compared on equal terms.

Potential savings on the site-specific level (‘spot spraying’)

Currently, weeds can only be determined automatically as being either monocot or dicot, while threshold levels for control and connected values of efficacy targets are provided at the weed species level. Accordingly, exact calculations cannot be made yet of potentials (to reduce cost, TFI and ELI), when exchanging field specific herbicide applications with site specific herbicide applications.

DSS models to quantify needs for control of weeds, were developed in the 1960-1990’s after studying literature. This resulted in a model, which combines traditional threshold models with models, which gradually increase values of efficacy targets on the crop and weed species level. The resulting model will use efficacy targets >0 will, when a weed density threshold is exceeded, and gradual increases will be made, until a maximum value close to 100% control is reached for extremely high densities.

In order to integrate different requirements to weed control, which farmers often have, in particular 1) securing potential amount and quality of yield and 2) avoiding too much residual weed infestation, different versions of this combined model were constructed and tested in >2,000 Danish field validation trials.

Until the initiation of the RWM-project, farmers/advisors have had the responsibility of executing manual field inspections, which could provide a basis for achieving such balanced weed control in practice. For example, the farmer could decide to register weeds in expected worst-case spots/areas of a field, and thereby achieve safe control of a whole field with a minimum effort in terms of weed registrations. However, many farmers instead used ‘best practice’ herbicide applications, as recommended by advisors on the regional level.

Figure 11 illustrates an example of use of threshold values for weed density.

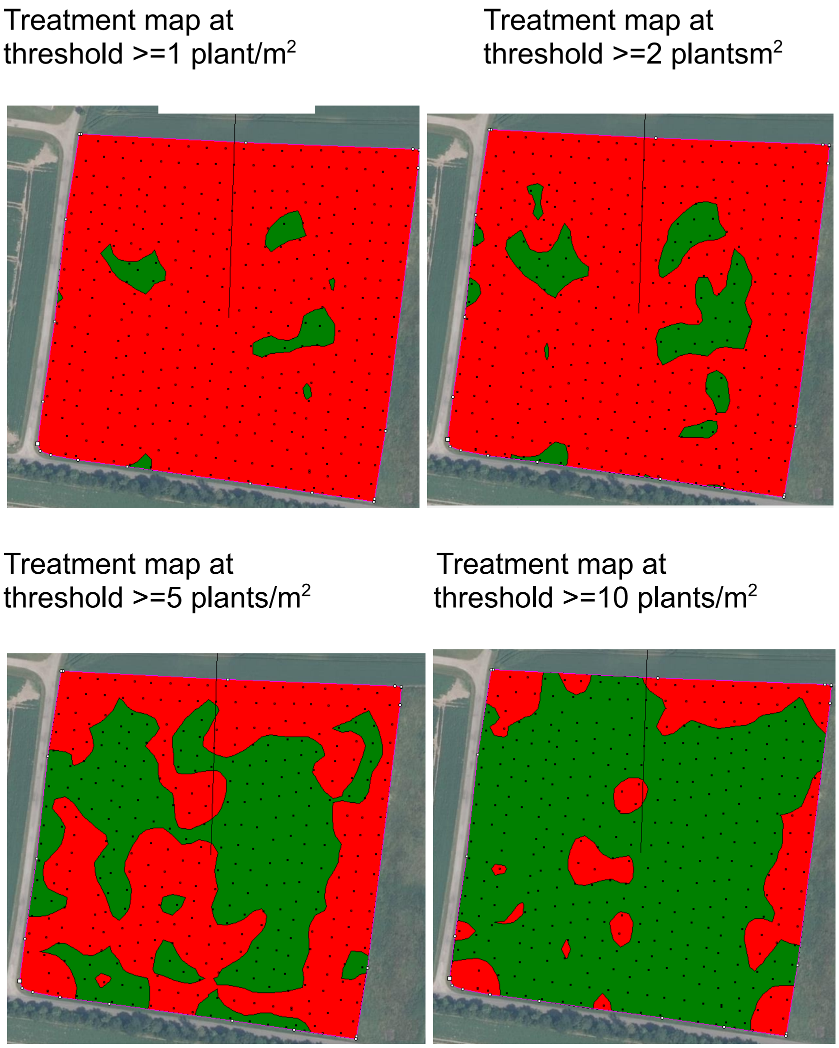

Figure 11: *Example of weed map in 1 field, at 4 different threshold values of 1, 2, 5 and 10 monocot pl/m^2. Dots indicate spots, where pictures have been taken, which interpolation is based upon. Red colour indicates areas, which exceed threshold values.*

In Table 6, combinations of crops and weeds, which use the currently lowest threshold value of 1 pl/m^2, are marked in pink colour. In silage-maize, which do not tolerate much competition from weeds, the threshold value >=1 pl/m^2 was used and many of the 42 weeds were found in the 84 fields; while in cereal crops in spring, only 15 species use this threshold value and in winter wheat in autumn season only 2 species used this low threshold value.

Table 6: Spray thresholds in RWM *for combinations of crops, seasons and weed species, which are included in the present report. Combinations, which use the low threshold value >=1 are marked in red colour.*

Weed species		**Weed threshold density releasing requirement for control (plants/m^2)**			
	Occurrences in 84 fields	**Spring barley**	**Winter wheat, autumn**	**Winter wheat, spring**	**Maize, silage**
Anchusa arvensis	2	50	150	50	1
Aphanes arvensis L.	1	10	150	150	1
Artemisia vulgaris L.	8	1	10	10	1
Artemisia vulgaris L.	2	10	300	50	10
Atriplex patula L.	1	1	300	50	10
Brassica napus L.	54	1	1	10	1
Capsella bursa-pastoris	34	10	50	50	1
Chenopodium album L.	18	1	300	50	1
Cirsium arvense	14	1	300	1	10
Convolvulus arvensis L.	1	50	300	50	10
Equisetum arvense L.	8	1	300	1	N/A
Erodium cicutarium	13	10	150	50	1
Euphorbia helioscopia L.	1	10	300	50	1
Festuca rubra L.	1	50	50	50	1
Fumaria officinalis L.	7	10	50	50	10
Galeopsis spp.	1	1	300	10	1
Galium aparine L.	24	1	1	1	10
Geranium sp.	27	10	10	50	1
Lamium spp.	10	50	150	50	1
Lapsana communis	2	50	150	50	150
Lolium perenne L.	27	1	10	10	1
Myosotis arvensis	7	10	150	150	1
Papaver rhoeas L.	7	10	10	10	1
Plantago lanceolata L.	1	N/A	N/A	N/A	1
Poa annua L.	72	150	10	150	1
Polygonum aviculare L.	3	10	300	50	1
Polygonum convolvulus L.	13	1	300	10	50
Polygonum lapathifolium L.	1	10	300	50	1
Polygonum persicaria L.	25	10	300	50	1
Ranunculus repens L.	3	1	10	1	1

Rumex crispus L.	2	1	50	50	10
Senecio vulgaris L.	1	50	150	50	10
Sinapis arvensis L.	5	1	300	10	10
Solanum nigrum	4	10	300	50	10
Spinacia oleracea	5	10	150	10	10
Stellaria media	54	10	10	10	1
Taraxacum officinale	16	10	300	50	10
Tripleurospermum inodorum L.	48	1	10	1	10
Urtica urens L.	8	10	300	50	1
Veronica persica	52	50	50	50	N/A
Vicia faba	2	N/A	N/A	N/A	10
Viola arvensis	35	50	10	50	10
Total	620				

Table 7 shows how large proportions of each of 82 whole fields that will be left untreated, when 4 different threshold values are used for monocot weeds and 1 threshold value for dicot weeds.

As 2 of the 84 fields had so complex weed infestation and so large weed plants that RWM/IPMwise could not find options for control, the calculations of field specific reduction potentials include only 82 fields, while calculations of additional savings on the site-specific level includes 84 fields.

Table 7: *Relative proportions of 84 fields, which will not be sprayed, when different thresholds values of weed density are used, actually 1, 2, 5 og 10 weed plants/m^2). As the number of pictures/ha affects also safety in interpolations, satisfactory fields are marked in green colours and non-satisfactory fields in red colours.*

Crop	Season	Area (ha)	Number of pictures/ha	Relative saving (%)				
				Monocot. at threshold				Dicot. at threshold
				>=1	>=2	>=5	>=10	>=1
Maize, silage	Spring	3.25	250	2	4	15	37	0
		6.07	214	11	19	36	52	0
		7.5	208	3	8	23	46	0
		9.3	210	0	0	0	1	0
		9.95	176	1	1	3	5	0
		12.44	192	11	22	46	70	0
		12.63	186	2	4	12	25	0
		24	327	0	0	2	11	0
Winter barley	Autumn	14.05	80	3	6	19	46	0
		16.02	100	63	76	91	98	5
		18.78	387	2	4	8	10	0
	Spring	4.71	94	1	6	26	46	0
		5.67	107	40	56	76	85	1
		8.24	102	0	0	0	1	0
		8.33	94	24	38	65	84	7
		16.7	86	64	74	87	93	5
		20.62	85	47	63	83	93	16
		30.44	80	0	0	0	1	0
Winter wheat	Autumn	2.72	134	0	0	2	16	0
		3.33	424	59	77	92	97	0
		4.38	117	0	0	11	66	0
		4.74	133	45	69	92	97	0
		8.92	97	34	61	91	99	4
		10.12	101	70	85	98	100	5
		11.45	77	46	61	79	89	7
		12.52	543	14	38	82	96	0
		15.09	293	61	82	98	100	1
		16.47	368	4	14	46	74	0
		16.99	86	47	67	87	94	0
		17.1	62	16	28	64	90	1
		17.98	357	65	79	90	95	0
		18.11	311	68	89	98	99	0
		18.66	349	95	98	99	100	12
		21.94	89	28	39	54	69	0
		25.22	332	57	74	88	93	1
		29.46	324	93	98	99	100	19

		32.4	82	8	16	43	75	0
		42.52	441	0	0	3	20	0
		47.16	364	28	42	64	82	0
	Spring	1.87	352	1	6	36	67	5
		2.44	95	84	90	96	99	8
		3.5	118	2	9	41	77	0
		3.62	100	4	11	44	80	0
		3.74	121	0	0	1	7	0
		4.53	481	58	78	93	97	16
		5.04	89	86	94	97	99	0
		8.05	83	89	95	97	98	1
		9.97	97	45	66	89	95	6
		11.01	186	26	41	67	80	30
		11.92	253	0	0	1	4	0
		13.31	93	71	79	91	96	25
		14.72	94	5	12	31	55	2
		16.48	104	66	81	94	97	2
		17.1	101	0	0	1	5	0
		21.89	259	21	45	83	95	32
		22.81	122	66	79	90	95	60
		23.68	202	65	79	90	95	28
		26.55	239	10	16	35	57	1
		29.53	253	1	2	5	11	0
		30.6	86	6	14	42	69	1
Winter rye	Spring	2.33	338	72	81	87	91	0
		2.83	627	38	62	79	85	23
		3.12	955	52	70	85	93	1
		6.66	307	87	97	99	100	74
		8.34	84	67	84	94	96	1
		16.62	250	1	3	12	31	0
		19.71	64	35	49	72	87	0
		21.61	244	21	35	61	80	0
Spring barley	Spring	1.87	564	0	0	0	0	0
		5	224	0	0	0	0	0
		9.16	148	70	88	97	99	0
		12.52	105	0	0	0	1	0
		12.54	97	6	11	24	38	0
		14.7	119	0	0	0	0	0
		15.82	222	0	0	0	1	0
		18.64	83	90	96	98	99	88
		19.37	81	0	0	0	0	0
		20.28	87	81	89	95	98	0
		21.89	418	0	0	0	5	0
		23.17	244	0	1	8	32	0
		24.99	99	30	49	81	95	0
		28.15	83	96	98	99	100	76
		40.95	69	0	0	0	0	0
		44.61	91	84	91	95	98	0

Based on Table 7, average results are presented in Table 8.

Table 8: *Average saving of cost, TFI and ELI in % in 84 fields, separated by crop and growing season by spot spraying according to 4 threshold values of monocots and 1 thresholds value of dicots.*

		No. of fields	Pictures (no./ha)	Monocots, at threshold (pl/m²)				Dicots, at threshold (pl/m²)
				>=1	>=2	>=5	>=10	>=1
Maize, silage	Spring	8	220	4	7	17	31	0
Winter barley	Autumn	3	189	23	29	39	51	2
	Spring	7	93	25	34	48	57	4
Winter wheat	Autumn	21	242	40	53	70	83	2
	Spring	21	168	34	43	58	70	10
Winter rye	Spring	8	359	47	60	74	83	12
Spring barley	Spring	16	171	29	33	37	42	11
Count/average		**84**	**206**	**29**	**37**	**49**	**60**	**6**

Table 8 shows that herbicide savings, which were achieved by treating only spots/areas in a field, where threshold values were exceeded for monocot and dicot weeds, vary strongly both between crops and used threshold values. The threshold value >=1 may be used on monocot species, which are quite noxious, while the value >=10 may be used on more inferior species.

In general and as expected, when increasing threshold values from 1 to 10 pl/m^2, the potential savings increase significantly, actually around 2-3 times. Results from many years of field testing of herbicides show that when a relative low infestation of residual weeds occurs, yield, weed propagation and other aspects, which farmers may consider important when evaluating the success of weed control, will also be properly addressed.

In 2021-22, full-scale field validation tests, sponsored by the Danish EPA, will be executed to evaluate, if satisfactory weed control has been achieved, when applying the RWM-chain also for site-specific control.

Yet recorded savings in silage-maize should be ignored, until more true and fair results have been achieved on the whole-field level. In particular, needs for multiple photographing and treatments, needs to be better managed..

When replacing field specific with site-specific control, and using a threshold value of >=1 pl/m^2 on monocots, 23-47% savings were achieved. At a threshold value of instead >=10 pl/m^2 of monocots, 43-83% savings were achieved.

When selecting threshold values for monocot, it may be taken into account also that according to Table 6, even the currently most noxious monocot weed in Denmark, which is *Lolium perenne*, currently uses the threshold value >=10 pl/m^2. However, results from large-scale tests of RWM should be awaited before final threshold values shall be selected.

With dicots, only results from the threshold value >=1pl/m^2 are shown. This value may be considered to be relatively safe for use also in fields, where sparse/no information is available on occurrences on the species level. When replacing field specific with site specific control, and using the threshold value >= 1 pl/m^2 on dicots, 2-12% reductions were achieved. Which may be considered to be relatively small savings. However, this results is not so surprising, when taking also into account that results in Table 4a, which shows a total count of 40 dicot species, where only a few quite noxious species, such as for example G*alium aparine*, use such low threshold values.

Until better validation has been achieved on the realized weed efficacy after site-specific treatments which consider also uncertainties arising from the fact that only about 1% of the fields have actually been photographed, threshold values for monocot, which lie in between 1 and 10 plants/m^2 may be considered for inclusion in field validation experiments. Such decisions may also to some extent counteract for possible adverse effects caused by the used interpolation method which connects results from analyses of single pictures. In Table 9, potential savings has been calculated from replacing whole field treatment with site specific treatment in 13 fields, to specifically control *Cirsium arvense*, which often occurs in distinct field patches.

Table 9: *Potential saving of herbicide cost, when making site-specific control of only Cirsium arvense in 13 fields, when using a threshold value of >= 0.1 plant/*m^2.

Crop	Season	Area (ha)	Number of pictures per ha	Saving in %
Winter wheat	Autumn	8,9	97	91
Winter wheat	Autumn	10,1	101	97
Winter wheat	Autumn	42,5	441	87
Winter wheat	Spring	1,9	352	87
Winter wheat	Spring	3,5	118	83
Winter wheat	Spring	11,9	253	94
Winter wheat	Spring	26,6	239	93
Winter wheat	Spring	29,5	253	77
Winter rye	Spring	16,6	250	96
Winter rye	Spring	19,7	64	97
Spring barley	Spring	9,2	148	55
Spring barley	Spring	25,0	99	92
Spring barley	Spring	41,0	69	91
Average		**19,0**	**191**	**87,6**

These results show that considerable savings may be achieved from site specific treatment, even when using a very low threshold value of 0.1 pl/m^2. The average saving was 88%.

In Figure 12, an example of a treatment map, specificly for *Cirsium arvense* is presented.

Figure 12: Example of treatment map for Cirsium arvense (red markings), when using a threshold value of >= 0.1 pl/m^2.

Many relatively new field sprayers have an automatic open/close function, which can be used for spot-spraying of specific weed patches, for example of *Cirsium arvense*.

In the RWM project, until now *Cirsium arvense* is the only weed species, where realistic treatment maps have been delivered, and connected potential from use of spot-spraying has been calculated. However, by use of additional VFI and ML-training, additional automatic determination of weeds on the botanical family, genus and species levels are expected to be released later in 2021. To establish linkages from weeds, yet auto determined ‘only’ on family and genus levels, default ‘worst-case’ representatives of species, will be auto selected for RWM-calculation.

This will also include more detailed and more realistic herbicide application maps, which can be used for spot spraying.

Potential savings by combination of potentials on whole-field level and site-specific level ('spot spraying')

Until ML can automatically determine weeds on the species level, it will also be necessary to use relatively low threshold values for spot spraying, as shown in Table 6, 7 and 8, to ensure satisfactory weed control, both on the whole-field level and on the site-specific level.

Based on results in Table 7 and 8, unfortunately, it is not possible to estimate the total savings, when spraying simultaneously against both monocot and dicot weeds. A theoretical option may be to estimate how big proportions of fields have occurrence of monocot and dicot, which do not exceed threshold values. However, such an exercise has not been prioritized, as such calculations are considered to be only a relatively short intermezzo, until a substantial number of weed species can be auto determined by ML.

Accordingly, in Table 10 and 11, potential savings on the site-specific level has been calculated separately for monocot and dicot weeds. This has been done by combining extracts of Table 5 on whole-field level with results from Table 8 on site-specific level. However, this calculation ignores that only a few of the 82 fields had a need for control of only monocot or dicot weeds, and may therefore be considered to be too theoretical.

This calculation method for potential savings from combined whole-field and site-specific potentials can therefore be criticised, and shall therefore not be regarded as having any significance.

Table 10: Average savings in different crops and seasons *on the whole-field level for monocot and dicot weeds and on the site-specific ('spot') level on monocot weeds*

Crop	**Season**	**No. of**	**Ref. whole-field**			**Saved, whole-field (%)**			**Saved, spot (%)**				**Saved whole-field+spot (%)**		
		fields	**mono- + dicot**			**mono- + dicot**			**monocot**				**monocot**		
									at 4 thresholds (pl/m$^{2)}$				**at threshold >=1 pl/m^2**		
			Cost	**TFI**	**ELI**	**Cost**	**TFI**	**ELI**	**>=1**	**>=2**	**>=5**	**>=10**	**Cost**	**TFI**	**ELI**
			(dkk/ha)			**(%)**	**(%)**	**(%)**	(%)	(%)	(%)	(%)	**(%)**	**(%)**	**(%)**
Maize, silage	Spring	8	-	-	-	-	-	-	4	7	17	31	-	-	-
Winter barley	Autumn	3	139	0,36	0,60	-401%	-259%	-293%	23	29	39	51	-286%	-155%	-140%
Winter barley	Spring	7	161	0,86	0,14	73%	52%	52%	25	34	48	57	80%	68%	75%
Winter wheat	Autumn	21	288	0,97	1,11	52%	34%	85%	40	53	70	83	71%	69%	96%
Winter wheat	Spring	21	253	1,35	0,14	76%	63%	90%	34	43	58	70	84%	79%	96%
Winter rye	Spring	8	98	0,44	0,04	57%	24%	6%	47	60	74	83	77%	70%	76%
Spring barley	Spring	16	293	1,65	1,09	72%	49%	95%	29	33	37	42	80%	66%	97%
Sum/mean		**84**							**29**	**37**	**49**	**60**			

Table 11: *Average savings in different crops and season on the whole-field level for monocot and dicot weeds and on the site-specific ('spot') level for dicot weeds.*

Crop	Season	No. of fields	Ref. whole-field mono- + dicot			Saved, whole-field mono- + dicot			Saved, spot dicot at threshold >= 1 pl/m^2	Saved, whole-field+spot dicot at threshold >=1 pl/m2		
			Cost (dkk/ha)	TFI	ELI	Cost (%)	TFI (%)	ELI (%)	(%)	Cost (%)	TFI (%)	ELI (%)
Maize, silage	Spring	8	-	-	-	-	-	-	0	-	-	-
Winter barley	Autumn	3	139	0,36	0,60	-401%	-259%	-293%	2	-391%	-273%	-304%
Winter barley	Spring	7	161	0,86	0,14	73%	52%	52%	4	74%	52%	52%
Vinter wheat	Autumn	21	288	0,97	1,11	52%	34%	85%	2	53%	34%	85%
Winter wheat	Spring	21	253	1,35	0,14	76%	63%	90%	10	78%	63%	90%
Winter rye	Spring	8	98	0,44	0,04	57%	24%	6%	12	62%	24%	6%
Spring barley	Spring	16	293	1,65	1,09	72%	49%	95%	11	75%	49%	95%
Sum/mean		**84**							**6**			

Potential savings from site-specific weed control will be gradually improved, when more weeds and connected growth stages can be robustly auto determined by ML.

Additional tasks needing solving that are connected to RWM

For the RWM-consortium, a hypothesis has been, whether dual-line sprayers, which include 2 spray booms that can spray different herbicides/dose rates separately, could become particular important, e.g. by using one boom for herbicides against monocots and another boom for herbicides against dicots.

However, the RWM calculations in 82 fields show (Enclosure 3, Table 5) that the cheapest and also most environmentally friendly solutions were achieved often by use of herbicides, which simultaneously and efficiently control both monocot and dicot. For example, herbicide products such as Boxer (prosulfocarb), Hussar Plus (iodosulfuron, mesosulfuron), Atlantis OD (iodosulfuron and mesosulfuron) MaisTer (foramsulfuron, iodosulfuron, isoxadifen), etc.

Accordingly, the use of dual-line sprayers may instead be optimized in different ways. As automatic determination of weeds is expected to develop gradually in the coming years, accompanying new optimization methods should be developed to produce electronic spray maps, which can be read by various brands of 'spray controllers'. Such optimization needs to include also different spray methods, e.g. mixing in tank, mixing in nozzle by injection and application in both 2-timesteps and real-time.

For such specific ‘settings’, specific optimizations of herbicide product combinations and dose rates should be made accordingly.

Until this becomes available, crop advisors/farmers may make an initial set-off, by applying whole-field treatments by using standardised ‘best practice treatments’ which match weed infestations found by VFIs. Or use RWM to find more specific treatments, which also have significant potential. For sprayers, which can do on/off spot spraying, specific treatment maps may be used to harvest additional potential.

Balancing time spent and benefits achieved from ‘virtual field inspections’

As long as ML can only auto discriminate weeds as mono- or dicot, VFIs are required to expand the identification to botanical family, genus and species level..

Crop advisors, IPMwise and similar systems need connected information on weed species, classes of weed growth stages and weed density, to identify combinations of herbicide products and connected dose rates suitable for recommendation in a particular fields.

In Table 13, it can be seen how much time it takes to perform VFIs,’ using the RWM system. A randomly selected sample was made among the 84 photographed fields. In each field, 4 samples were taken out of autodetected thumbnail pictures of monocot and dicot weeds, respectively, which had been auto sorted descending according to weed size. 4 samples representing 0, 25, 50 and 75% percentiles were selected.

For training and control of results from VFIs, the Danish online weed in in ‘Crop Protection Online’ was used.

Table 13: *Time spent on 'virtual field inspections' in 10 randomly selected fields out of 84 fields. Weeds and accompanying growth stages were determined and counted in 4 samples, each of thumbnail pictures, which had been auto-detected by ML as mono- and dicots.*

Field no.	No. of ha	No. of dicot thumbnails in the field	No. of monocot thumbnails in the field	No. of minutes
16	21,9	526.944	149.997	21
19	2,3	8.331	3.951	10
31	10,1	11.413	816	16
32	25,2	161.851	19.387	19
36	11,0	1.941	3.334	15
37	22,8	1.302	1.834	22
38	14,1	64.521	4.614	14
39	32,4	98.412	5.385	14
40	21,6	62.311	5.385	28
41	16,6	116.667	18.223	27
83	3,3	24.697	3.410	16
Sum	181,3	1.078.390	216.336	202
Average	16,5	98.035	19.667	18
Minimum	2,3	1.302	816	10
Maximum	32,4	526.944	149.997	28

In RWM, 'execution of VFI requires a good insight in weed botany, and probably also a short introduction to the RWM user-interface, including hints on how to work efficiently. The results in Table 13 were achieved after 2-3 hours of training over 2-3 days.

VFIs may offer the following gains:

- New business case for crop advisors and others, who have good insight in weed botany
- Economic and environmental gains for farmers and the environment
- Support to additional training of ML for auto determination of weeds on the species and weed size level [3].

[3] Teimouri, N. et al., 2018. Weed Growth Stage Estimator Using Deep Convolutional Neural Networks. *Sensors* , 18(5), p.1580.

Scaling up Denmark

The executed theoretical analyses of potentials of the RWM technology in 82 fields as presented in Table 5, which represent a total area of 1,278 ha, is not sufficient information to produce valid estimates of potentials for the whole of Denmark.

However, some indications can be provided of magnitudes, which Danish crop producers may look forward to, if adopting the RWM technology.

In crops and crop seasons, where a minimum of 4 fields occur and the pictures have been taken ‘timely’, the average potential savings have been calculated in Table 12 for use of the RWM system at the whole-field level.

Table 12: *Potential savings of cost, TFI and ELI in crops and seasons, where minimum 4 fields have been photographed timely, when treating on whole-field level and scaling up to total areas in Denmark*.

Crop	Season	Total area	Saved cost/ha		Saved in DK	Saved TFI		Saved ELI	
		in DK (tha)	(dkk/ha)	(%)	(mio dkk)	TFI	(%)	ELI	(%)
Winter barley	Spring	100	118	73%	12	0,45	52%	0,07	52%
Winter wheat	Autumn+Spring	599	342	66%	205	1,18	51%	1,06	88%
Winter rye	Spring	145	56	57%	8	0,10	24%	0,00	6%
Spring barley	Spring	491	212	72%	104	0,81	49%	1,03	95%
Total		**1335**			**329**				
Average, area weighted			**246**			**0,87**		**0,86**	

From a users point, potential net savings need to be calculated by subtracting cost for the RWM service from the potential saved cost for herbicides. However, yet the cost of the RWM service has not been equipped with a price tag.

Table 12 shows that particular in winter wheat and spring barley, considerable both economic and environmental savings can be achieved only by adjusting herbicide treatments on the whole-field level, while in winter barley and winter rye in spring, somewhat less savings may be achieved.

When scaling up to a total areal of cereals in Denmark of 1.335 mio ha[4], which may need weed control in the spring and some also in the autumn, a total savings of 246 dkk/ha = 33 euro/ha and 329 mio dkk in whole Denmark, may be realized using the RWM technology. This is also a step forward in the direction of

[4] News from Danmarks Statistik, no. 274, 6. Juli 2019

precision agriculture. The connected environmental savings were 0.87 TFI and 0.86 ELI. However, implementation of these total potentials require also that arable farmers have invested in the necessary technology to exploit the RWM technology. According to Danmarks Statistik[5], currently 48% of Danish farmers have invested in spray equipment which enables site-specific spraying.

Additional savings may be achieved from implementation of site-specific treatments. Until now, a particular potential for site-specific control of *Cirsium arvense* of 88% has been found.

In fields, where the selection of herbicide products and accompanying dose are determined, mainly by needs for control of monocot weeds, results in Table 10 show potential savings of 20-80% for site-specific control of monocot weeds (at different threshold levels). These savings may hereafter be added to the savings calculated already for the whole-field level, as shown in Table 12. However, this calculation requires that treatments for control of dicot weeds are made and executed separately (e.g. by a separate spraying), which farmer's may find somewhat troublesome.

These troubles can be completely avoided, when automatic determination of weeds on the species level can be made automatically by ML. Such automation may additionally add considerable potentials for additional reductions in herbicide use, as provisionally indicated in Table 10 and 11. For example, in case indeterminate monocot weeds, which are now treated as being the worst-case species *Lolium perenne*, can instead be determined, considerable additional both economic and environmental savings can be achieved.

Implementation of the results in practice

Now, where the RWM technology has achieved basal functionalities, and a ML model version has been trained to auto detect monocot and dicot weeds, commercial use can be initiated. Simultaneously, additional training of ML to detect weeds on the species level can be made.

This initial version of RWM will primarily be relevant for use on relatively large farms, where investments have already been made for sprayers, which can also execute spot spraying. Another initial group of users may be machine co-operatives, which may exploit weed maps to rationally treat many fields in a short period of time.

As soon as RWM is available in larger areas, new opportunities may occur to adapt also crop rotations, both conventional and organic, and both on the whole-field and site-specific level.

The crop advisor, Patriotisk, estimates that additional development of targeted use of herbicides, as highlighted in the RWM project, include potentials for considerable reductions of herbicide use, and may have a decisive effect on long-term desires for reducing or completely avoiding use of pesticides in future Danish Agriculture.

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[5] News from Danmarks Statistik, no. 391, 21. October 2020

The RWM also opens up for additional new options which, however, have not yet been highlighted. In this context, it may be considered that:

- Weed infestations often may be regulated/reduced over some years, for example by growing more spring cereals and more perennial crops, depending on which weeds that are dominating
- Soil cultivation may be intensified/extensified in fields, where perennial weeds such as *Cirsium arvense* or *Equisetum arvense* are spreading
- Graduated improvement of soil structures (e.g. liming) may be optimized, which may also regulate weed infestations, by deteriorating growing conditions for particular weed species
- Information on site-specific weed infestations at the farm level will enable also rational transitions, when new owners or managers are taking over. Today, such transitions will often lead to an initial decrease in yield levels, propagation of weeds and/or extra use of pesticides, until the new person in charge has gained some experience with the new fields

In summary, the results from RWM will benefit the environment, and additionally optimize and reduce the future use of pesticides and also optimize yields and economy of crop producers.

Results should be distributed at different levels:

- Scientific articles to motivate other researchers and investors to additionally develop and improve current technologies
- Professional documentation, e.g. by inclusion of also Danish ‘Landsforsøg’/Nordic trials, so that different companies and advisors can gain trust that the RWM works well and stick to provided promises
- In ways which ensure that sufficient capacities are available on the areas and points of time, which are requested by crop producers.This need also to include a time-strategy, which specifies how:
    - multiple photographing and treatments should be organized
    - reuse of earlier photographs can be made, so that new pictures need to be taken e.g. only every 5th year. However, this requires additional investigations
- Frontrunner farmers and other professions working with precision spraying should be offered participation in field meetings and network groups. It is important that farmers can gain their own experiences from use of new technologies
- From 1st March 2021, experts from Datlogisk and Patriotisk will be ready to support farmers in solving potential problems and provide new opportunities using the RWM system

Conclusion

The objective of the project (RoboWeedMaps / RWM) has been to analyze potential savings of herbicide use, by use of automatic determination of weed infestations.

In addition, the construction of a botanical, hierarchical system has been initiated. This will be used for gradually more specific weed identifications, starting with monocot and dicot weeds, then families, genus and ultimately species. The hierarchical identification is necessary for improved evaluation of needs for weed control and for the selection of suitable herbicide products, calculation of accompanying dose rates. Which will be used as a basis for subsequent optimization of herbicide tank-mixtures. To explore the potentials of RWM, 'virtual field inspections' (VFIs) were used to determine weed infestation at the weed species level. This is required to identify options for control in the photographed field and to simultaneously furtherly train ML.

To quantify economic and environmental potentials of the RWM technology, farmer's planned and/or executed herbicide applications were used as reference. In fields where this data were not available, regional 'best practice' recommendations were used instead.

As shown in Table 12 and Enclosure 3, potential savings have been estimated for cost, Treatment Frequency Index (TFI) and a special Danish Environmental Load Index (ELI) of herbicides.

For different crops and growing seasons, where the 'timely' photographing had been executed in a minimum of 4 fields, the area-weighted mean shows a savings of 246 dkk/ha, which is equal to 33 Euro/ha (57-73%) for herbicides, and environmental savings of 0.87 TFI and 0.86 ELI, when applying the RWM technology on the whole-field level.

Additional savings can be achieved by applying RWM at the site-specific level. It was demonstrated in 13 fields that when treating the weed *Cirsium arvense*, only 12% of the area needed treatment even when a low threshold value of >=0.1 pl/m^2 was used. Accordingly, a switch from field- to site specific control, created an additional reduction of herbicide input of 88%.

These initial results indicate that the RWM technology will be very useful, especially when species-specific treatments can also be prescribed. The hierarchical botanical system is expected to be developed and implemented for weed treatments at a species level later in 2021.

In addition, the RWM technology also opens up for a more stringent implementation of 7 of the 8 general principles on Integrated Pest Management (IPM), see EU Directive 2009/128/EC, Annex III.[6] For example, the principles that 'measures for control must be targeted for only detected pests' (here weeds), and 'adjusted according to expected efficacy', herbicide resistance management etc.

Commercial use of the RWM technology is still in the emerging phase, as the technology, including the HVCam (high-velocity camera), is quite new. The commercial RWM-product starts with collecting pictures while driving up to 40-60 km/h and ends with instructions/ spray map for optimized field- or site-specific herbicide applications.

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[6] The European Parliament and the Council of the European Union, 2009. Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticidesText with EEA relevance. *Official Journal of the European Union*, L 309(71), p.16.

However, among these yet relatively few users, the Danish RWM consortium now takes a leading position in offering a new RWM product chain. Considerable savings will be achieved when using herbicides for crop protection while using the RWM technologies.

The implementation of RWM is, however, challenged by many decades of conventional weed control, where herbicides were applied only at the whole-field level, and in most cases determined by often standardised plans and experiences.

Recognizing that weeds are different and need to be controlled accordingly, targeted weed management strategies are now possible. Such targeted strategies may be less subjected to errors, more rational, save money for the farmer and improve environmental conditions. In addition, this technology provides the ability to improve biodiversity by leaving some spots untreated.

During the 4 years of work in the RWM project, a new business case has been established. However, important elements still need to be further developed and delivered. Such elements are in particular:

- Refinements of the HVCam
- Improvement of the hierarchical botanical model, which can now automatically determine weeds as monocot and dicot. Information is required about the family, genus and ultimately species level to identify and optimize options for application of herbicides.
- Large-scale field validation trials, where the efficacy on weeds of the RWM is compared to efficacy of best practice treatments. Such will be executed in 2021-22, also sponsored by the Danish EPA.

In addition, the RWM consortium continues to invest in additional improvements of the RWM product. In 2021,the investment for additional HVCams has been initiated.

To promote the demands of the 1st commercial version of the RWM product, approximately 1,000 ha have been planned for photographing in 2021, and presentations have been planned for selected farmers and advisor innovators and early adopters.

In 2021, it will also be analyzed by use of IPMwise, how targeted the farmers/advisors reference treatment have been, for weed infestations as documented by pictures and ‘virtual field inspection’.

Enclosure 1: Results from virtual field inspections in 84 fields

Enclosure 2: Weed maps from 84 fields

Printouts from the Danish online Farm Management System ‘Naesgaard Markkort’, showing the distribution of weeds by using different threshold values of weed density.

Enclosure 3: Economic and environmental savings on herbicides and adjuvants in 84 single fields

Provisional savings on herbicides and adjuvants in 84 fields by using the RWM product chain on the whole-field level. In Table 5, summary results are presented.

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size: 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
1	1	JN	Winter wheat	Spring	3,5	DICOT	1.500	103,5	14,5	Fuglegræs, alm.			2				5-8	0,6	IT	Express C
										Hyrdetaske			6				5-8	1,8		
										Kamille, lugtløs			21				5-8	6,2		
										Ranunkel, lav			1				5-8	0,3		
										Storkenæb, blød			9				5-8	2,7		
										Tidsel, ager			10				5-8	3,0		
						MONOC	787	103,50	7,6	Rapgræs, enårig			100				5-8	7,6		
1	2	JN	Winter wheat	Spring	3,62	DICOT	2.460	90,25	27,3	Burre-snerre			1				3-4	0,3	IT	Mustang
										Bynke, grå			1				3-4	0,3		
										Fuglegræs, alm.			18				5-8	5,7		
										Hejrenæb			18				5-8	5,7		
										Kamille, lugtløs			37				3-4	11,7		
										Ranunkel, lav			3				5-8	1,0		
										Raps			1				3-4	0,3		
										Stedmoder, ager			1				3-4	0,3		
										Storkenæb, blød			6				3-4	1,9		
						MONOC	1.040	90,25	11,5	Rapgræs, enårig			100				5-8	11,5		
1	3	JN	Winter wheat	Spring	16,48	DICOT	11.333	426,50	26,6	Fuglegræs, alm.			1				3-4	6,6	IT	Express C
										Hejrenæb			1				3-4	6,6		
										Raps			1				3-4	6,6		
										Stedmoder, ager			1				3-4	6,6		
						MONOC	637	426,50	1,5	Rapgræs, enårig			100				5-8	1,5		
1	4	JN	Winter wheat	Spring	9,97	DICOT	2.661	241,75	11,0	Kamille, lugtløs			55				5-8	8,9	IT	Ally SX
										Mælkebøtte			9				5-8	1,5		
										Storkenæb, blød			4				3-4	0,6		
						MONOC	1.017	241,75	4,2	Rapgræs, enårig			100				5-8	4,2		
1	5	JN	Winter barley	Spring	5,67	DICOT	3.108	151,75	20,5	Fuglegræs, alm.			47				>8	5,5	IT	Ally SX
										Hejrenæb			47				>8	5,5		
										Hyrdetaske			2				3-4	0,2		
										Kamille, lugtløs			73				5-8	8,6		
										Mælkebøtte			1				3-4	0,1		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Tidsel, ager			1				3-4	0,1		
										Ærenpris, storkronet			3				3-4	0,4		
						MONOC	1.504	151,75	9,9	Rapgræs, enårig			100				5-8	9,9		
1	6	JN	Winter barley	Spring	8,24	DICOT	12.852	210,75	61,0	Fuglegræs, alm.			17				>8	13,0	IT	DFF
										Hejrenæb			4				5-8	3,0		Hussar O
										Hyrdetaske			12				3-4	9,1		Starane X
										Kamille, lugtløs			6				5-8	4,6		
										Stedmoder, ager			6				3-4	4,6		
										Ærenpris, storkronet			35				3-4	26,7		
						MONOC	15.228	210,75	72,3	Rapgræs, enårig			100				5-8	72,3		
1	7	JN	Winter barley	Spring	8,33	DICOT	4.346	196,25	22,1	Fuglegræs, alm.			14				3-4	5,7	IT	Ally SX
										Kamille, lugtløs			60				5-8	24,6		
										Ærenpris, storkronet			2				3-4	0,8		
						MONOC	1.279	196,25	6,5	Rapgræs, enårig			100				5-8	6,5		
1	8	JN	Winter barley	Spring	20,62	DICOT	3.035	438,00	6,9	Burre-snerre			1				3-4	0,0	IT	Ally SX
										Fuglegræs, alm.			42				5-8	1,8		
										Hyrdetaske			4				3-4	0,2		
										Kamille, lugtløs			100				5-8	4,4		
										Mælkebøtte			2				3-4	0,1		
										Stedmoder, ager			6				3-4	0,3		
										Ærenpris, storkronet			3				3-4	0,1		
						MONOC	1.561	438,00	3,6	Rapgræs, enårig			100				5-8	3,6		
1	9	JN	Winter barley	Spring	16,7	DICOT	6.185	358,25	17,3	Fuglegræs, alm.			9				5-8	3,3	IT	Ally SX
										Hyrdetaske			36				5-8	13,2		
										Mælkebøtte			1				3-4	0,4		
										Storkenæb, blød			1				3-4	0,4		
						MONOC	1.395	358,25	3,9	Rapgræs, enårig			100				5-8	3,9		
1	10	JN	Winter barley	Spring	30,44	DICOT	97.789	605,50	161,5	Fuglegræs, alm.			60				>8	56,3	IT	Ally SX
										Hejrenæb			50				>8	46,9		Harmony
										Hyrdetaske			60				5-8	56,3		DLG Con
										Kamille, lugtløs			2				5-8	0,0		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
						MONOC	50.566	605,50	83,5	Rapgræs, enårig			100				5-8	83,5		
1	**11**	JN	Winter barley	Spring	4,71	DICOT	10.578	110,50	95,7	Fuglegræs, alm.			80				>8	44,3	IT	Ally SX
										Hyrdetaske			80				5-8	44,3		
										Kamille, lugtløs			12				3-4	6,6		
										Stedmoder, ager			1				3-4	0,6		
						MONOC	3.204	110,50	29,0	Rapgræs, enårig			100				5-8	29,0		
1	**12**	JN	Winter wheat	Spring	14,72	DICOT	4.115	345,25	11,9	Burre-snerre			1				3-4	0,1	IT	Hussar Pl
										Fuglegræs, alm.			1				5-8	0,1		
										Hejrenæb			1				5-8	0,1		
										Hyrdetaske			80				5-8	9,6		
										Kamille, lugtløs			7				5-8	0,8		
										Ærenpris, storkronet			9				5-8	1,1		
						MONOC	4.342	345,25	12,6	Rajgræs, alm.			20				5-8	2,5		
										Rapgræs, enårig			80				5-8	10,1		
1	**13**	JN	Winter wheat	Spring	3,74	DICOT	4.688	113,00	41,5	Fuglegræs, alm.			20				>8	4,9	IT	Hussar Pl
										Hejrenæb			20				>8	4,9		
										Hyrdetaske			40				5-8	9,8		
										Kamille, lugtløs			50				5-8	12,2		
										Ærenpris, storkronet			40				5-8	9,8		
						MONOC	3.201	113,00	28,3	Rajgræs, alm.			15				5-8	4,5		
										Rapgræs, enårig			80				5-8	23,9		
2	**14**	JN	Winter wheat	Spring	21,89	DICOT	10.117	1246,52	8,1	Burre-snerre		4	5	1		10	3-4	1,3	IT	Starane X
										Forglemmigej, mark			2	3		5	5-8	0,6		
										Fuglegræs, alm.	2	6	8	1		17	3-4	2,2		
										Hyrdetaske			2			2	3-4	0,3		
										Nælde, liden			1	2		3	5-8	0,4		
										Raps			3			3	3-4	0,4		
										Stedmoder, ager		3	6			9	3-4	1,2		
										Storkenæb, blød			5	2	1	8	5-8	1,0		
										Ærenpris, storkronet		1	5			6	3-4	0,8		
						MONOC	7.898	1246,52	6,3	Rapgræs, enårig			100	100		200	5-8	6,2		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
										Rajgræs, alm.			3			3	5-8	0,1		
2	15	JN	Winter wheat	Spring	1,87	DICOT	1.402	144,76	9,7	Fuglegræs, alm.			4			4	3-4	1,4	IT	Express S
										Kamille, lugtløs	4	6	6			16	3-4	5,5		Primus 25
										Mælkebøtte				1		1	5-8	0,3		DLG Con
										Raps		2				2	1-2	0,7		
										Tidsel, ager			5			5	3-4	1,7		
						MONOC	2.897	144,76	20,0	Rapgræs, enårig			100	100		200	5-8	19,5		
										Rajgræs, alm.			4			4	3-4	0,4		
2	16	JN	*Winter rye*	Spring	21,89	DICOT	526.944		231,1	Hyrdetaske			30			30	3-4	49,5	IT	Cossack
										Kamille, lugtløs			25			25	3-4	41,3		Renol
										Pileurt, fersken		5				5	1-2	8,3		
										Raps		60	10			70	1-2	115,5		
										Ærenpris, storkronet			10			10	3-4	16,5		
						MONOC	149.997		68,0	Rapgræs, enårig		300	200	100		600	5-8	68,0		
2	17	JN	Winter rye	Spring	1,87	DICOT	74.593		282,82	Kamille, lugtløs				15		15	5-8	40,0	IT	Harmony
										Mælkebøtte			2	2		4	5-8	10,7		Primus 25
										Pileurt, versken		6	2			8	3-4	21,3		DLG Con
										Sennep, ager		50	20			70	3-4	186,8		
										Stedmoder, ager				8		8	5-8	21,3		
										Tidsel, ager			1			1	3-4	2,7		
						MONOC	24.109		92,0	Rapgræs, enårig		30	20	6		56	3-4	92,0		
2	18	JN	Winter rye	Spring	6,66	DICOT	4.496	817,60	5,5	Burre-snerre			1			1	3-4	0,0	IT	Ally SX
										Forglemmigej, mark			2			2	3-4	0,1		
										Fuglegræs, alm.			30	50		80	5-8	2,9		
										Jordrøg, læge				6		6	5-8	0,2		
										Nælde, liden			3			3	3-4	0,1		
										Ranunkel, lav				2		2	5-8	0,1		
										Raps		4	15			19	3-4	0,7		
										Stedmoder, ager			8			8	3-4	0,3		
										Storkenæb, blød			6	10		16	5-8	0,6		
										Vejbred, lancet		2	4			6	5-8	0,2		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Ærenpris, storkronet		3	6			9	3-4	0,3		
						MONOC	1.111	817,60	1,4	Rapgræs, enårig			6			6	3-4	1,4		
2	**19**	JN	Winter rye	Spring	2,33	DICOT	8.331	314,80	26,5	Forglemmigej, mark			1			1	3-4	0,5	IT	Ally SX
										Fuglegræs, alm.			8	15		23	5-8	11,5		
										Jordrøg, læge			2			2	3-4	1,0		
										Kamille, lugtløs			8	10		18	5-8	9,0		
										Raps			1			1	3-4	0,5		
										Storkenæb, blød				8		8	5-8	4,0		
						MONOC	3.951	314,80	12,6	Rapgræs, enårig				100		100	5-8	12,6		
2	**20**	JN	Winter rye	Spring	2,83	DICOT	5.324	710,00	7,5	Mælkebøtte			6			6	3-4	1,1	IT	Ally SX
										Kamille, lugtløs			8			8	3-4	1,5		
										Raps			7			7	3-4	1,3		
										Stedmoder, ager			2			2	3-4	0,4		
										Storkenæb, blød			12			12	3-4	2,2		
										Ærenpris, storkronet			1	5		6	5-8	1,1		
						MONOC	6.180	710,00	8,7	Rapgræs, enårig				100		100	5-8	7,9		
0										Rajgræs, alm.				10		10	5-8	0,8		
2	**21**	JN	Winter rye	Spring	3,12	DICOT	14.072	1191,60	11,8	Fuglegræs, alm.			6			6	3-4	1,3	IT	Ally SX
										Kamille, lugtløs		4	12	8		24	5-8	5,1		
										Mælkebøtte			4			4	3-4	0,8		
										Raps			4			4	3-4	0,8		
										Storkenæb, blød			9	9		18	3-4	3,8		
						MONOC	4.442	1191,60	3,7	Rapgræs, enårig				100		100	5-8	3,7		
3	**22**	JN	Winter wheat	Spring	4,53	DICOT	21.937	872,40	25,1	Burre-snerre			24			24	3-4	4,5	IT	DFF
										Fuglegræs, alm.			10	40		50	5-8	9,3		Hussar O
										Hyrdetaske				15		15	5-8	2,8		
										Kamille, lugtløs			20	20		40	5-8	7,5		
										Stedmoder, ager			6			6	3-4	1,1		
						MONOC	4.999	872,40	5,7	Rapgræs, enårig				40		40	5-8	4,6		
										Rajgræs, alm.				10		10	5-8	1,1		
4	**23**	S	Winter wheat	Autumn	4,38	DICOT	5.238		38,1	Fuglegræs, alm.		20				20	1-2	6,9	IT	Mateno D

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Hyrdetaske		15				15	1-2	5,2		Atlantis C
										Raps			50			50	3-4	17,3		Buctril EC
										Stedmoder, ager		15				15	1-2	5,2		
										Ærenpris, storkronet		10				10	1-2	3,5		
						MONOC	416		6,5	Rajgræs, alm.		50	10			60	1-2	6,5		
4	**24**	S	Winter barley	Autumn	16,02	DICOT	5.956		20,6	Burre-snerre		2				2	1-2	0,5	IT	Boxer
										Fuglegræs, alm.		20	20			40	3-4	10,3		Nuance V
										Pileurt, fersken		6				6	1-2	1,5		DLG Con
										Raps			20			20	3-4	5,1		
										Storkenæb, blød		2				2	1-2	0,5		
										Stedmoder, ager		6				6	1-2	1,5		
										Ærenpris, storkronet		4				4	1-2	1,0		
						MONOC	594		8,2	Rajgræs, alm.		15				15	1-2	8,2		
4	**25**	S	Winter wheat	Autumn	16,99	DICOT	14.446		40,9	Fuglegræs, alm.		8				8	1-2	2,9	IT	Otello
										Raps		80	5			85	1-2	30,5		
										Stedmoder, ager		6				6	1-2	2,2		
										Ærenpris, storkronet		15				15	1-2	5,4		
						MONOC	1.048		9,8	Rajgræs, alm.	30	20				50	1-2	9,8		
4	**26**	S	Winter wheat	Autumn	21,94	DICOT	39.553		83,2	Fuglegræs, alm.		10				10	1-2	8,3	IT	Atlantis C
										Pileurt, fersken		10				10	1-2	8,3		
										Raps		70				70	1-2	58,3		
										Ærenpris, storkronet		10				10	1-2	8,3		
						MONOC	9.142		37,6	Rajgræs,alm.	20	40				60	1-2	37,6		
4	**27**	S	Winter wheat	Autumn	2,72	DICOT	6.833		69,1	Forglemmigej, mark		22				22	1-2	6,9	IT	Atlantis C
										Fuglegræs, alm.		152				152	1-2	6,9		DFF
										Hyrdetaske		208				208	1-2	6,9		
										Kamille, lugtløs		6				6	1-2	6,9		
										Raps		140	100			240	3-4	23,86		
										Stedmoder, ager		13				13	1-2	4,08		
										Storkenæb, blød		36				36	1-2	5,91		
										Tidsel, ager		2				2	1-2	3,45		

Farm	Field	Re-	Crop	Autumn	No. of	Weed	ML auto count	Area	Auto	Weed species	Weed counts in VF,					Sum, VF	Size, esti	Density,	In time /	RWM, ve
ID	ID	gion		/spring	ha	group	thumbnail	(m2)	weed	found in VF	5 clases of weed size					count	75%-frac	calculate	too late	Product
				season			pictures		dens.	(Danish names)	1	2	4	8	9				(IT / TL)	Herbicide/
										Ærenpris, storkronet		85				85	1-2	6,24		
						MONOC	1.467		19,5	Rajgræs, alm.		174				174	1-2	7,4		
6	**28**	S	Winter wheat	Autumn	8,92	DICOT	1.794	216,00	8,3	Fuglegræs, alm.			4			4	3-4	0,3	IT	Helmstar
										Kamille, lugtløs			4			4	3-4	0,3		DFF
										Pileurt, fersken		2				2	1-2	0,2		
										Raps			6			6	3-4	0,5		
										Stedmoder, ager			50			50	3-4	4,2		
										Storkenæb, blød			2			2	3-4	0,2		
										Ærenpris, storkronet		30				30	1-2	2,5		
						MONOC	194	216,00	0,9	Svingel, rød			50			50	3-4	0,5		
										Rapgræs, enårig			40			40	3-4	0,4		
6	**29**	S	Winter wheat	Autumn	4,74	DICOT	10.667	157,75	67,6	Forglemmigej, mark			2			2	3-4	0,7	IT	Atlantis O
										Fuglegræs, alm.		2	16			18	3-4	6,1		DFF
										Hyrdetaske		4				4	1-2	1,3		
										Kamille, lugtløs		2	6			8	3-4	2,7		
										Natskygge, sort		3				3	1-2	1,0		
										Nælde, liden		10	6			16	3-4	5,4		
										Raps		8	100			108	3-4	36,3		
										Stedmoder, ager		20	10			30	3-4	10,1		
										Ærenpris, storkronet		6	6			12	3-4	4,0		
						MONOC	1.108	157,75	7,0	Rajgræs, alm.			20			20	3-4	7,0		
6	**30**	S	Winter wheat	Autumn	11,45	DICOT	10.786	220,75	48,9	Raps		20	25	50		95	5-8	31,6	IT	Atlantis O
										Stedmoder, ager		20	4			24	1-2	8,0		Buctril EC
										Ærenpris, storkronet		20	8			28	3-4	9,3		Mateno D
						MONOC	3.098	220,75	14,0	Rapgræs, enårig			16			16	3-4	9,4		
										Rajgræs, alm.			8			8	3-4	4,7		
6	**31**	S	Winter wheat	Autumn	10,12	DICOT	11.413	255,00	44,8	Kamille, lugtløs			4			4	3-4	1,2	IT	Nuance V
										Mælde, svine			1			1	3-4	0,3		Atlantis O
										Padderokke, ager			1			1	3-4	0,3		Pico 750
										Raps		20	50	50		120	5-8	35,1		DLG Con
										Storkenæb, blød			3			3	3-4	0,9		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
										Stedmoder, ager		4	8			12	3-4	3,5		
										Ærenpris, storkronet		4	8			12	3-4	3,5		
						MONOC	816	255,00	3,2	Rapgræs, enårig			6			6	3-4	1,6		
										Rajgræs, alm.			6			6	3-4	1,6		
6	**32**	S	Winter wheat	Spring	25,22	DICOT	161.851	1760,43	91,9	Fuglegræs, alm.				10		10	5-8	3,5	IT	Husar OD
										Raps		100	100	20		220	3-4	77,8		Renol
										Ærenpris, storkronet		30				30	3-4	10,6		
						MONOC	19.387	1760,43	11,0	Rapgræs, enårig			30			30	3-4	4,7		
										Rajgræs, alm.			40			40	3-4	6,3		
6	**33**	S	Winter wheat	Spring	29,46	DICOT	112.615	2006,55	56,1	Fuglegræs, alm.			10	20		30	5-8	19,4	IT	Ally SX
										Nælde, liden			2			2	3-4	1,3		Metaxon
										Spinat		10	10			20	3-4	12,9		
										Stedmoder, ager		10	5			15	3-4	9,7		
										Ærenpris, storkronet		10	8	2		20	3-4	12,9		
						MONOC	4.045	2006,55	2,0	Rapgræs, enårig			15			15	1-2	2,0		
7	34	S	Winter wheat	Autumn	47,16	DICOT	131.037		37,4	Hestebønne				80		80	5-8	32,5	IT	Othello
										Ærenpris, storkronet		4				4	1-2	1,6		
										Stedmoder, ager		8				8	1-2	3,3		
						MONOC	34.733		23,3	Rajgræs, alm.		30				30	1-2	23,3		
7	35	S	Winter wheat	Autumn	18,66	DICOT	7.648		13,5	Burre-snerre			15	2		17	3-4	4,2	IT	Othello
										Fuglegræs, alm.			2			2	3-4	0,5		
										Hestebønne			2			2	3-4	0,5		
										Kamille, lugtløs			2			2	3-4	0,5		
										Mælkebøtte			7			7	3-4	1,7		
										Pileurt, fersken			4			4	3-4	1,0		
										Raps			6			6	3-4	1,5		
										Stedmoder, ager			3			3	3-4	0,7		
										Tidsel, ager				6		6	5-8	1,5		
										Ærenpris, storkronet		6				6	1-2	1,5		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
						MONOC	821		16,2	Rajgræs, alm.		50				50	1-2	16,2		
7	36	S	Winter wheat	Spring	11,01	DICOT	1.941		11,0	Burre-snerre			3			3	3-4	0,3	IT	Mustang
										Hyrdetaske				4		4	5-8	0,4		
										Jordrøg, læge		12	6			18	3-4	1,9		
										Kamille, lugtløs			12	16		28	5-8	2,9		
										Pileurt, fersken		4				4	1-2	0,4		
										Raps				2		2	5-8	0,2		
										Stedmoder, ager			2			2	3-4	0,2		
										Storkenæb, blød			20	22		42	5-8	4,4		
										Ærenpris, storkronet			2			2	3-4	0,2		
						MONOC	3.334		16,42	Rapgræs, enårig		50	70	50		170	5-8	16,4		
7	37	S	Winter wheat	Spring	22,81	DICOT	2.302		11,9	Burre-snerre			10	25		35	5-8	4,1	IT	Lancellot
										Hyrdetaske			4	3		7	5-8	0,8		DLG Con
										Kamille, lugtløs				4		4	5-8	0,5		
										Nælde, liden			5	12		17	5-8	2,0		
										Pileurt, fersken		4				4	1-2	0,5		
										Raps		8		1		9	1-2	1,0		
										Skræppe, kruset				3		3	5-8	0,3		
										Valmue, korn				6		6	5-8	0,7		
										Ærenpris, storkronet			8	9		17	5-8	2,0		
						MONOC	1.834		11,4	Rapgræs, enårig			120	50		170	3-4	11,4		
8	38	JM	Winter barley	Autumn	14,05	DICOT	64.521		234,4	Fuglegræs, alm.			40			40	3-4	94,7	IT	Boxer
										Kamille, lugtløs			2			2	3-4	4,7		Nuance V
										Pileurt, fersken		10				10	1-2	23,7		DLG Con
										Raps			20			20	3-4	47,4		
										Ærenpris, storkronet		20	7			27	3-4	63,9		
						MONOC	4.614		21,29	Rajgræs, alm		50				50	1-2	17,7		
										Rapgræs, enårig		10				10	1-2	3,5		
9	39	JM	Winter wheat	Autumn	32,4	DICOT	98.412		149,2	Fuglegræs, alm.			40			40	3-4	38,8	IT	Othelllo
										Kamille, lugtløs		20				20	1-2	19,4		
										Pileurt, fersken		14				14	1-2	13,6		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Raps		70	10			80	1-2	77,5		
						MONOC	5.385		12,0	Rajgræs, alm		80				80	1-2	12,0		
10	40	F	Winter rye	Spring	21,61	DICOT	62.311	1158,96	53,8	Fuglegræs, alm.				5		5	5-8	6,0	IT	Ally SX
										Ærenpris, storkronet		40				40	1-2	47,8		
						MONOC	18.223	915,42	19,9	Rapgræs, enårig				100		100	5-8	19,9		
10	41	F	Winter rye	Spring	16,62	DICOT	116.667	915,42	127,4	Bynke, grå				1		1	5-8	0,7	IT	Ally SX
										Haremad		20	10	2		32	5-8	21,7		
										Kamille, lugtløs		20		7		27	3-4	18,3		
										Pileurt, fersken		20	60			80	3-4	54,2		
										Raps		10	5			15	3-4	10,2		
										Stedmoder, ager		30				30	1-2	20,3		
										Storkenæb, blød				1		1	5-8	0,7		
										Vortemælk, skærm			2			2	3-4	1,4		
						MONOC	18.223		28,9	Rapgræs, enårig			100	25	14	139	5-8	28,9		
10	42	F	Winter wheat	Spring	26,55	DICOT	94.299	1397,22	67,5	Fuglegræs, alm.				5		5	5-8	1,7	IT	Mustang
										Haremad		8	2			10	3-4	3,4		
										Hejrenæb			1			1	3-4	0,3		
										Gåsefod, hvidmelet			33			33	3-4	11,3		
										Hyrdetaske				3		3	5-8	1,0		
										Kamille, lugtløs			10			10	3-4	3,4		
										Mælkebøtte			2	5		7	5-8	2,4		
										Padderokke, ager			4			4	3-4	1,4		
										Pileurt, fersken		23	2			25	3-4	8,6		
										Pileurt, snerle			1			1	3-4	0,3		
										Raps		24	22			46	3-4	15,8		
										Sennep, ager				7		7	5-8	2,4		
										Spinat				8		8	5-8	2,7		
										Stedmoder, ager			24			24	3-4	8,2		
										Storkenæb, blød				1		1	5-8	0,3		

Farm	Field	Re-	Crop	Autumn	No. of	Weed	ML auto count	Area	Auto	Weed species	Weed counts in VF,					Sum, VF	Size, esti	Density,	In time /	RWM, ve
ID	ID	gion		/spring	ha	group	thumbnail	(m2)	weed	found in VF	5 clases of weed size					count	75%-frac	calculate	too late	Product
				season			pictures		dens.	(Danish names)	1	2	4	8	9				(IT / TL)	Herbicide/
										Tidsel, ager			2			2	3-4	0,7		
										Tvetand			5			5	3-4	1,7		
										Ærenpris, storkronet			5			5	3-4	1,7		
						MONOC	19.889	1397,22	14,2	Rapgræs, enårig				100		100	5-8	14,2		
11	**43**	F	Winter wheat	Spring	29,53	DICOT	54.803	1631,52	33,6	Forglemmigej, mark		1				1	1-2	0,8	IT	Ally SX
										Gåsefod, hvidmelet			3			3	3-4	2,3		
										Hyrdetaske			16			16	3-4	12,2		
										Kamille, lugtløs			6			6	3-4	4,6		
										Nælde, liden			8			8	3-4	6,1		
										Tvetand			10			10	3-4	7,6		
						MONOC	13.148	1631,52	8,1	Rapgræs, enårig			10			10	3-4	8,1		
11	**44**	F	Winter wheat	Spring	11,92	DICOT	6.796	662,20	10,3	Gåsefod, hvidmelet		12				12	1-2	1,8	IT	Hussar O
										Hyrdetaske		14				14	1-2	2,1		Renol
										Raps		7				7	1-2	1,1		
										Tvetand			16			16	3-4	2,5		
										Ærenpris, storkronet			18			18	3-4	2,8		
						MONOC	2.931	662,20	4,4	Rajgræs, alm.			5			5	3-4	4,4		
12	**45**	JM	Spring barley	Spring	20,28	DICOT	20.518		44,7	Hyrdetaske		8	4			12	3-4	8,5	IT	Primus 25
										Jordrøg, læge			7			7	3-4	5,0		Pixxaro E
										Kamille, lugtløs		2	4			6	3-4	4,3		
										Padderokke, ager			4			4	3-4	2,8		
										Pileurt, fersken		5	6			11	3-4	7,8		
										Sennep, ager		13	6			19	3-4	13,5		
										Storkenæb, blød		4				4	1-2	2,8		
						MONOC	1.205		14,2	Rapgræs, enårig			80	40		120	3-4	14,2		
12	**46**	JM	Spring barley	Spring	12,54	DICOT	46.900	12,54	131,0	Burre-snerre		8	4			12	3-4	12,3	IT	Express C
										Fuglegræs, alm.			8			8	3-4	8,2		Mustang
										Gåsefod, hvidmelet			6			6	3-4	6,1		
										Hanekro			4			4	3-4	4,1		
										Hyrdetaske			8			8	3-4	8,2		
										Pileurt, fersken			4			4	3-4	4,1		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
										Pileurt, snerle			2			2	3-4	2,0		
										Raps		14	6	8		28	5-8	28,7		
										Storkenæb, blød		14	16			30	3-4	30,7		
										Stedmoder, ager			3			3	3-4	3,1		
										Tidsel, ager			4	15		19	5-8	19,5		
										Tvetand			4			4	3-4	4,1		
						MONOC	11.336		41,4	Rapgræs, enårig		10	50	5		65	3-4	41,4		
13	47	F	Winter wheat	Spring	30,6	DICOT	12.872		24,7	Burre-snerre		1	1			2	3-4	0,7	IT	Ally SX
										Fuglegræs, alm.			4	4	4	12	>8	4,1		Lancelot
										Hyrdetaske				2		2	5-8	0,7		DLG Con
										Kamille, lugtløs				12		12	5-8	4,1		
										Raps		30				30	1-2	10,3		
										Valmue, korn				8		8	5-8	2,7		
										Ærenpris, storkronet				6		6	5-8	2,1		
						MONOC	5.691		13,7	Rapgræs, enårig			60	60		120	5-8	13,7		
13	48	F	Winter rye	Spring	19,71	DICOT	12.934		7,1	Burre-snerre			4			4	3-4	0,3	IT	Mustang
										Fuglegræs, alm.				8	6	14	>8	1,0		
										Kamille, lugtløs			20	12		32	5-8	2,4		
										Stedmoder, ager				8		8	5-8	0,6		
										Storkenæb, blød			4	2		6	5-8	0,4		
										Valmue, korn			6	9		15	5-8	1,1		
										Ærenpris, storkronet		8	8			16	3-4	1,2		
						1-kin	2.264		16,3	Rapgræs, enårig			40	40		80	5-8	16,3		
13	49	F	Winter rye	Spring	8,34	DICOT	2.218		16,8	Burre-snerre			4	3		7	5-8	0,5	IT	Mustang
										Hejrenæb			1			1	3-4	0,1		
										Kamille, lugtløs			25	8	1	34	5-8	2,4		
										Røllike, alm.				3		3	5-8	0,2		
										Storkenæb, blød			30	25		55	5-8	3,9		
										Ærenpris, storkronet			1			1	3-4	0,1		
						MONOC	738		20,4	Rapgræs, enårig			50	50		100	5-8	20,4		
13	50	F	Winter wheat	Spring	5,04	DICOT	3.865		38,9	Burre-snerre		10	15	25		50	5-8	12,9	IT	Lancelot

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Kamille, lugtløs			8	8		16	5-8	4,1		DLG Con
										Mælkebøtte				1		1	5-8	0,3		
										Raps		70				70	1-2	18,1		
										Storkenæb, blød			5	5		10	5-8	2,6		
										Valmue, korn				1		1	5-8	0,3		
										Ærenpris, storkronet				3		3	5-8	0,8		
						MONOC	229		19,1	Rapgræs, enårig			50	50		100	5-8	19,1		
13	**51**	F	Winter wheat	Spring	8,05	DICOT	4.048		29,1	Burre-snerre			15	30		45	5-8	16,8	IT	Tombo
										Hyrdetaske			8			8	3-4	3,0		
										Pileurt, fersken		5				5	1-2	1,9		
										Raps		15				15	1-2	5,6		
										Storkenæb, blød				3		3	5-8	1,1		
										Valmue, korn				2		2	5-8	0,7		
						MONOC	199		14,2	Rapgræs, enårig		50	40	40		130	5-8	14,2		
13	**52**	F	Winter wheat	Spring	2,44	DICOT	1.458		39,1	Burre-snerre		40	25	40		105	5-8	27,0	IT	Lancelot
										Kamille, lugtløs				1		1	5-8	0,3		DLG Con
										Raps		24				24	1-2	6,2		
										Valmue, korn				1		1	5-8	0,3		
										Ærenpris, storkronet			20	1		21	3-4	5,4		
						MONOC	102		14,6	Rapgræs, enårig		15	40	40		95	5-8	14,6		
14	**53**	F	Winter wheat	Autumn	12,52	DICOT	141.927	1328,19	106,9	Fuglegræs, alm.			4			4	3-4	3,2	TL	Atlantis O
										Mælkebøtte			5			5	3-4	4,0		Buctril EC
										Raps		100	14			114	3-4	90,9		
										Ærenpris, storkronet		8	3			11	3-4	8,8		
						MONOC	5.180	1328,19	3,9	Rajgræs, alm		15	30			45	3-4	3,9		
15	**54**	F	Winter wheat	Autumn	42,52	DICOT	102.237	3906,70	26,2	Fuglegræs, alm.		5				5	1-2	1,7	TL	Mustang
										Spinat		20	50			70	3-4	23,5		Hussar O
										Ærenpris, storkronet		3				3	1-2	1,0		Renol
						MONOC	79.321	3906,70	20,3	Rajgræs, alm.			1	1		2	5-8	20,3		
16	**55**	F	xWinter barley	Autumn	18,78	DICOT	234.822	1371,81	171,2	Fuglegræs, alm.		14				14	1-2	17,1	TL	N/A
										Raps		40	40	10		90	5-8	110,0		

Farm	Field	Re-	Crop	Autumn	No. of	Weed	ML auto count	Area	Auto	Weed species	Weed counts in VF,					Sum, VF	Size, esti	Density,	In time /	RWM, ve
ID	ID	gion		/spring	ha	group	thumbnail	(m2)	weed	found in VF	5 clases of weed size					count	75%-frac	calculate	too late	Product
				season			pictures		dens.	(Danish names)	1	2	4	8	9				(IT / TL)	Herbicide/
										Stedmoder, ager		8				8	1-2	9,8		
										Tvetand		16				16	1-2	19,6		
										Ærenpris, storkronet		12				12	1-2	14,7		
						MONOC	150.337	1371,81	109,6	Rapgræs, enårig				3		3	5-8	10,0		
										Rajgræs, alm.				30		30	5-8	99,6		
17	**56**	JS	Winter wheat	Autumn	17,98	DICOT	41.008		40,7	Nælde, liden			1			1	3-4	0,5	IT	Othello
										Raps		80				80	1-2	39,2		
										Skræppe, kruset			1			1	3-4	0,5		
										Spinat			1			1	3-4	0,5		
						MONOC	3.642		17,3	Rapgræs, enårig		40	5			45	3-4	17,3		
17	**57**	JS	Winter wheat	Autumn	3,33	DICOT	7.636		32,6	Raps		40	5			45	3-4	32,6	IT	Othello
						MONOC	584		12,7	Rapgræs, enårig		40	5			45	3-4	12,7		
13	**58**	F	Spring barley	Spring	9,16	DICOT	19.899		60,7	Bynke, grå		4		1		5	1-2	2,8	TL	Catch
										Fuglegræs, alm.			10			10	3-4	5,7		Ally SX
										Gåsefod, hvidmelet			25	12		37	5-8	21,0		
										Hyrdetaske				6		6	5-8	3,4		
										Kamille, lugtløs				8		8	5-8	4,5		
										Raps		8	10	15		33	5-8	18,7		
										Sennep, ager				8		8	5-8	4,5		
						MONOC	542		8,9	Rapgræs, enårig			15			15	3-4	8,9		
7	**59**	S	Spring barley	Spring	28,15	DICOT	990		10,8	Burre-snerre		5	3	2		10	5-8	5,1	TL	Tomahaw
										Fuglegræs, alm.			2			2	3-4	1,0		
										Hyrdetaske			1			1	3-4	0,5		
										Ærenpris, storkronet			8			8	3-4	4,1		
						MONOC	142		7,6	Rapgræs, enårig			40	10		50	5-8	7,6		
7	**60**	S	Spring barley	Spring	44,61	DICOT	601		7,1	Burre-snerre			6			6	3-4	3,3	TL	Mustang
										Raps		7				7	1-2	3,8		
						MONOC	1.789		16,7	Rapgræs, enårig		40	40	10		90	5-8	16,7		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
7	61	S	Spring barley	Spring	13,31	DICOT	852		11,7	Burre-snerre			5			5	3-4	2,9	TL	Mustang
										Fuglegræs, alm.			3			3	3-4	1,8		
										Raps		12				12	1-2	7,0		
						MONOC	297		12,3	Rapgræs, enårig		30	40	10		80	5-8	12,3		
3	62	S	Winter wheat	Spring	13,31	DICOT	31.812		34,5	Burre-snerre			5	15		20	5-8	8,0	IT	Broadway
										Fuglegræs, alm.			9			9	3-4	3,6		
										Hyrdetaske			5			5	3-4	2,0		
										Kamille, lugtløs			12			12	3-4	4,8		
										Raps		4				4	1-2	1,6		
										Stedmoder, ager			15			15	3-4	6,0		
										Tvetand			1			1	3-4	0,4		
										Ærenpris, storkronet			10	10		20	5-8	8,0		
						MONOC	37.890		50,8	Rapgræs, enårig		15	40	40		95	5-8	50,8		
3	63	S	Winter wheat	Spring	17,1	DICOT	15.070		39,4	Burre-snerre			10	4		14	3-4	3,5	IT	Primus
										Dværgløvefod			3			3	3-4	0,8		Cossack
										Fuglegræs, alm.			4	8	35	47	>8	11,8		DLG Con
										Hyrdetaske			14			14	3-4	3,5		
										Kamille, lugtløs			16			16	3-4	4,0		
										Raps			8			8	3-4	2,0		
										Stedmoder, ager			25			25	3-4	6,3		
										Ærenpris, storkronet			30			30	3-4	7,5		
						MONOC	28.516		72,3	Rapgræs, enårig		22	40	40		102	5-8	72,3		
13	64	F	Spring barley	Spring	40,95	DICOT	75.005		110,8	Brandbæger, alm			12			12	3-4	14,1	IT	Mustang
										Fuglegræs, alm.			5			5	3-4	5,9		Express
										Gåsefod, hvidmelet			22			22	3-4	25,9		
										Jordrøg, læge			15	2		17	3-4	20,0		
										Kamille, lugtløs			18			18	3-4	21,2		
										Krumhals			1			1	3-4	1,2		
										Mælkebøtte			1	1		2	5-8	2,4		

Farm ID	Field ID	Re- gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size					Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
											1	2	4	8	9					
										Raps				8		8	5-8	9,4		
										Snerle, ager				7		7	5-8	8,3		
										Tidsel, ager			2			2	3-4	2,4		
						MONOC	50.298		73,9	Rapgræs, enårig		60	40	5		105	5-8	73,9		
13	**65**	F	Spring barley	Spring	19,37	DICOT	37.296		100,3	Bynke, grå			4	20		24	5-8	17,6	TL	Ally SX
										Gåsefod, hvidmelet			40			40	3-4	29,3		Primus 2
										Hyrdetaske			15			15	3-4	11,0		
										Krumhals			10			10	3-4	7,3		
										Nælde, liden			2	2		4	5-8	2,9		
										Padderokke, ager			6	10		16	5-8	11,7		
										Pileurt, fersken			6			6	3-4	4,4		
										Pileurt, snerle			16			16	3-4	11,7		
										Raps			4			4	3-4	2,9		
										Tidsel, ager			1	1		2	5-8	1,5		
						MONOC	20.060		76,4	Rapgræs, enårig		80	40	4		124	3-4	76,4		
13	**66**	F	Spring barley	Spring	12,52	DICOT	42.376		133,6	Brandbæger, alm			20			20	3-4	17,7	TL	Mustang
										Bynke, grå			5	7		12	5-8	10,6		Express
										Fuglegræs, alm.				6		6	5-8	5,3		
										Gåsefod, hvidmelet			33			33	3-4	29,2		
										Kamille, lugtløs			2			2	3-4	1,8		
										Pileurt, bleg		6	2			8	3-4	7,1		
										Pileurt, snerle			9			9	3-4	8,0		
										Raps				50		50	5-8	44,2		
										Røllike			2			2	3-4	1,8		
										Tidsel, ager			3	3		6	5-8	5,3		
										Ærenpris, storkronet				3		3	5-8	2,7		
						MONOC			57,9	Rapgræs, enårig		60	40	10		110	3-4	57,9		
13	**67**	F	Spring barley	Spring	14,7	DICOT	18.355		44,8	Bynke, grå				30		30	5-8	12,6	TL	Catch
										Fuglegræs, alm.			4			4	3-4	1,7		Ally SX
										Gåsefod, hvidmelet		8	4			12	3-4	5,0		
										Hejrenæb				6		6	5-8	2,5		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
										Kamille, lugtløs			2			2	3-4	0,8		
										Natskygge, sort			3			3	3-4	1,3		
										Pileurt, fersken			3			3	3-4	1,3		
										Raps		8	12	20		40	5-8	16,7		
										Stedmoder, ager			4			4	3-4	1,7		
										Ærenpris, storkronet			3			3	3-4	1,3		
						MONOC	22.996		55,2	Rapgræs, enårig		40	40	20		100	3-4	55,2		
13	**68**	F	Spring barley	Spring	24,99	DICOT	82.829		135,6	Bynke, grå				8		8	5-8	8,3	TL	Express G
										Gåsefod, hvidmelet			32			32	3-4	33,4		Primus 25
										Hyrdetaske			4			4	3-4	4,2		
										Kamille, lugtløs			22	8		30	3-4	31,3		
										Pileurt, snerle			4			4	3-4	4,2		
										Pileurt, vej				2		2	5-8	2,1		
										Padderokke, ager			4			4	3-4	4,2		
										Raps			38	8		46	3-4	48,0		
						MONOC	2.848		9,5	Rapgræs, enårig		40	35	15		90	3-4	9,5		
24	**69**	F	Winter wheat	Autumn	16,47	DICOT	473.621		107,2	Fuglegræs, alm.		20	40			60	3-4	55,4	IT	Atlantis O
										Hejrenæb			2			2	3-4	1,8		DFF
										Hyrdetaske			2			2	3-4	1,8		
										Kamille, lugtløs			1			1	3-4	0,9		
										Raps			8			8	3-4	7,4		
										Storkenæb, blød			3			3	3-4	2,8		
										Tvetand			15			15	3-4	13,9		
										Ærenpris, storkronet			25			25	3-4	23,1		
						MONOC	13.633		10,2	Rapgræs, enårig		20				20	1-2	6,8		
										Rajgræs, alm.		10				10	1-2	3,4		
24	**70**	F	Winter wheat	Autumn	15,09	DICOT	86.989		93,2	Fuglegræs, alm.		25				25	1-2	35,8	IT	Othello
										Raps		25				25	1-2	35,8		
										Ærenpris, storkronet		15				15	1-2	21,5		
						MONOC	1.089		6,4	Rapgræs, enårig		40				40	1-2	6,4		
24	**71**	F	Winter wheat	Autumn	18,11	DICOT	223.366		176,4	Raps		150	50			200	1-2	176,4	IT	Boxer

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size: 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
						MONOC	1.416		6,5	Rapgræs, enårig		120	50			170	1-2	6,5		Othello
18	72	JN	Spring barley	Spring	15,82	DICOT	20.556		28,1	Kamille, lugtløs			4			4	3-4	1,5	IT	Ally SX
										Mælkebøtte			1			1	3-4	0,4		
										Pileurt, fersken		10				10	5-8	3,8		
										Raps		50	10			60	3-4	22,5		
						MONOC	30.790		40,5	Rapgræs, enårig		30	35			65	3-4	40,5		
19	73	JN	Spring barley	Spring	5	DICOT	54.423		220,87	Hejrenæb			22	33		55	5-8	108,5	TL	Ally SX
										Hyrdetaske			17	8		25	3-4	49,3		Zypar
										Kamille, lugtløs			9			9	3-4	17,7		
										Pileurt, fersken		9				9	1-2	17,7		
										Stedmoder, ager			8			8	3-4	15,8		
										Storkenæb, blød			6			6	3-4	11,8		
						MONOC	31.481		128,8	Rapgræs, enårig		50	12			62	3-4	128,8		
20	74	JS	Spring barley	Spring	23,17	DICOT	349.591		281,4	Gåsefod, hvidmelet			4			4	3-4	9,5	TL	Catch
										Hejrenæb				30		30	5-8	71,5		Ally SX
										Hyrdetaske				32		32	5-8	76,3		
										Kamille, lugtløs			2			2	3-4	4,8		
										Pileurt, snerle			8			8	3-4	19,1		
										Raps			5	25		30	5-8	71,5		
										Stedmoder, ager			10			10	3-4	23,8		
										Storkenæb, blød			2			2	3-4	4,8		
						MONOC	30.587		30,8	Rapgræs, enårig		40	30	10		80	3-4	30,8		
21	75	JN	xMaize, silage	Spring	24	DICOT	319.935		185,9	Bynke, grå				22		22	5-8	24,6	TL	N/A
										Forglemmigej, mark		5				5	1-2	5,6		
										Hyrdetaske			3			3	3-4	3,4		
										Mælkebøtte				1		1	5-8	1,1		
										Padderokke, ager				1		1	5-8	1,1		
										Pileurt, fersken		32				32	1-2	35,8		
										Raps		25	60			85	3-4	95,2		
										Stedmoder, ager			5			5	3-4	5,6		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
										Ærenpris, storkronet		12				12	1-2	13,4		
						MONOC	72.077		47,7	Rapgræs, enårig			15	10		25	5-8	47,7		
21	**76**	JN	Winter wheat	Spring	23,68	DICOT	13.574		14,0	Burre-snerre			35	20		55	5-8	8,9	IT	Mustang
										Fuglegræs, alm.			9	11		20	5-8	3,2		
										Kamille, lugtløs			6	3		9	5-8	1,5		
										Valmue, korn				1		1	5-8	0,2		
										Ærenpris, storkronet				2		2	5-8	0,3		
						MONOC	7.849		16,4	Rapgræs, enårig			60	30		90	5-8	16,4		
3	**77**	S	Winter wheat	Autumn	17,1	DICOT	14.622		58,2	Fuglegræs, alm.		12				12	1-2	11,3	IT	Othello
										Raps		35	5			40	1-2	37,5		
										Ærenpris, storkronet		10				10	1-2	9,4		
						MONOC	1.269		9,5	Rapgræs, enårig		25	6	3		34	3-4	9,5		
23	**78**	F	Maize, silage	Spring	7,5	DICOT	49.120	342,76	143,3	Burre-snerre		1				1	1-2	0,7	IT	Tocalis
										Gåsefod, hvidmelet		50	50			100	3-4	67,9		Harmony
										Jordrøg, læge			12			12	3-4	8,2		MaisTer
										Natskygge, sort		8	8			16	3-4	10,9		MaisOil
										Padderokke, ager			2			2	3-4	1,4		
										Pileurt, snerle		4	6			10	3-4	6,8		
										Sennep, ager		8	12			20	3-4	13,6		
										Ærenpris, storkronet		50				50	1-2	34,0		
						MONOC	7.226	342,76	21,1	Rapgræs, enårig		25	15			40	3-4	11,4		
										Rajgræs, alm.		20	14			34	3-4	9,7		
23	**79**	F	Maize, silage	Spring	12,63	DICOT	52.394	515,68	101,6	Fuglegræs, alm.		4	8			12	3-4	7,6	TL	Harmony
										Gåsefod, hvidmelet		50	50			100	3-4	63,1		MaisTer
										Jordrøg, læge		5	14			19	3-4	12,0		Tocalis
										Natskygge, sort		4				4	1-2	2,5		MaisOil
										Padderokke, ager			2			2	3-4	1,3		
										Pileurt, snerle				8		8	5-8	5,0		
										Pileurt, fersken			2			2	3-4	1,3		
										Storkenæb, blød			2			2	3-4	1,3		
										Ærenpris, storkronet		12				12	1-2	7,6		

Farm ID	Field ID	Re-gion	Crop	Autumn /spring season	No. of ha	Weed group	ML auto count thumbnail pictures	Area (m2)	Auto weed dens.	Weed species found in VF (Danish names)	Weed counts in VF, 5 clases of weed size 1	2	4	8	9	Sum, VF count	Size, esti 75%-frac	Density, calculate	In time / too late (IT / TL)	RWM, ve Product Herbicide/
						MONOC	32.071	515,68	62,2	Rapgræs, enårig		30	34	6		70	3-4	42,3		
										Rajgræs, alm.		16	14	3		33	3-4	19,9		
23	80	F	Maize, silage	Spring	9,3	DICOT	107.677	428,78	251,1	Fuglegræs, alm.		5	3			8	3-4	14,3	IT	Tokalis
										Gåsefod, hvidmelet		15	15			30	3-4	53,8		Harmony
										Pileurt, fersken		10	12			22	3-4	39,5		MaisTer
										Pileurt, snerle			40	10		50	3-4	89,7		MaisOil
										Spinat			4			4	3-4	7,2		
										Stedmoder, ager			3			3	3-4	5,4		
										Ærenpris, storkronet		20	3			23	1-2	41,3		
						MONOC	49.965	428,78	116,5	Rapgræs, enårig			40	10		50	3-4	116,5		
23	81	F	Maize, silage	Spring	9,95	DICOT	61.101	386,32	158,2	Gåsefod, hvidmelet		14	20			34	3-4	40,4	IT	Xinca
										Pileurt, snerle		26	24			50	3-4	59,5		MaisTer
										Raps			2			2	3-4	2,4		Callisto
										Stedmoder, ager		4				4	1-2	4,8		MaisOil
										Tidsel, ager		1				1	1-2	1,2		
										Tvetand		4	4			8	3-4	9,5		
										Ærenpris, storkronet		26	8			34	3-4	40,4		
						MONOC	52.387	386,32	135,6	Rapgræs, enårig		30	50	30		110	3-4	135,6		
23	82	F	Maize, silage	Spring	12,44	DICOT	49.972	526,68	94,9	Gåsefod, hvidmelet		35	3			38	3-4	39,6	IT	Xinca
										Pileurt, fersken		7				7	1-2	7,3		Harmony
										Pileurt, snerle		15				15	1-2	15,6		DLG Con
										Pileurt, vej		18				18	1-2	18,8		
										Tidsel, ager				1		1	5-8	1,0		
										Tvetand		12				12	1-2	12,5		
						MONOC	4.699	526,68	8,9	Rapgræs, enårig		50	10			60	3-4	8,9		
23	83	F	Maize, silage	Spring	3,25	DICOT	24.697	178,82	138,1	Fuglegræs, alm.		2				2	1-2	5,4	TL	Starane 3
										Gåsefod, hvidmelet		13	8			21	3-4	56,9		Tocalis
										Mælkebøtte				1		1	5-8	2,7		MaisTer
										Pileurt, fersken		2				2	1-2	5,4		MaisOil
										Pileurt, snerle			4			4	3-4	10,8		
										Pileurt, vej		14				14	1-2	37,9		

Farm	Field	Re-	Crop	Autumn	No. of	Weed	ML auto count	Area	Auto	Weed species	Weed counts in VF,					Sum, VF	Size, esti	Density,	In time /	RWM, ve
ID	ID	gion		/spring	ha	group	thumbnail	(m2)	weed	found in VF	5 clases of weed size					count	75%-frac	calculate	too late	Product
				season			pictures		dens.	(Danish names)	1	2	4	8	9				(IT / TL)	Herbicide/
										Storkenæb, blød		6				6	1-2	16,2		
										Tidsel, ager			1			1	3-4	2,7		
						MONOC	3.410	178,82	19,1	Rapgræs, enårig		50	16	8		74	5-8	11,1		
										Rajgræs, alm.		50	3			53	3-4	8,0		
23	84	F	Maize, silage	Spring	6,07	DICOT	37.576	286,22	131,3	Fuglegræs, alm.			5			5	3-4	0,6	IT	Tocalis
										Gåsefod, hvidmelet		10	24			34	3-4	4,2		Harmony
										Pileurt, fersken			12			12	3-4	1,5		MaisTer
										Pileurt, snerle		20	50	4		74	3-4	9,1		MaisOil
										Tvetand		10				10	1-2	1,2		
										Ærenpris, storkronet		20				20	1-2	2,5		
						MONOC	5.480	286,22	19,1	Rapgræs, enårig		25	30			55	3-4	19,1		
Sum/c	**84**	**84**			1277,89		5.977.927				4	220	450	178	6					

Appendix 2:

Field maps showing weed distribution on 84 fields: Analysis of possible herbicide savings using experience and data from RoboWeedMaPS

The appendix contains weed maps for the fields included in the project.


152-0
153-0
151-0
156-0
122-0
103-0
140-0
144-0
133-0a
133-0b
133-1
161-0
1 stk/m2
0,0-1,0 21,2%
1,0->>> 78,8%
Gyldensteen
2020
Monocot weeds
Dato: 21-01-21
Tid: 09-02-20
Processed in Næsgaard Markkort ADVICER

152-0
153-0
151-0
156-0
122-0
103-0
140-0
144-0
133-0a
133-0b
133-1
161-0
2 stk/m2
0,0-2,0 28,6%
2,0->>> 71,4%
Gyldensteen
2020
Monocot weeds
Dato: 21-01-21
Tid: 09-03-51
Processed in Næsgaard Markkort ADVICER

Gyldensteen **2020**

Monocot weeds

Dato: 21-01-21
Tid: 09-05-17

Processed in Næsgaard Markkort ADVICER

5 stk/m2

(green)	0,0-5,0	40,4%
(red)	5,0->>>	59,6%

Gyldensteen 2020

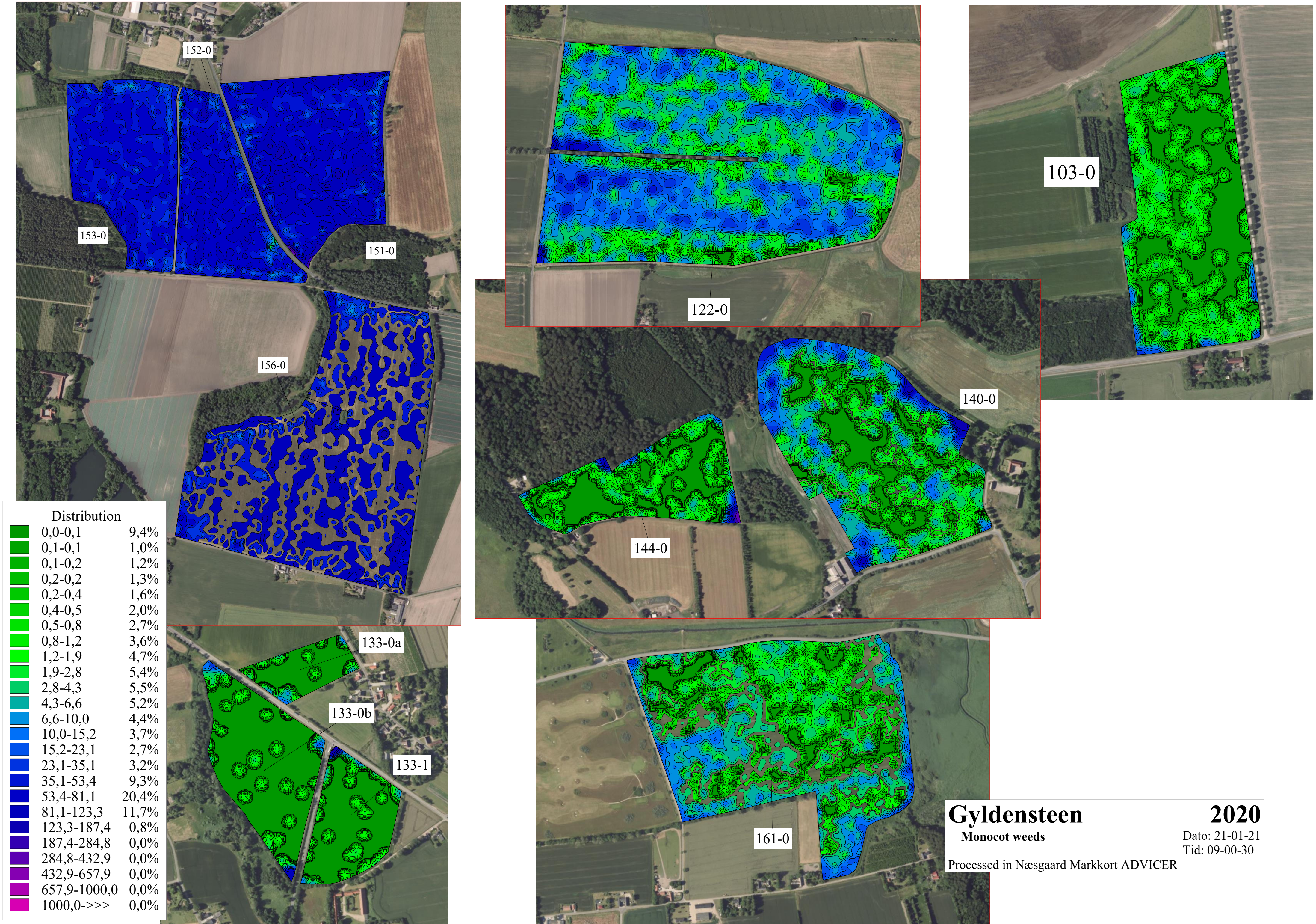
Monocot weeds

Dato: 21-01-21
Tid: 09-07-06

Processed in Næsgaard Markkort ADVICER

10 stk/m2

(green)	0,0-10,0	48,2%
(red)	10,0->>>	51,8%


152-0
153-0
151-0
156-0
122-0
103-0
140-0
144-0
133-0a
133-0b
133-1
161-0
Distribution
0,0-0,1 9,4%
0,1-0,1 1,0%
0,1-0,2 1,2%
0,2-0,2 1,3%
0,2-0,4 1,6%
0,4-0,5 2,0%
0,5-0,8 2,7%
0,8-1,2 3,6%
1,2-1,9 4,7%
1,9-2,8 5,4%
2,8-4,3 5,5%
4,3-6,6 5,2%
6,6-10,0 4,4%
10,0-15,2 3,7%
15,2-23,1 2,7%
23,1-35,1 3,2%
35,1-53,4 9,3%
53,4-81,1 20,4%
81,1-123,3 11,7%
123,3-187,4 0,8%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Gyldensteen 2020
Monocot weeds
Dato: 21-01-21
Tid: 09-00-30
Processed in Næsgaard Markkort ADVICER

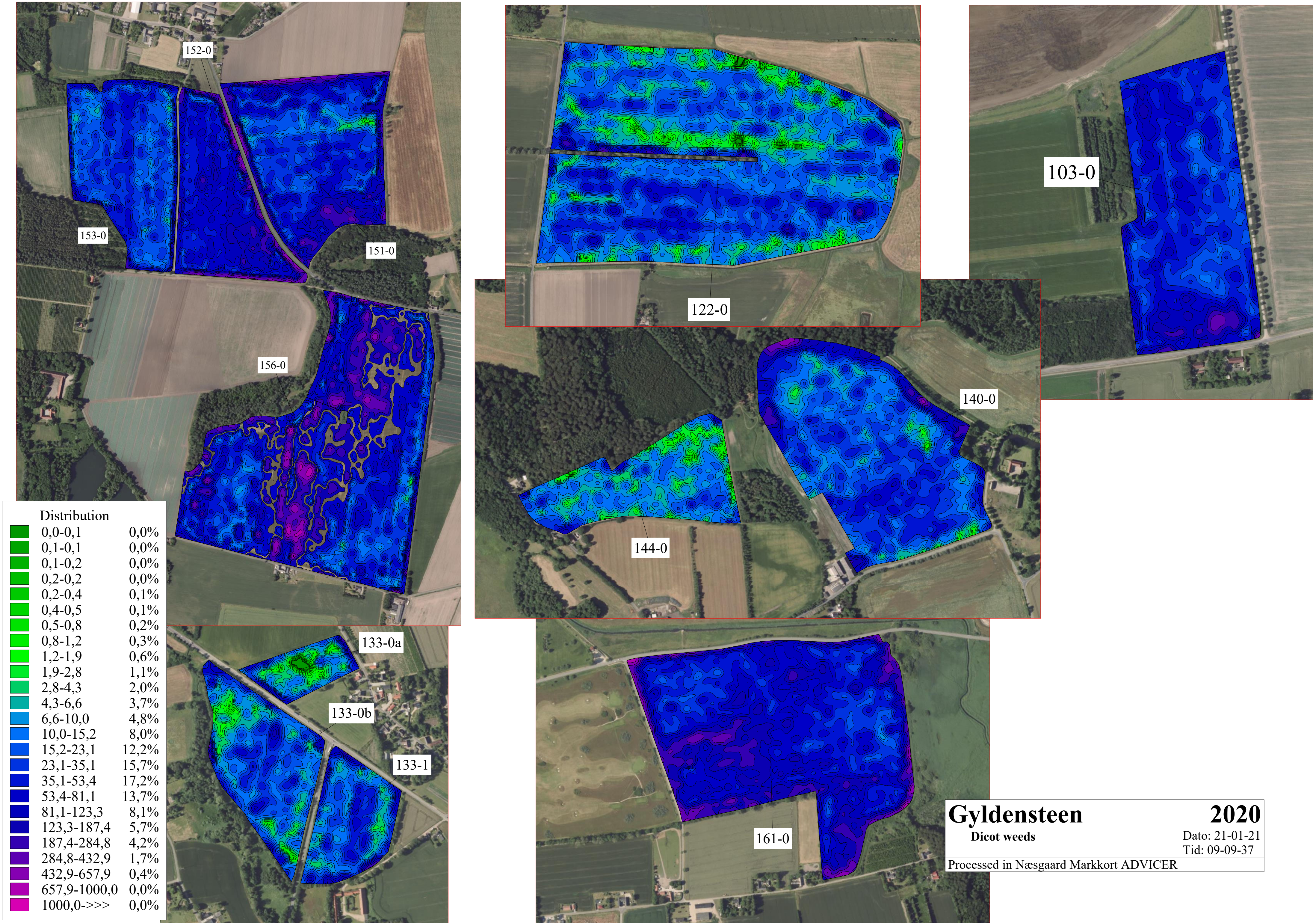
1 stk/m2	
0,0-1,0	0,3%
1,0->>>	99,7%

Gyldensteen **2020**

Dicot weeds

Dato: 21-01-21
Tid: 09-11-10

Processed in Næsgaard Markkort ADVICER


152-0
153-0
151-0
156-0
122-0
103-0
140-0
144-0
133-0a
133-0b
133-1
161-0
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,1%
0,4-0,5 0,1%
0,5-0,8 0,2%
0,8-1,2 0,3%
1,2-1,9 0,6%
1,9-2,8 1,1%
2,8-4,3 2,0%
4,3-6,6 3,7%
6,6-10,0 4,8%
10,0-15,2 8,0%
15,2-23,1 12,2%
23,1-35,1 15,7%
35,1-53,4 17,2%
53,4-81,1 13,7%
81,1-123,3 8,1%
123,3-187,4 5,7%
187,4-284,8 4,2%
284,8-432,9 1,7%
432,9-657,9 0,4%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Gyldensteen 2020
Dicot weeds
Dato: 21-01-21
Tid: 09-09-37
Processed in Næsgaard Markkort ADVICER

Gyldensteen **2020**

Thistles

Dato: 21-01-21
Tid: 09-20-00

Processed in Næsgaard Markkort ADVICER

Gyldensteen 2020

Thistles

Dato: 21-01-21
Tid: 09-18-31

Processed in Næsgaard Markkort ADVICER

1 stk/m2

(green)	0,0-1,0	52,6%
(red)	1,0->>>	47,4%

Hans de Neergaard 2020

Monocot weeds

Dato: 21-01-21
Tid: 08-29-09

Processed in Næsgaard Markkort ADVICER

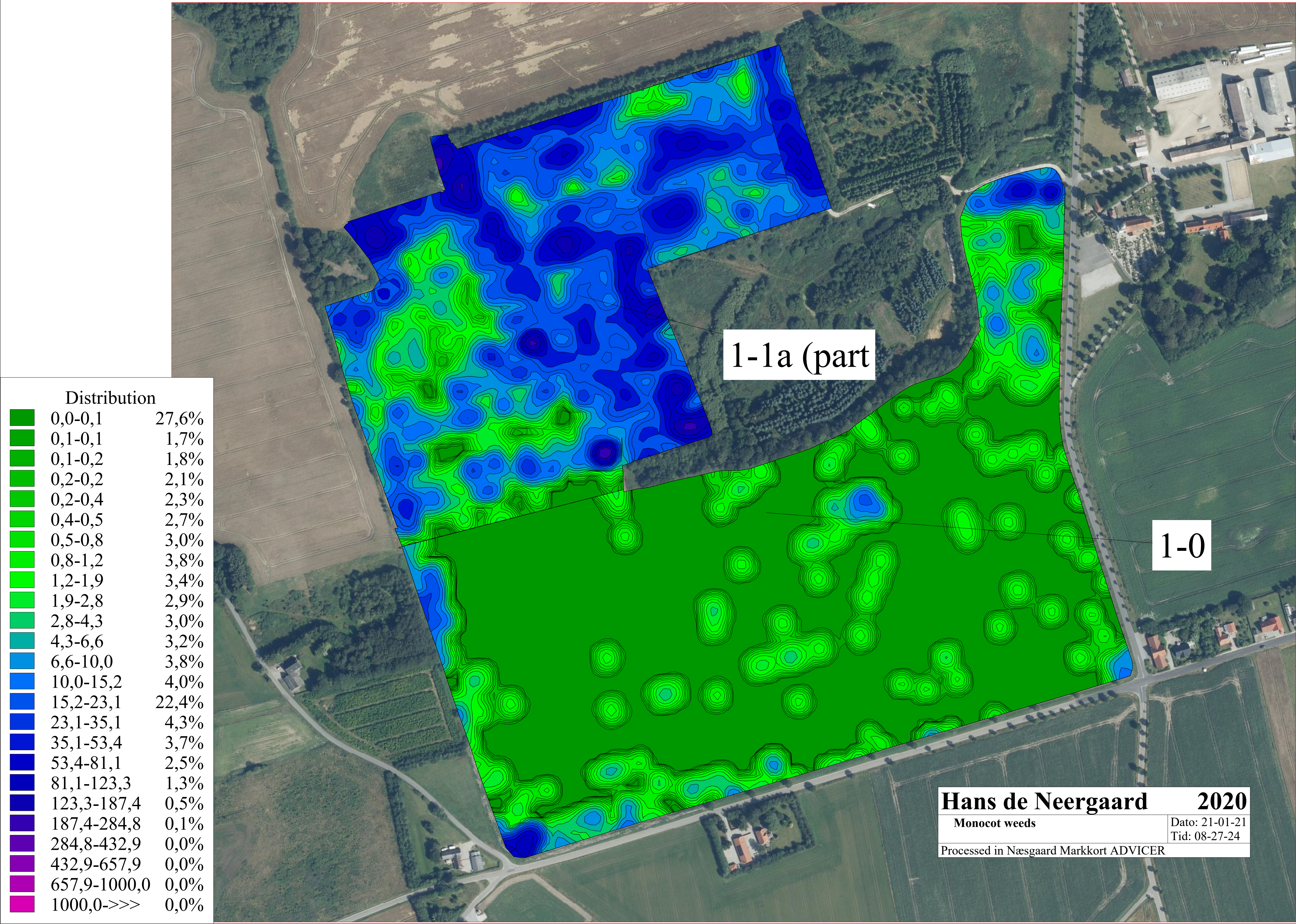

1-1a (part
1-0
Hans de Neergaard 2020
Monocot weeds
Dato: 21-01-21
Tid: 08-33-06
Processed in Næsgaard Markkort ADVICER
2 stk/m2
0,0-2,0 59,8%
2,0->>> 40,2%

Hans de Neergaard	2020
Monocot weeds	Dato: 21-01-21 Tid: 08-36-28
Processed in Næsgaard Markkort ADVICER	

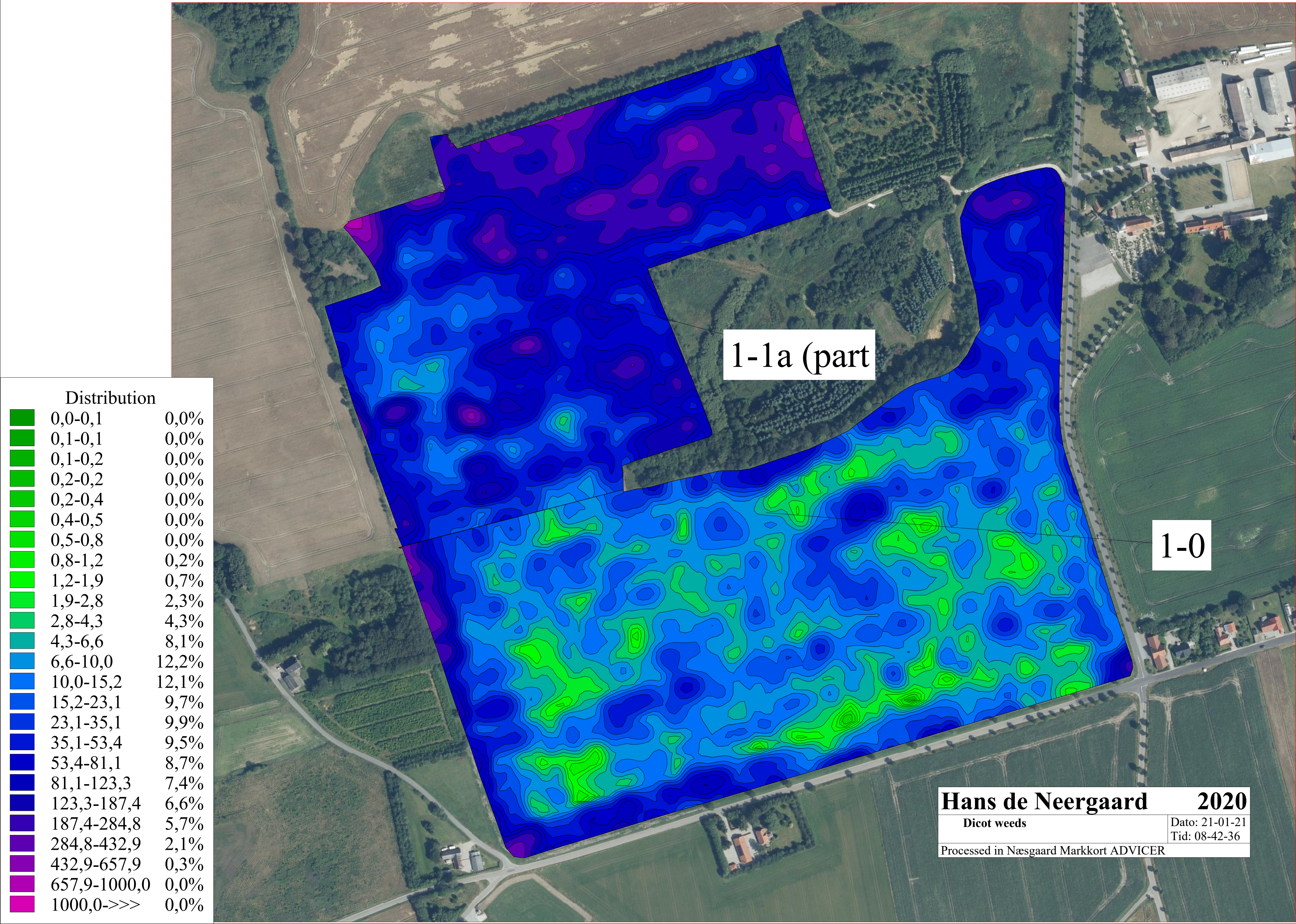
5 stk/m2

(green)	0,0-5,0	67,9%
(red)	5,0->>>	32,1%


1-1a (part
1-0
Hans de Neergaard 2020
Monocot weeds
Dato: 21-01-21
Tid: 08-37-59
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 75,1%
10,0->>> 24,9%


1-1a (part
1-0
Distribution
0,0-0,1 27,6%
0,1-0,1 1,7%
0,1-0,2 1,8%
0,2-0,2 2,1%
0,2-0,4 2,3%
0,4-0,5 2,7%
0,5-0,8 3,0%
0,8-1,2 3,8%
1,2-1,9 3,4%
1,9-2,8 2,9%
2,8-4,3 3,0%
4,3-6,6 3,2%
6,6-10,0 3,8%
10,0-15,2 4,0%
15,2-23,1 22,4%
23,1-35,1 4,3%
35,1-53,4 3,7%
53,4-81,1 2,5%
81,1-123,3 1,3%
123,3-187,4 0,5%
187,4-284,8 0,1%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hans de Neergaard 2020
Monocot weeds
Dato: 21-01-21
Tid: 08-27-24
Processed in Næsgaard Markkort ADVICER


1-1a (part
1-0
Hans de Neergaard 2020
Dicot weeds
Dato: 21-01-21
Tid: 08-46-05
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 0,2%
1,0->>> 99,8%

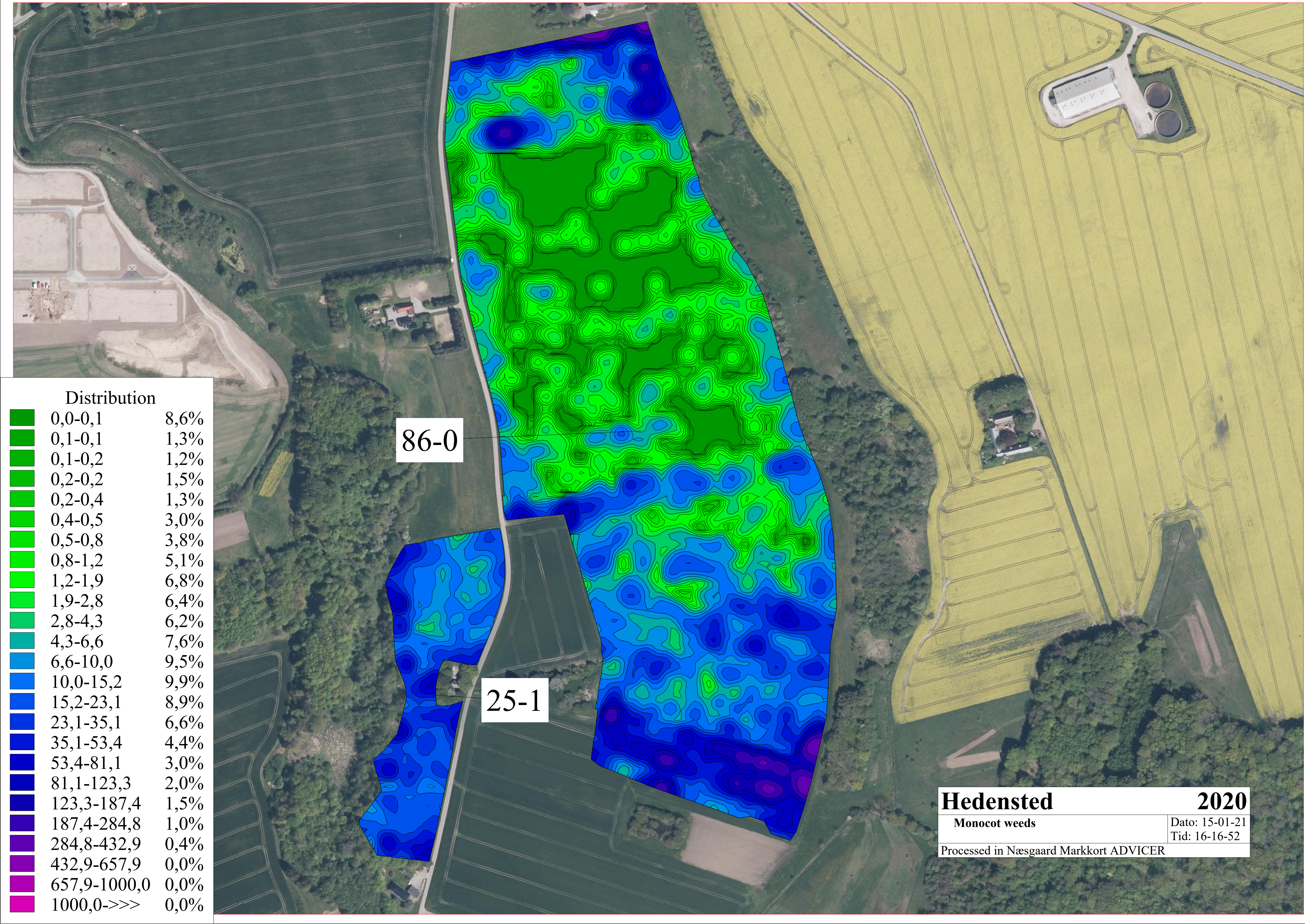

1-1a (part
1-0
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,0%
0,8-1,2 0,2%
1,2-1,9 0,7%
1,9-2,8 2,3%
2,8-4,3 4,3%
4,3-6,6 8,1%
6,6-10,0 12,2%
10,0-15,2 12,1%
15,2-23,1 9,7%
23,1-35,1 9,9%
35,1-53,4 9,5%
53,4-81,1 8,7%
81,1-123,3 7,4%
123,3-187,4 6,6%
187,4-284,8 5,7%
284,8-432,9 2,1%
432,9-657,9 0,3%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hans de Neergaard 2020
Dicot weeds
Dato: 21-01-21
Tid: 08-42-36
Processed in Næsgaard Markkort ADVICER

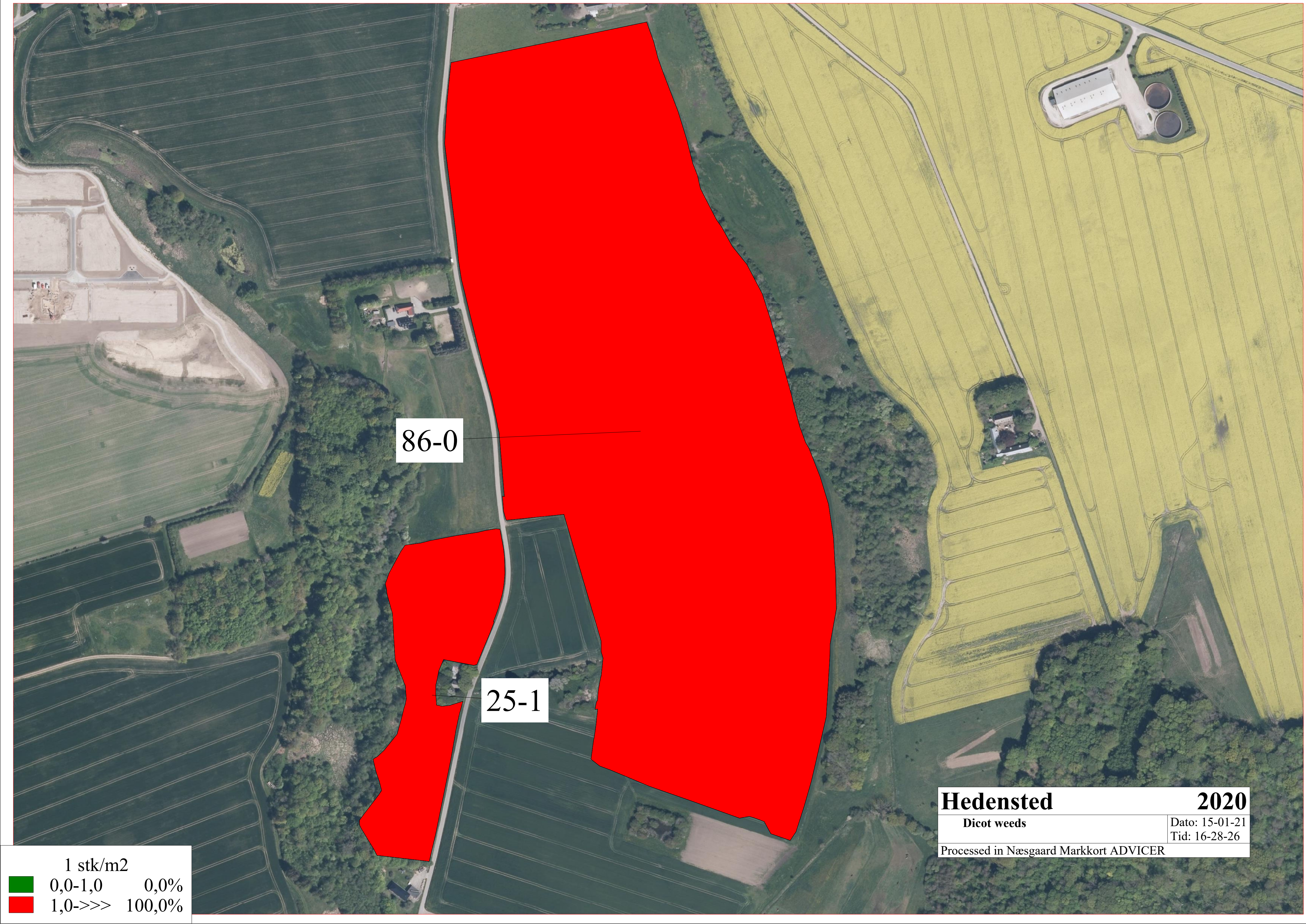

86-0
25-1
1 stk/m2
0,0-1,0 24,5%
1,0->>> 75,5%
Hedensted 2020
Monocot weeds
Dato: 15-01-21
Tid: 16-18-41
Processed in Næsgaard Markkort ADVICER

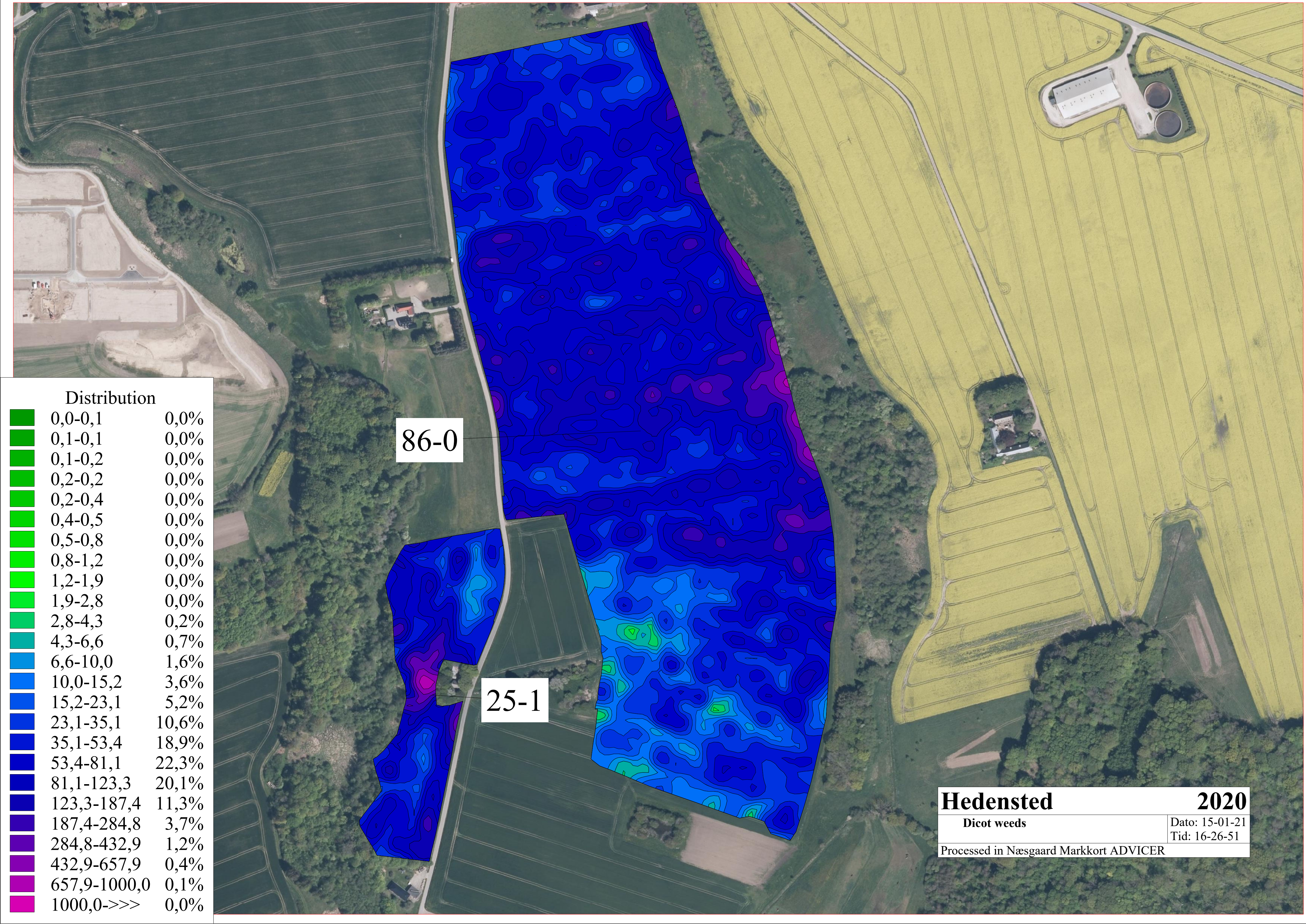
86-0
25-1
Hedensted
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-20-17
Processed in Næsgaard Markkort ADVICER
2 stk/m2
0,0-2,0 34,8%
2,0->>> 65,2%

86-0
25-1
Hedensted
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-22-09
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 48,5%
5,0->>> 51,5%


86-0
25-1
Hedensted
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-23-29
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 62,9%
10,0->>> 37,1%


Distribution
0,0-0,1 8,6%
0,1-0,1 1,3%
0,1-0,2 1,2%
0,2-0,2 1,5%
0,2-0,4 1,3%
0,4-0,5 3,0%
0,5-0,8 3,8%
0,8-1,2 5,1%
1,2-1,9 6,8%
1,9-2,8 6,4%
2,8-4,3 6,2%
4,3-6,6 7,6%
6,6-10,0 9,5%
10,0-15,2 9,9%
15,2-23,1 8,9%
23,1-35,1 6,6%
35,1-53,4 4,4%
53,4-81,1 3,0%
81,1-123,3 2,0%
123,3-187,4 1,5%
187,4-284,8 1,0%
284,8-432,9 0,4%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
86-0
25-1
Hedensted 2020
Monocot weeds
Dato: 15-01-21
Tid: 16-16-52
Processed in Næsgaard Markkort ADVICER


86-0
25-1
Hedensted 2020
Dicot weeds
Dato: 15-01-21
Tid: 16-28-26
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 0,0%
1,0->>> 100,0%



Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,0%
0,8-1,2 0,0%
1,2-1,9 0,0%
1,9-2,8 0,0%
2,8-4,3 0,2%
4,3-6,6 0,7%
6,6-10,0 1,6%
10,0-15,2 3,6%
15,2-23,1 5,2%
23,1-35,1 10,6%
35,1-53,4 18,9%
53,4-81,1 22,3%
81,1-123,3 20,1%
123,3-187,4 11,3%
187,4-284,8 3,7%
284,8-432,9 1,2%
432,9-657,9 0,4%
657,9-1000,0 0,1%
1000,0->>> 0,0%
86-0
25-1
Hedensted 2020
Dicot weeds
Dato: 15-01-21
Tid: 16-26-51
Processed in Næsgaard Markkort ADVICER

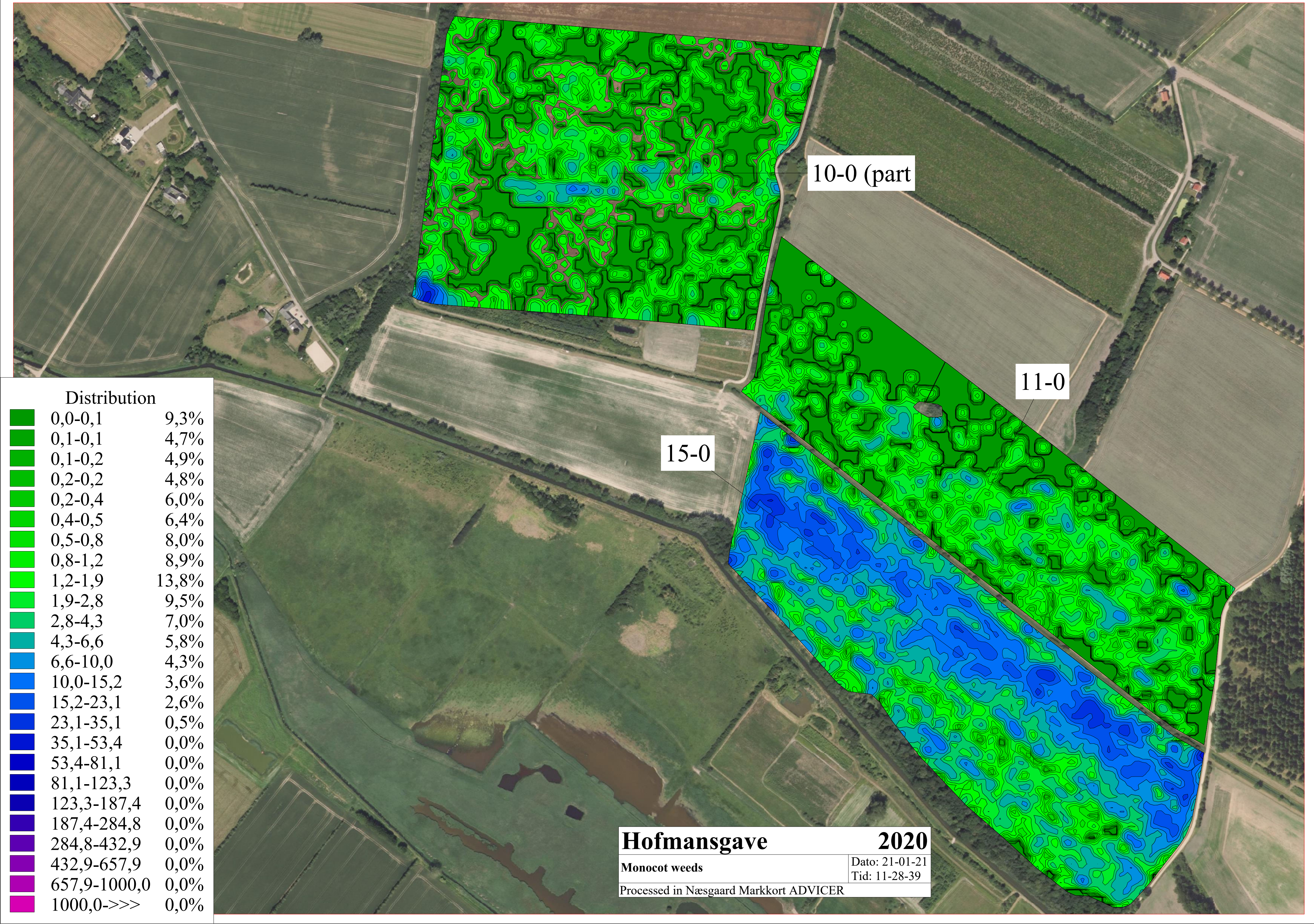

10-0 (part
11-0
15-0
Hofmansgave 2020
Monocot weeds
Dato: 21-01-21
Tid: 11-30-23
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 45,0%
1,0->>> 55,0%

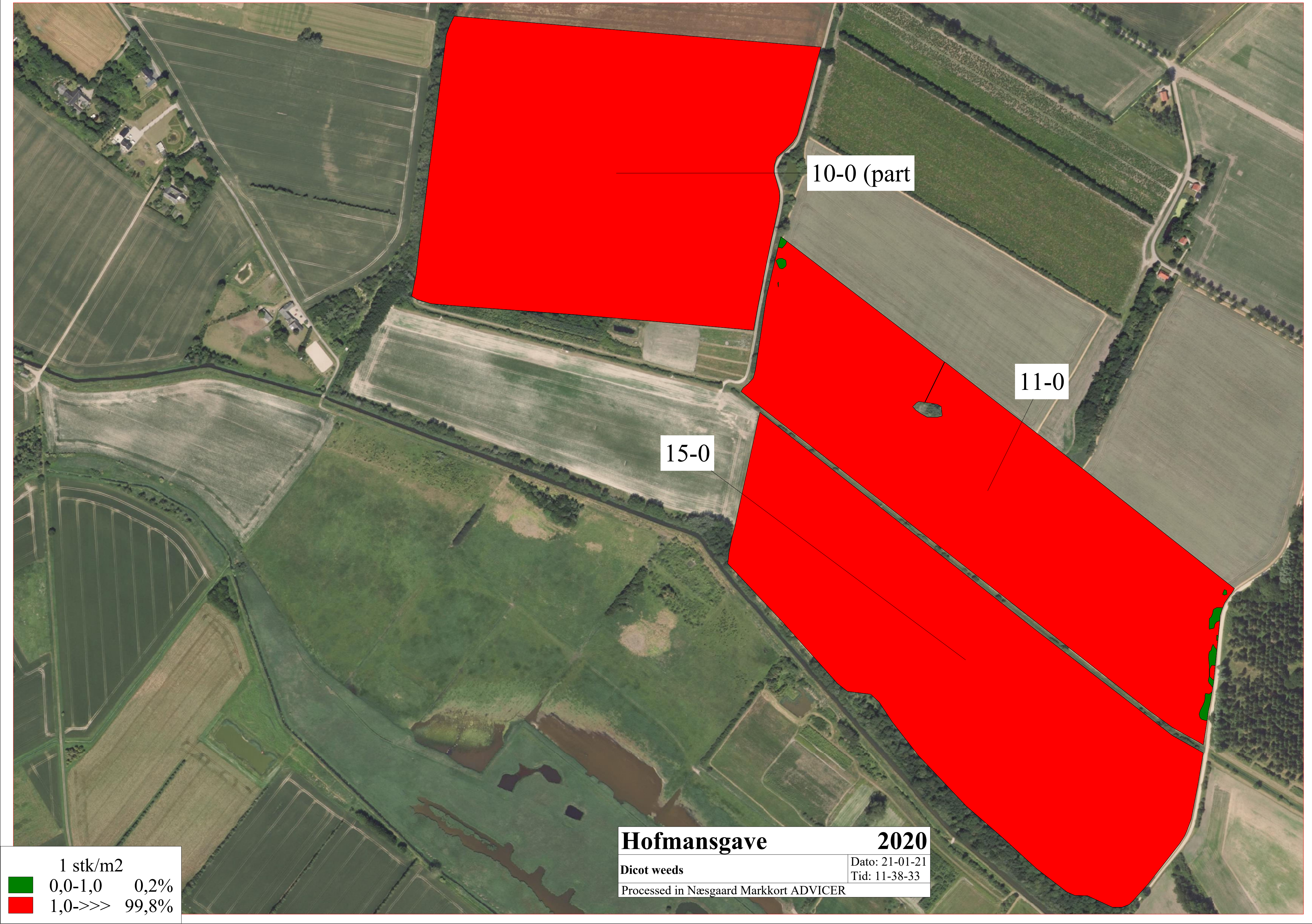
2 stk/m2	
0,0-2,0	62,1%
2,0->>>	37,9%

Hofmansgave	2020
Monocot weeds	Dato: 21-01-21 Tid: 11-32-26
Processed in Næsgaard Markkort ADVICER	

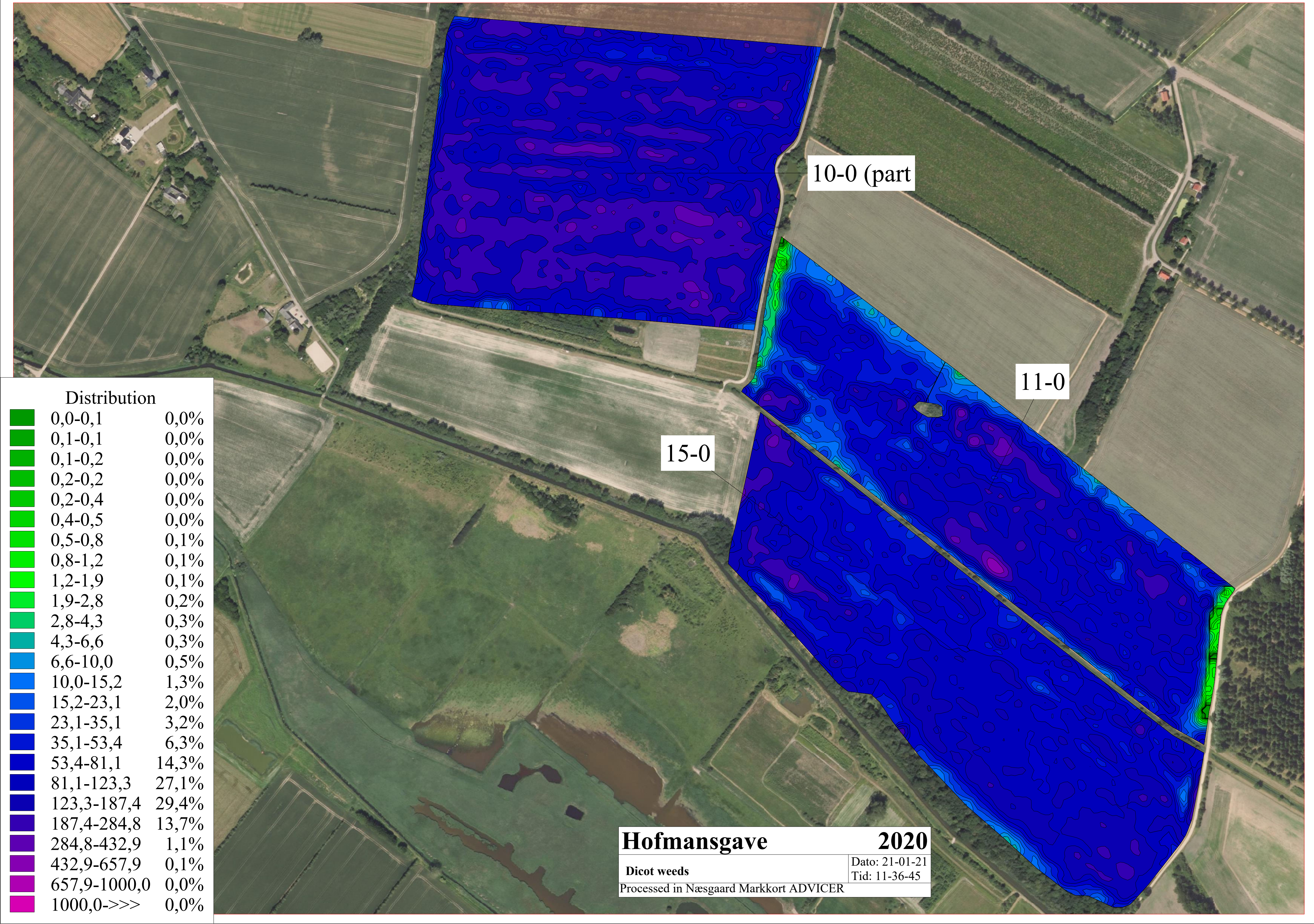

10-0 (part
11-0
15-0
Hofmansgave
2020
Monocot weeds
Dato: 21-01-21
Tid: 11-33-54
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 80,6%
5,0->>> 19,4%

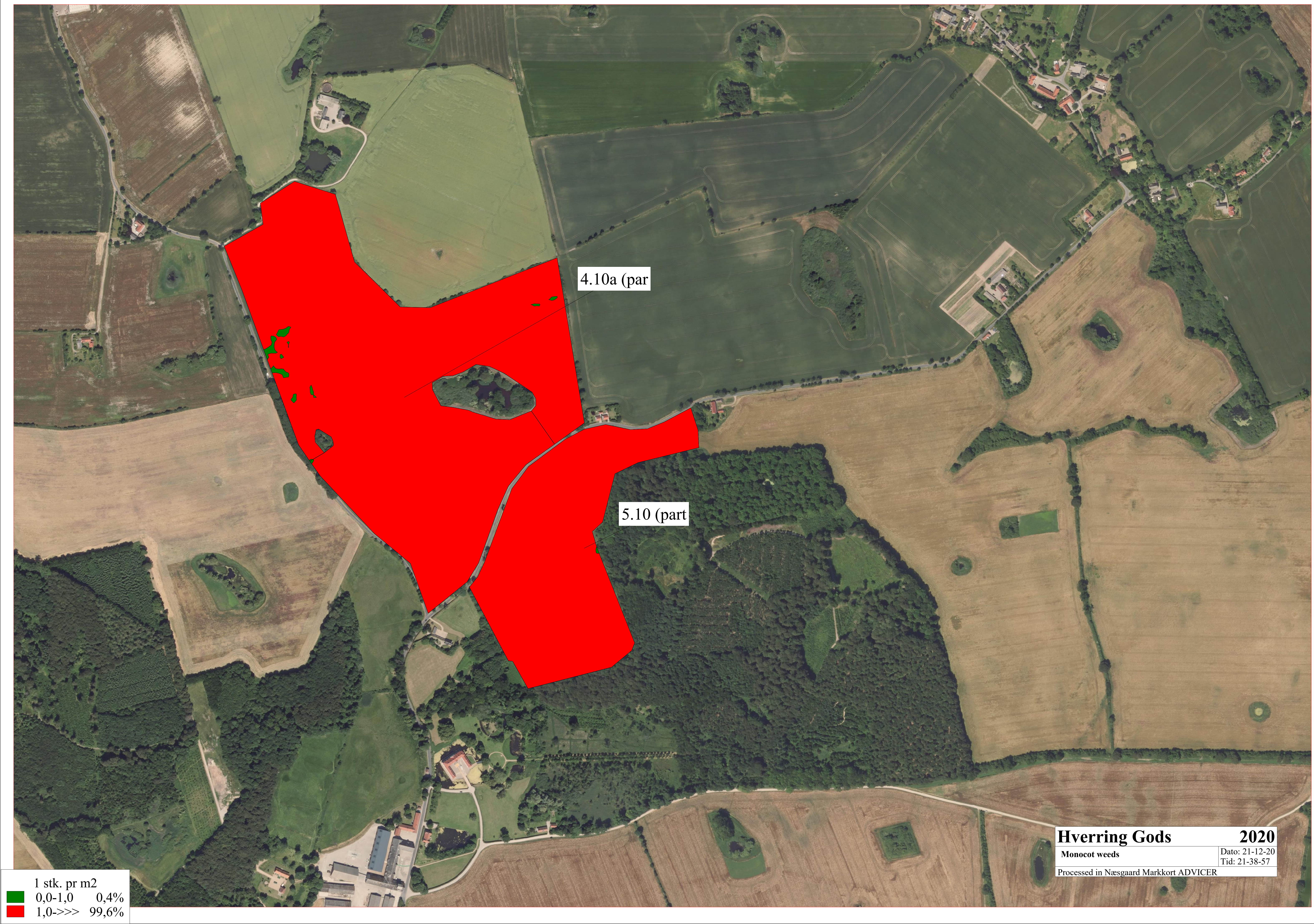
10-0 (part
11-0
15-0
Hofmansgave
2020
Monocot weeds
Dato: 21-01-21
Tid: 11-35-31
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 91,1%
10,0->>> 8,9%


10-0 (part
11-0
15-0
Distribution
0,0-0,1 9,3%
0,1-0,1 4,7%
0,1-0,2 4,9%
0,2-0,2 4,8%
0,2-0,4 6,0%
0,4-0,5 6,4%
0,5-0,8 8,0%
0,8-1,2 8,9%
1,2-1,9 13,8%
1,9-2,8 9,5%
2,8-4,3 7,0%
4,3-6,6 5,8%
6,6-10,0 4,3%
10,0-15,2 3,6%
15,2-23,1 2,6%
23,1-35,1 0,5%
35,1-53,4 0,0%
53,4-81,1 0,0%
81,1-123,3 0,0%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hofmansgave 2020
Monocot weeds
Dato: 21-01-21
Tid: 11-28-39
Processed in Næsgaard Markkort ADVICER

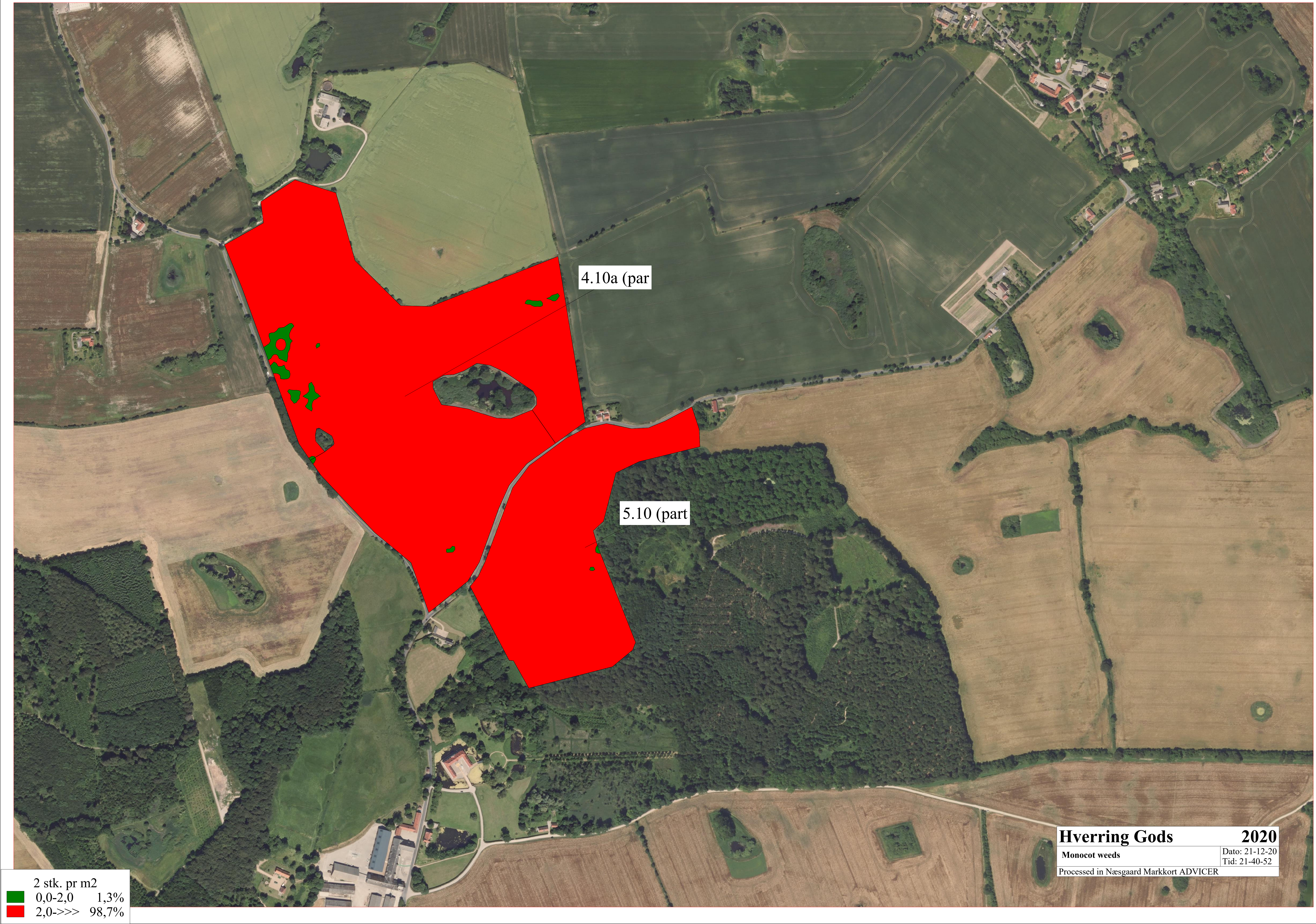


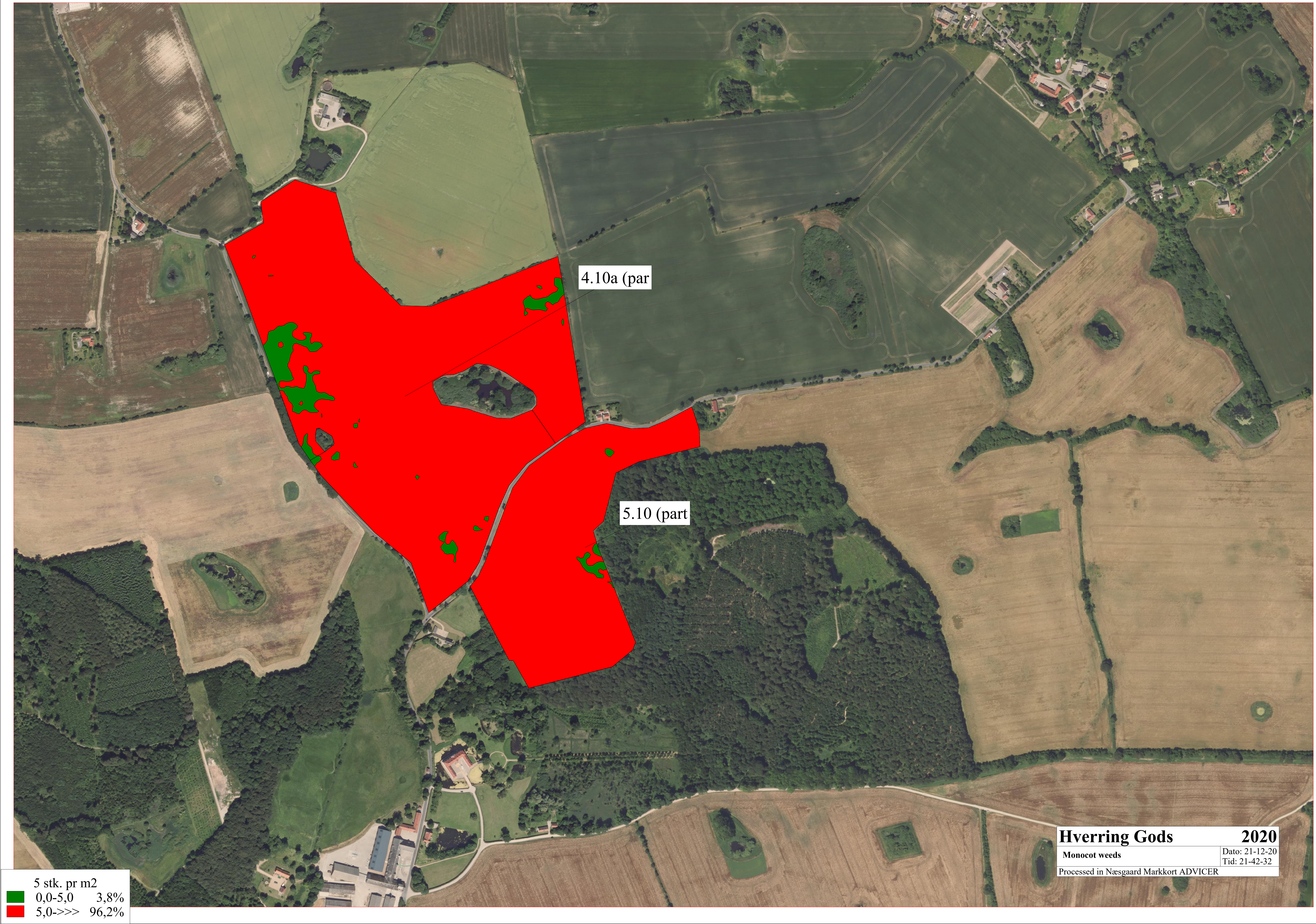
10-0 (part
11-0
15-0
Hofmansgave
2020
Dicot weeds
Dato: 21-01-21
Tid: 11-38-33
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 0,2%
1,0->>> 99,8%

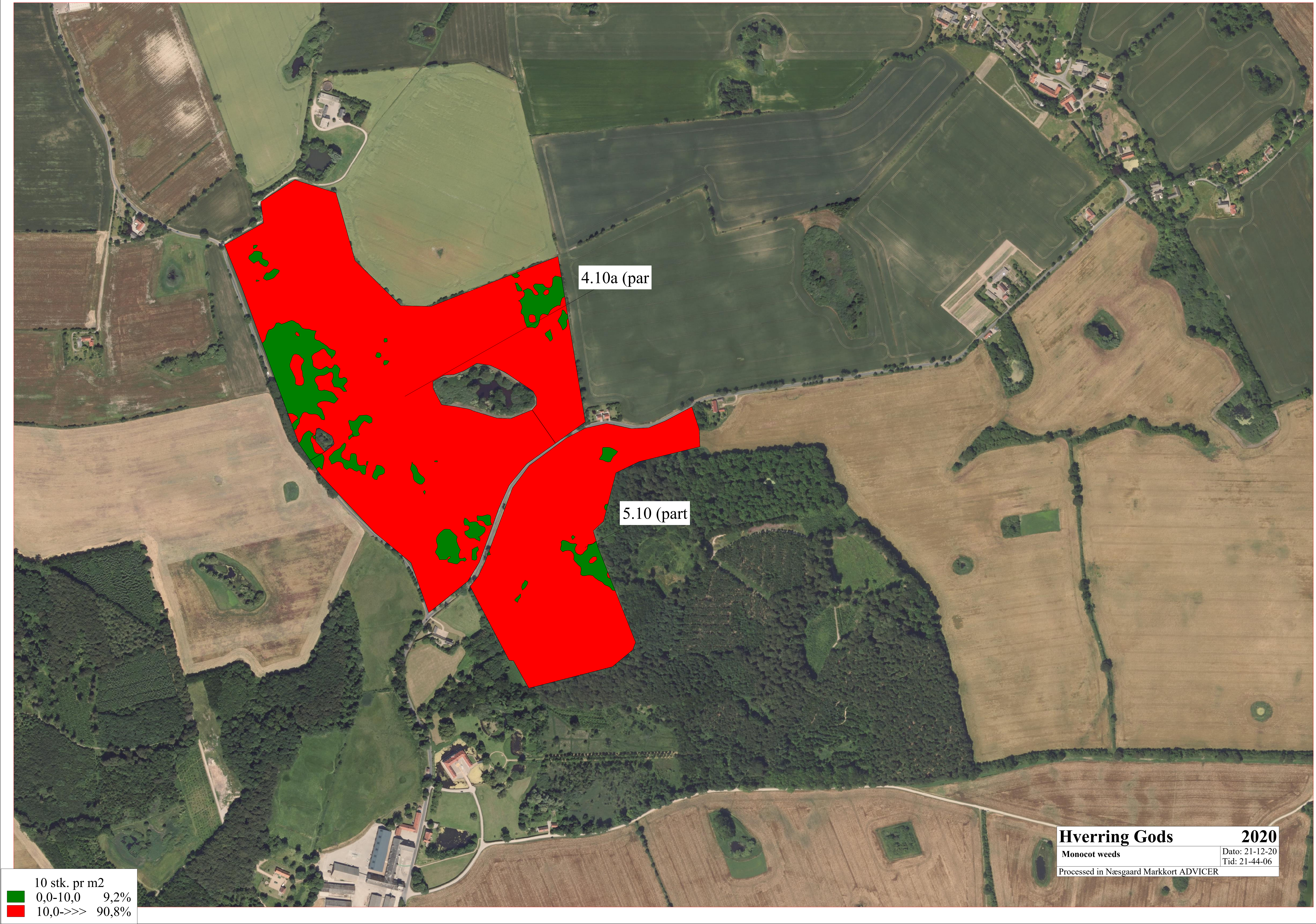

10-0 (part
11-0
15-0
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,1%
0,8-1,2 0,1%
1,2-1,9 0,1%
1,9-2,8 0,2%
2,8-4,3 0,3%
4,3-6,6 0,3%
6,6-10,0 0,5%
10,0-15,2 1,3%
15,2-23,1 2,0%
23,1-35,1 3,2%
35,1-53,4 6,3%
53,4-81,1 14,3%
81,1-123,3 27,1%
123,3-187,4 29,4%
187,4-284,8 13,7%
284,8-432,9 1,1%
432,9-657,9 0,1%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hofmansgave 2020
Dicot weeds
Dato: 21-01-21
Tid: 11-36-45
Processed in Næsgaard Markkort ADVICER

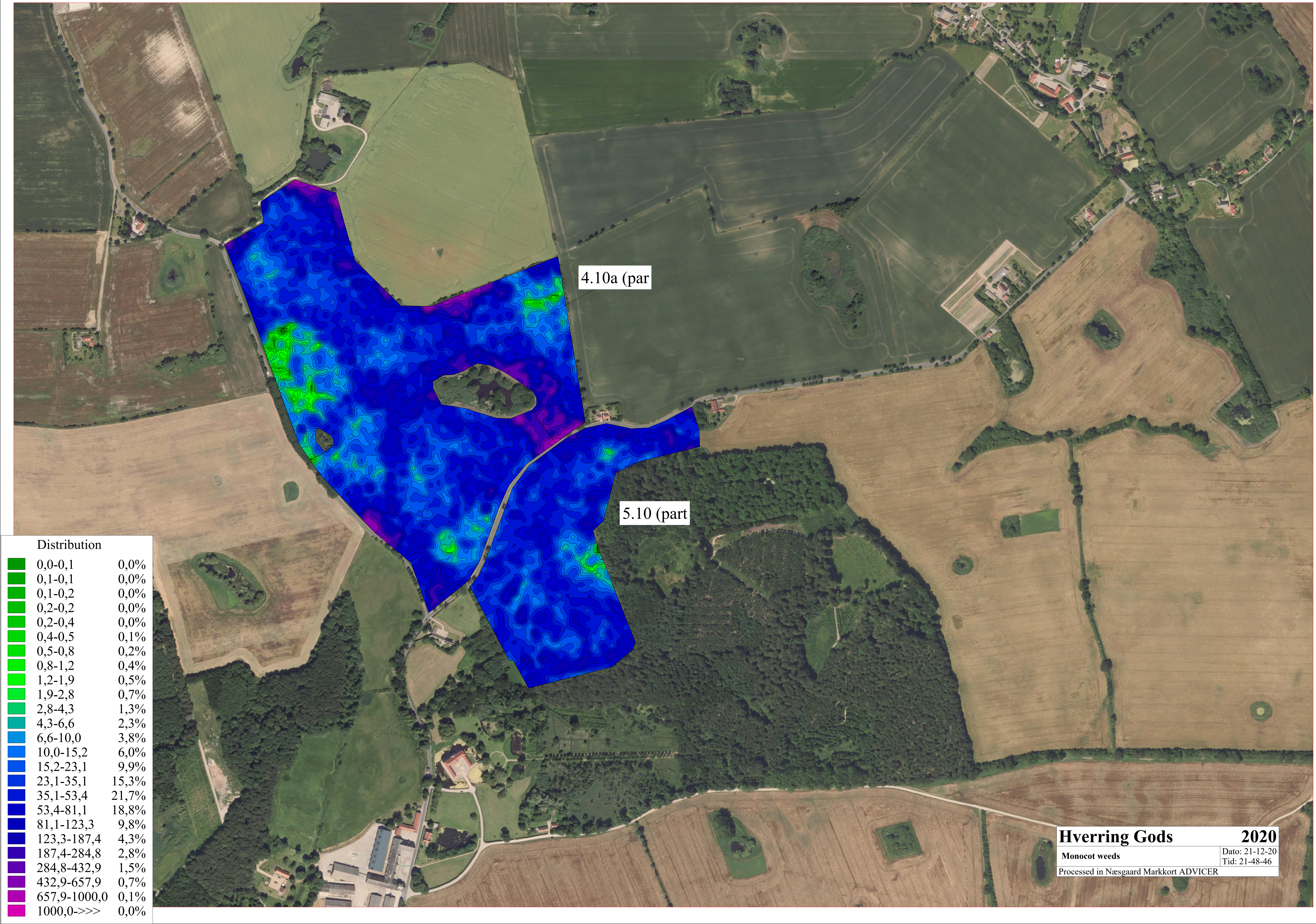


4.10a (par
5.10 (part
Hverring Gods
2020
Monocot weeds
Dato: 21-12-20
Tid: 21-38-57
Processed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 0,4%
1,0->>> 99,6%

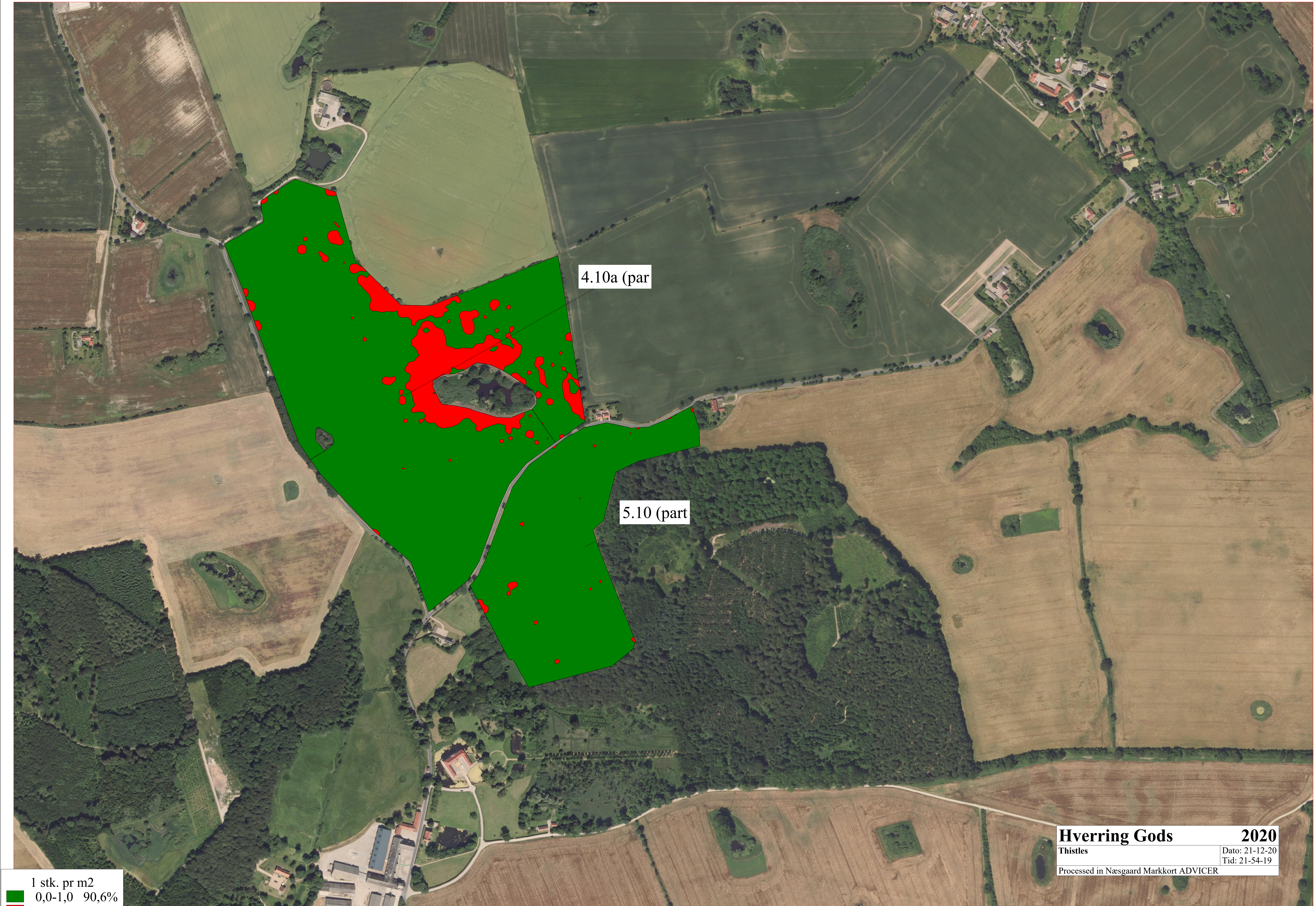

4.10a (par
5.10 (part
Hverring Gods
2020
Monocot weeds
Dato: 21-12-20
Tid: 21-40-52
Processed in Næsgaard Markkort ADVICER
2 stk. pr m2
0,0-2,0 1,3%
2,0->>> 98,7%


4.10a (par
5.10 (part
Hverring Gods 2020
Monocot weeds
Dato: 21-12-20
Tid: 21-42-32
Processed in Næsgaard Markkort ADVICER
5 stk. pr m2
0,0-5,0 3,8%
5,0->>> 96,2%


4.10a (par
5.10 (part
Hverring Gods 2020
Monocot weeds
Dato: 21-12-20
Tid: 21-44-06
Processed in Næsgaard Markkort ADVICER
10 stk. pr m2
0,0-10,0 9,2%
10,0->>> 90,8%

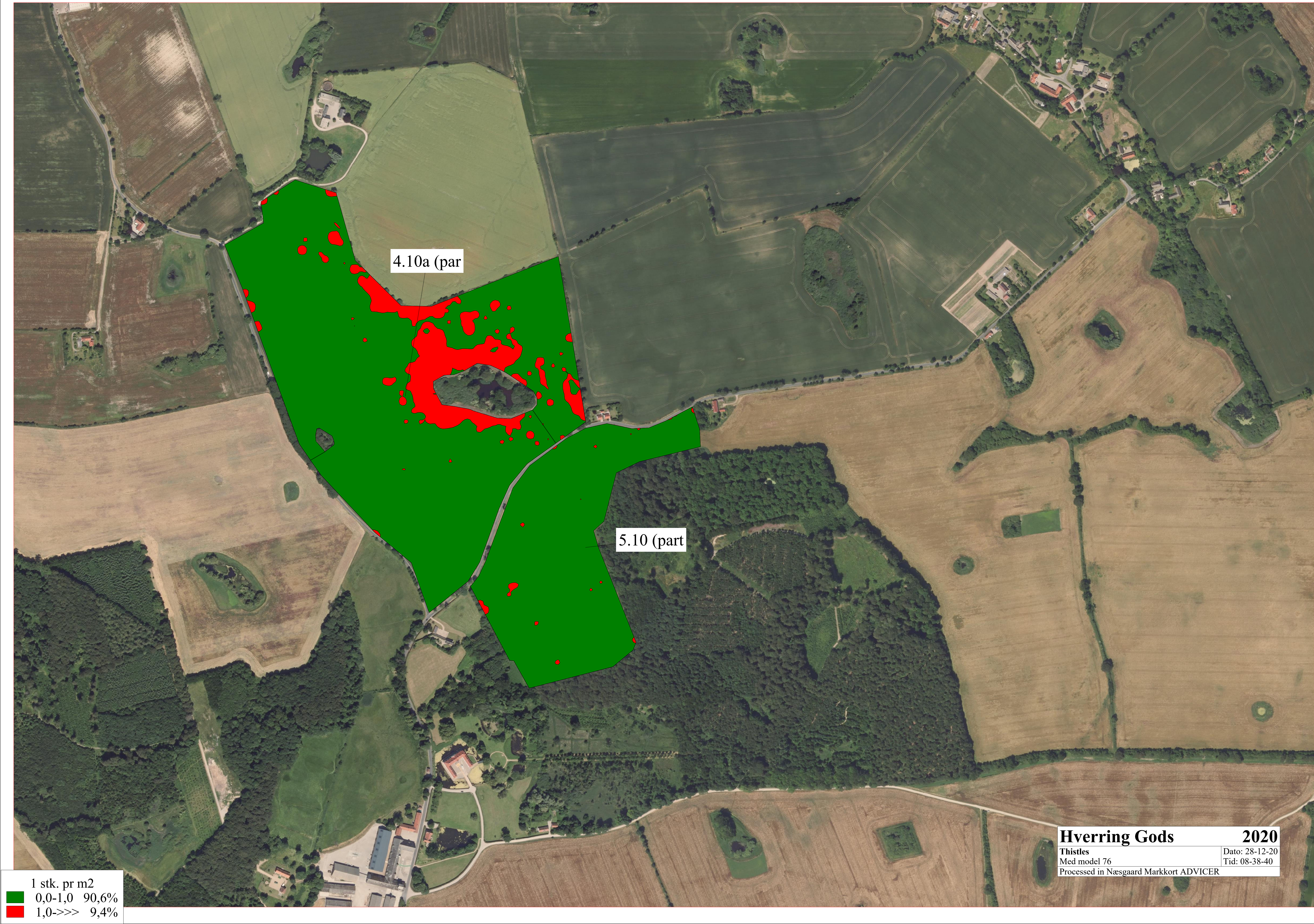

4.10a (par
5.10 (part
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,1%
0,5-0,8 0,2%
0,8-1,2 0,4%
1,2-1,9 0,5%
1,9-2,8 0,7%
2,8-4,3 1,3%
4,3-6,6 2,3%
6,6-10,0 3,8%
10,0-15,2 6,0%
15,2-23,1 9,9%
23,1-35,1 15,3%
35,1-53,4 21,7%
53,4-81,1 18,8%
81,1-123,3 9,8%
123,3-187,4 4,3%
187,4-284,8 2,8%
284,8-432,9 1,5%
432,9-657,9 0,7%
657,9-1000,0 0,1%
1000,0->>> 0,0%
Hverring Gods 2020
Monocot weeds
Dato: 21-12-20
Tid: 21-48-46
Processed in Næsgaard Markkort ADVICER

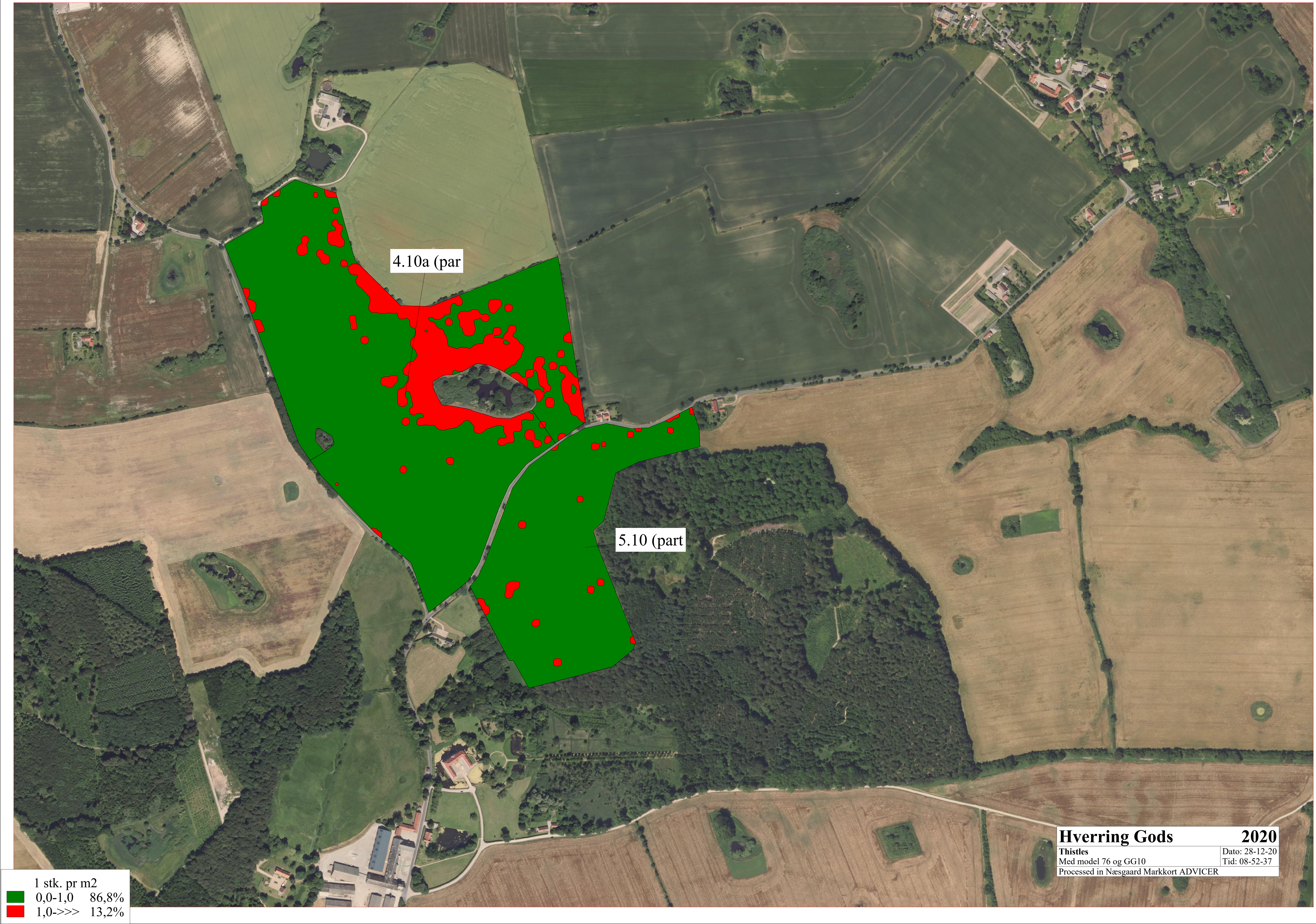

4.10a (par
5.10 (part
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,0%
0,8-1,2 0,0%
1,2-1,9 0,0%
1,9-2,8 0,0%
2,8-4,3 0,1%
4,3-6,6 0,3%
6,6-10,0 0,7%
10,0-15,2 2,2%
15,2-23,1 6,9%
23,1-35,1 15,2%
35,1-53,4 21,2%
53,4-81,1 17,3%
81,1-123,3 14,1%
123,3-187,4 10,8%
187,4-284,8 6,8%
284,8-432,9 3,2%
432,9-657,9 1,0%
657,9-1000,0 0,2%
1000,0->>> 0,1%
Hverring Gods
2020
Dicot weeds
Dato: 21-12-20
Tid: 21-46-40
Processed in Næsgaard Markkort ADVICER

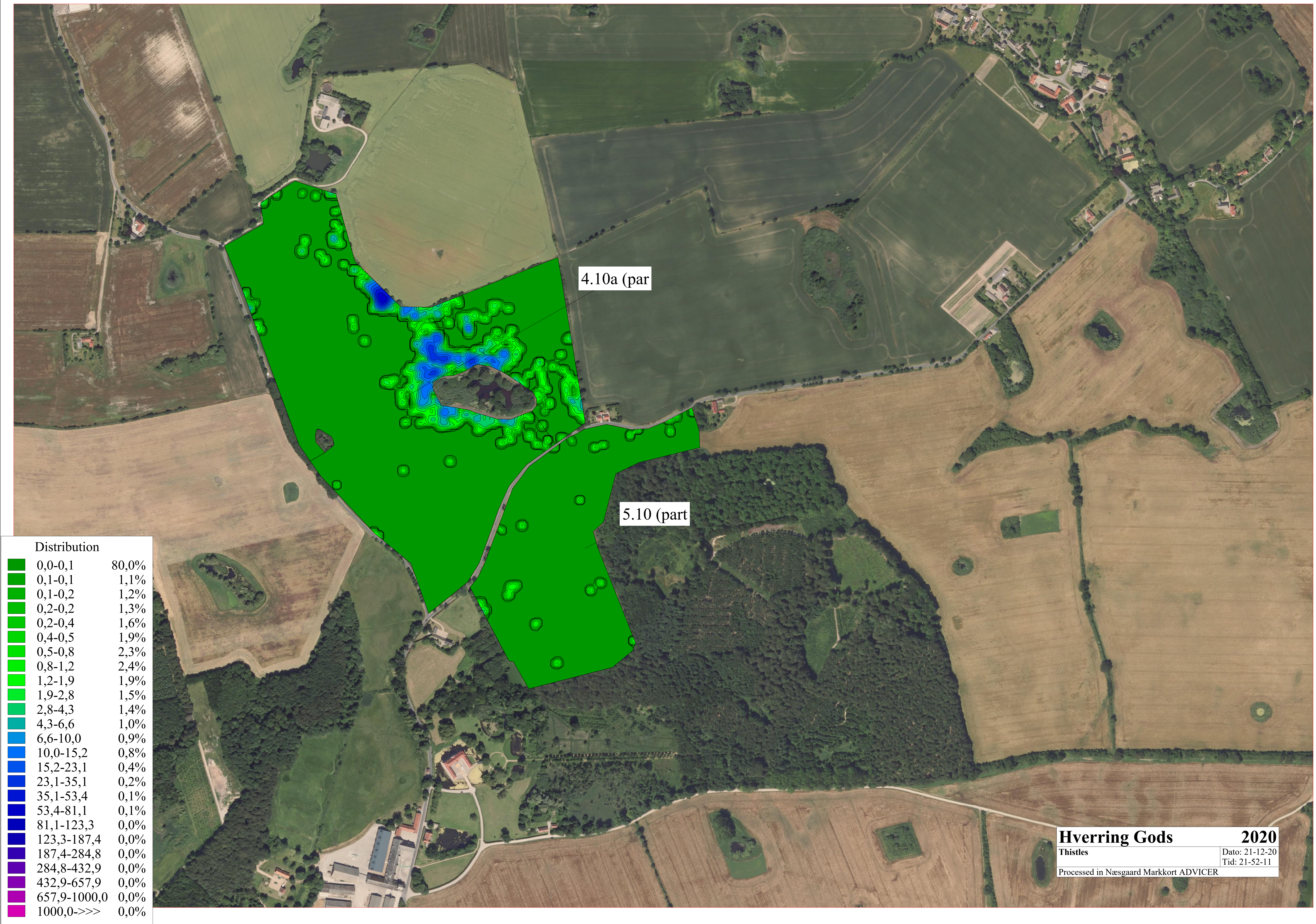


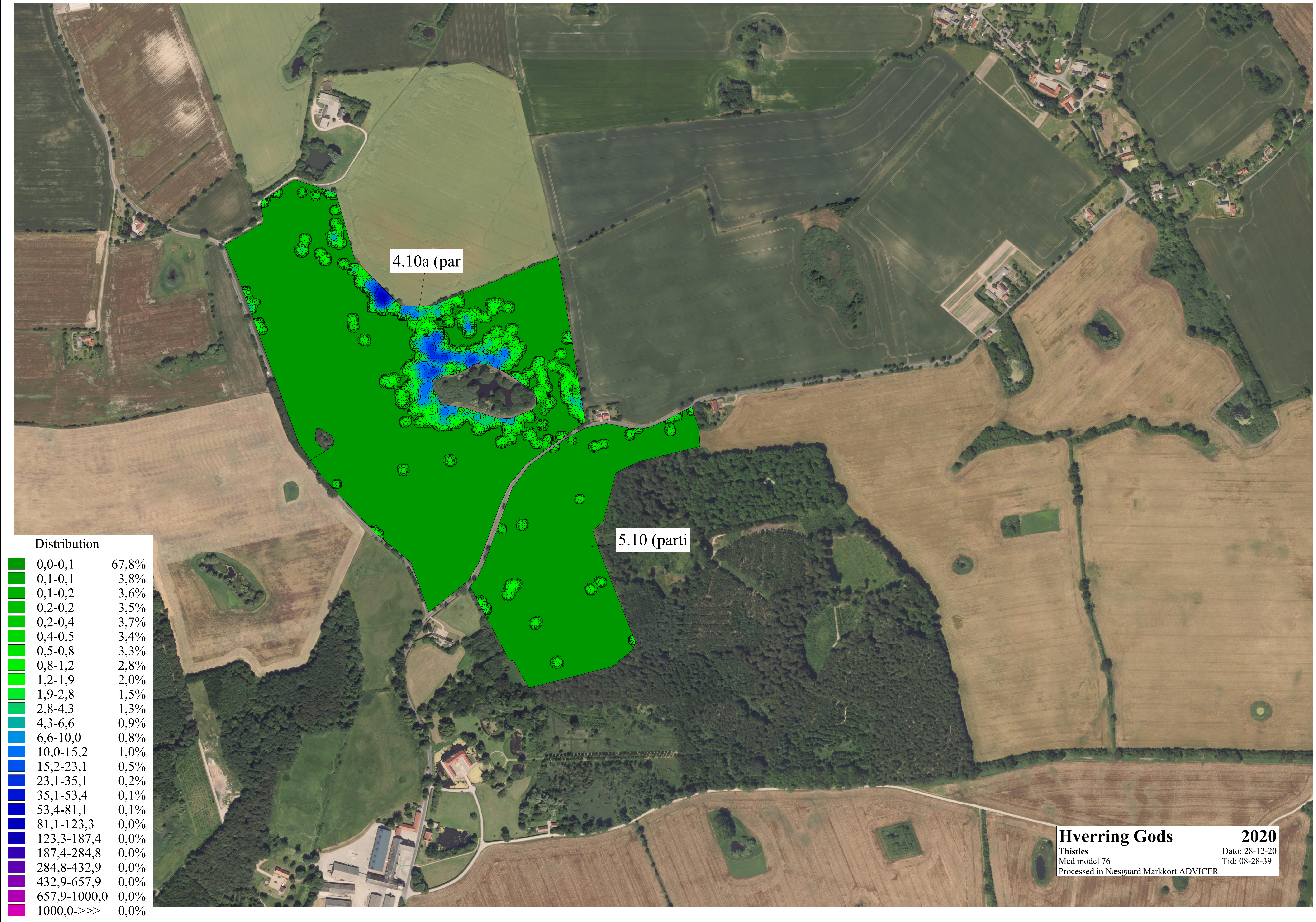
1 stk. pr m2
0,0-1,0 90,6%
1,0->>> 9,4%

Hverring Gods 2020
Thistles
Dato: 21-12-20
Tid: 21-54-19
Processed in Næsgaard Markkort ADVICER

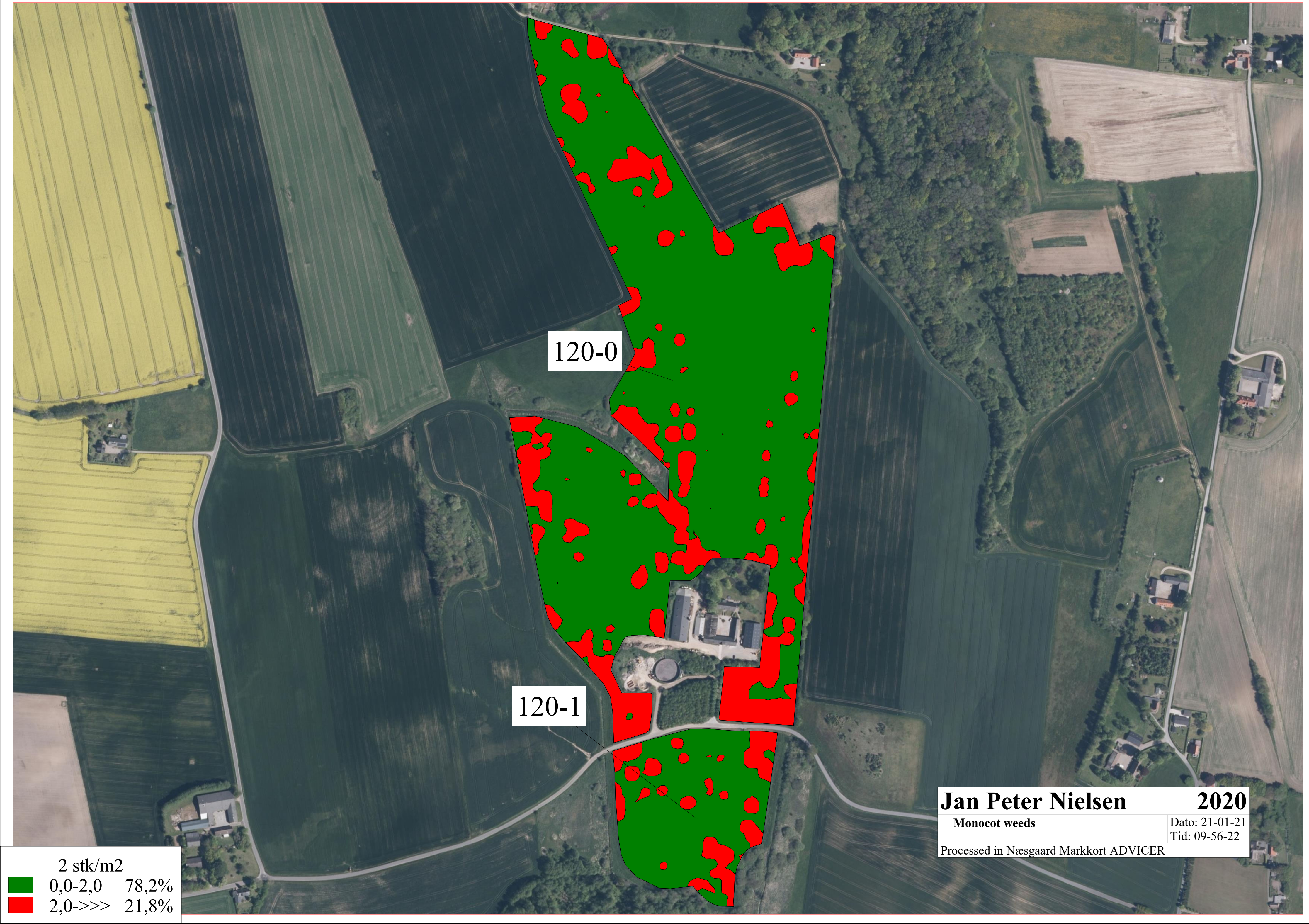

4.10a (par
5.10 (part
Hverring Gods 2020
Thistles
Med model 76
Dato: 28-12-20
Tid: 08-38-40
Processed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 90,6%
1,0->>> 9,4%


4.10a (par
5.10 (part
Hverring Gods
2020
Thistles
Med model 76 og GG10
Dato: 28-12-20
Tid: 08-52-37
Processed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 86,8%
1,0->>> 13,2%


4.10a (par
5.10 (part
Distribution
0,0-0,1 80,0%
0,1-0,1 1,1%
0,1-0,2 1,2%
0,2-0,2 1,3%
0,2-0,4 1,6%
0,4-0,5 1,9%
0,5-0,8 2,3%
0,8-1,2 2,4%
1,2-1,9 1,9%
1,9-2,8 1,5%
2,8-4,3 1,4%
4,3-6,6 1,0%
6,6-10,0 0,9%
10,0-15,2 0,8%
15,2-23,1 0,4%
23,1-35,1 0,2%
35,1-53,4 0,1%
53,4-81,1 0,1%
81,1-123,3 0,0%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hverring Gods 2020
Thistles
Dato: 21-12-20
Tid: 21-52-11
Processed in Næsgaard Markkort ADVICER

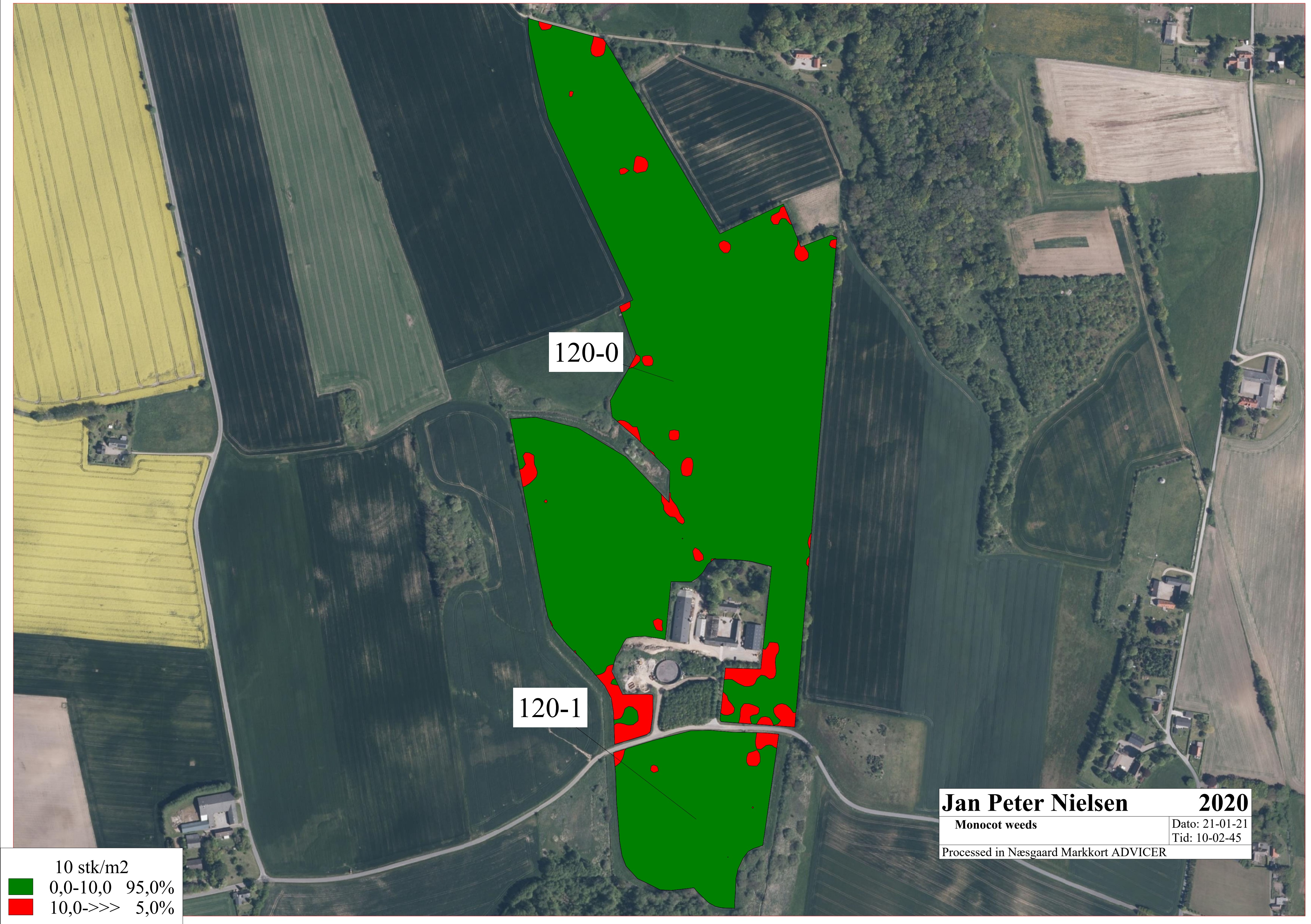

4.10a (par
5.10 (parti
Distribution
0,0-0,1 67,8%
0,1-0,1 3,8%
0,1-0,2 3,6%
0,2-0,2 3,5%
0,2-0,4 3,7%
0,4-0,5 3,4%
0,5-0,8 3,3%
0,8-1,2 2,8%
1,2-1,9 2,0%
1,9-2,8 1,5%
2,8-4,3 1,3%
4,3-6,6 0,9%
6,6-10,0 0,8%
10,0-15,2 1,0%
15,2-23,1 0,5%
23,1-35,1 0,2%
35,1-53,4 0,1%
53,4-81,1 0,1%
81,1-123,3 0,0%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Hverring Gods 2020
Thistles
Med model 76
Dato: 28-12-20
Tid: 08-28-39
Processed in Næsgaard Markkort ADVICER

120-0
120-1
1 stk/m2
0,0-1,0 64,1%
1,0->>> 35,9%
Jan Peter Nielsen 2020
Monocot weeds
Dato: 21-01-21
Tid: 09-54-48
Processed in Næsgaard Markkort ADVICER

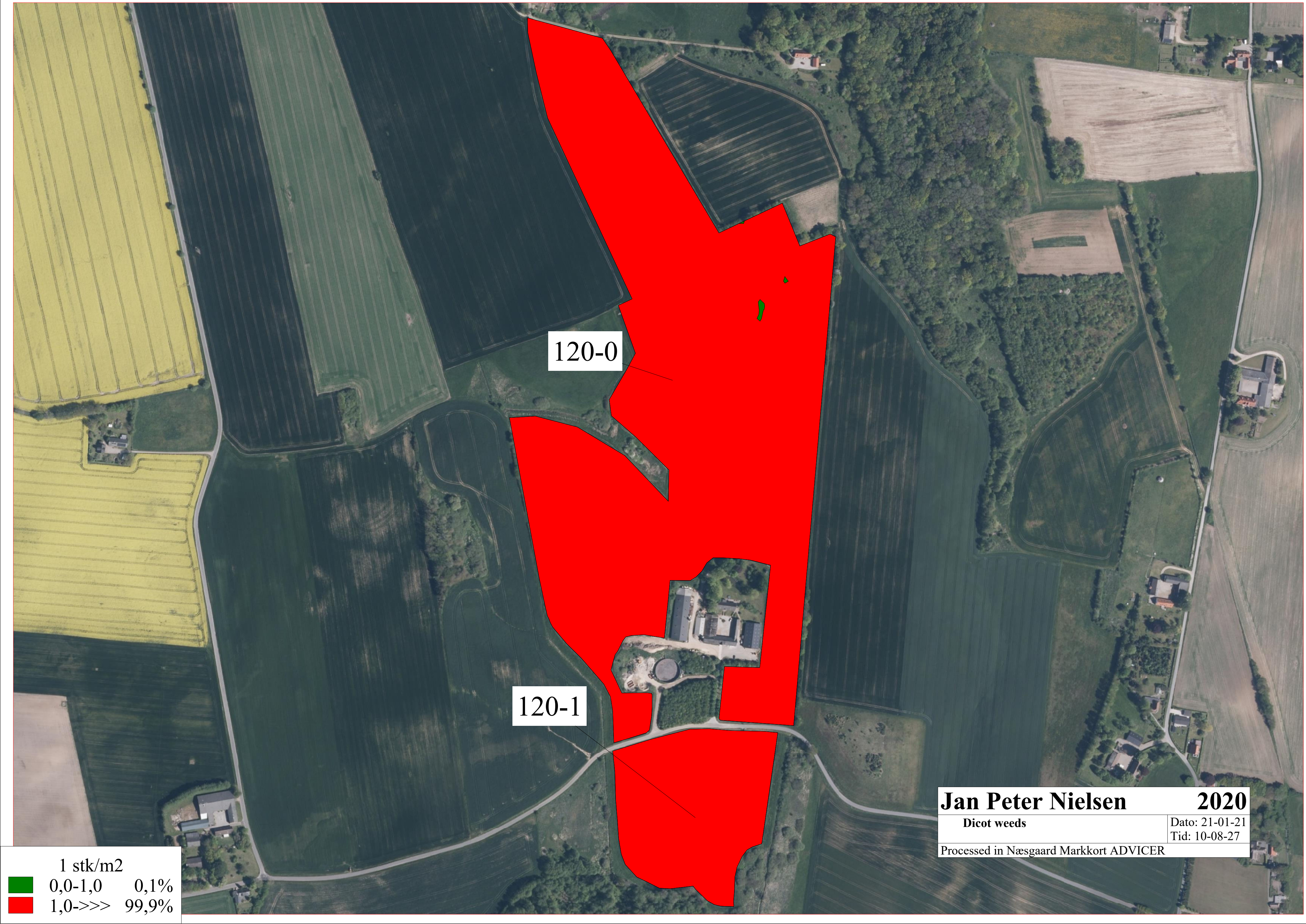


120-0
120-1
2 stk/m2
0,0-2,0 78,2%
2,0->>> 21,8%
Jan Peter Nielsen
2020
Monocot weeds
Dato: 21-01-21
Tid: 09-56-22
Processed in Næsgaard Markkort ADVICER

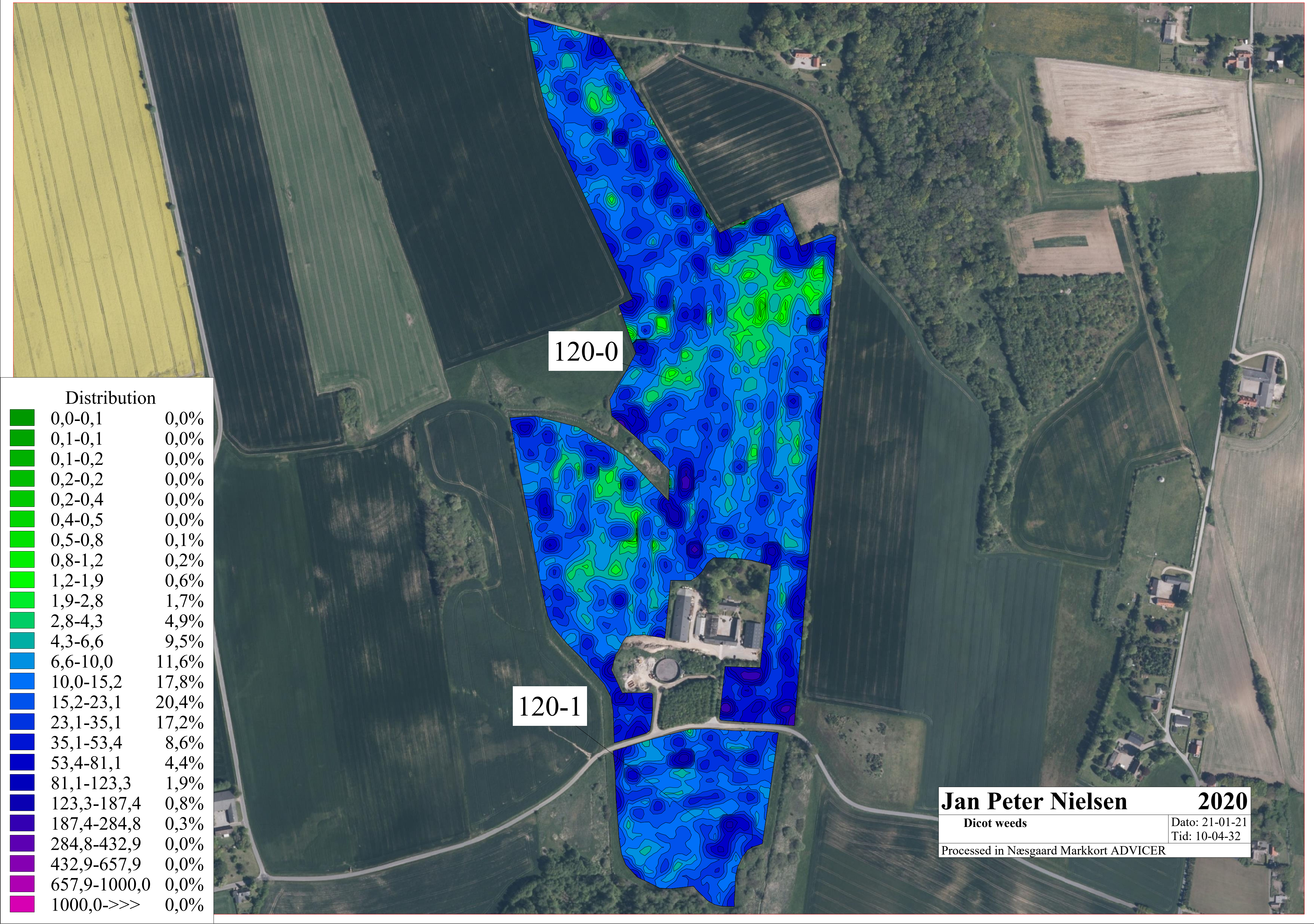

120-0
120-1
Jan Peter Nielsen
2020
Monocot weeds
Dato: 21-01-21
Tid: 10-00-19
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 90,1%
5,0->>> 9,9%

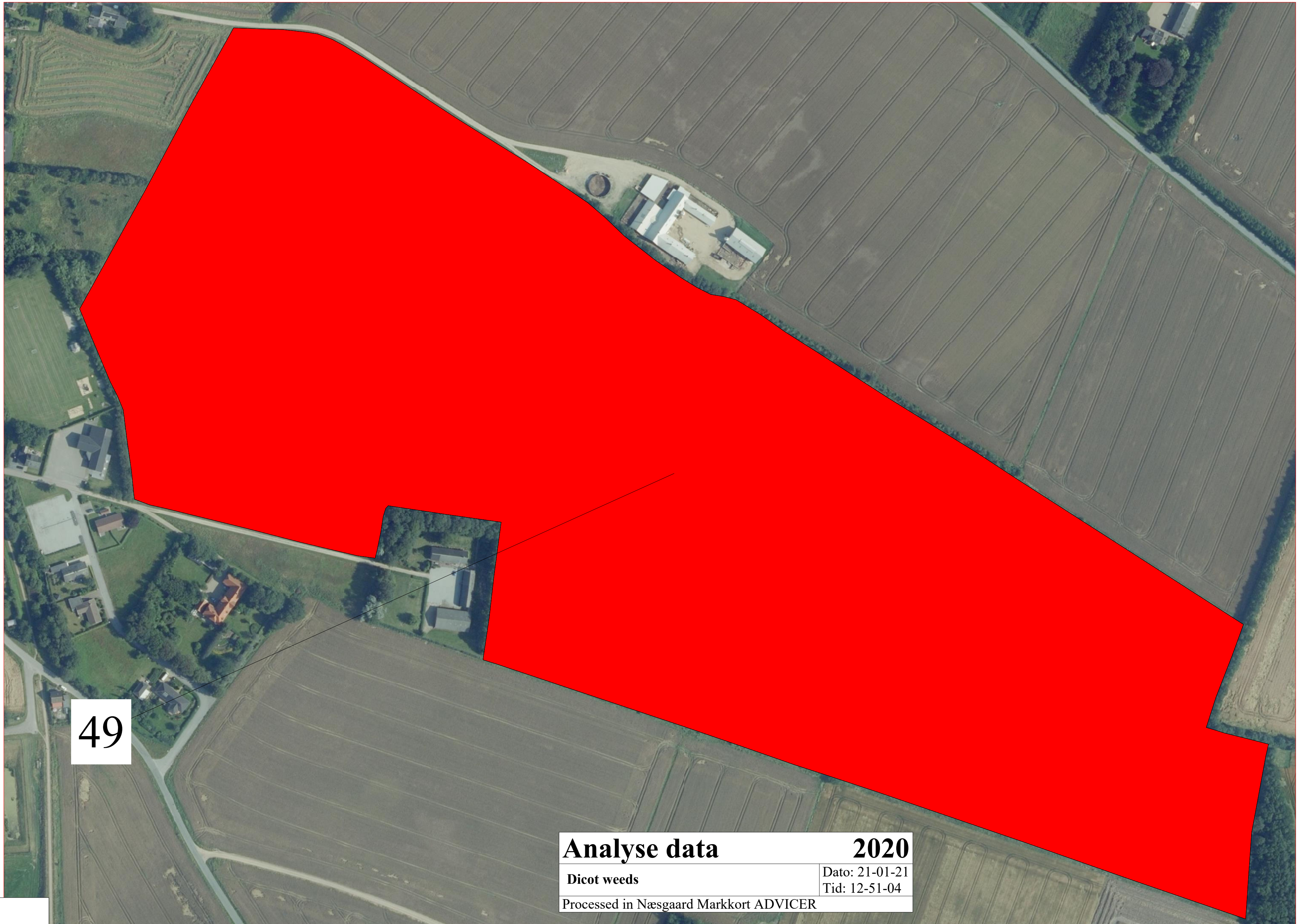

120-0
120-1
Jan Peter Nielsen
2020
Monocot weeds
Dato: 21-01-21
Tid: 10-02-45
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 95,0%
10,0->>> 5,0%


120-0
120-1
Distribution
0,0-0,1 28,0%
0,1-0,1 2,3%
0,1-0,2 3,2%
0,2-0,2 4,3%
0,2-0,4 5,2%
0,4-0,5 7,4%
0,5-0,8 9,4%
0,8-1,2 9,0%
1,2-1,9 8,2%
1,9-2,8 6,6%
2,8-4,3 5,0%
4,3-6,6 3,5%
6,6-10,0 2,8%
10,0-15,2 2,2%
15,2-23,1 1,5%
23,1-35,1 0,6%
35,1-53,4 0,4%
53,4-81,1 0,1%
81,1-123,3 0,0%
123,3-187,4 0,1%
187,4-284,8 0,1%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Jan Peter Nielsen 2020
Monocot weeds
Dato: 21-01-21
Tid: 09-24-40
Processed in Næsgaard Markkort ADVICER



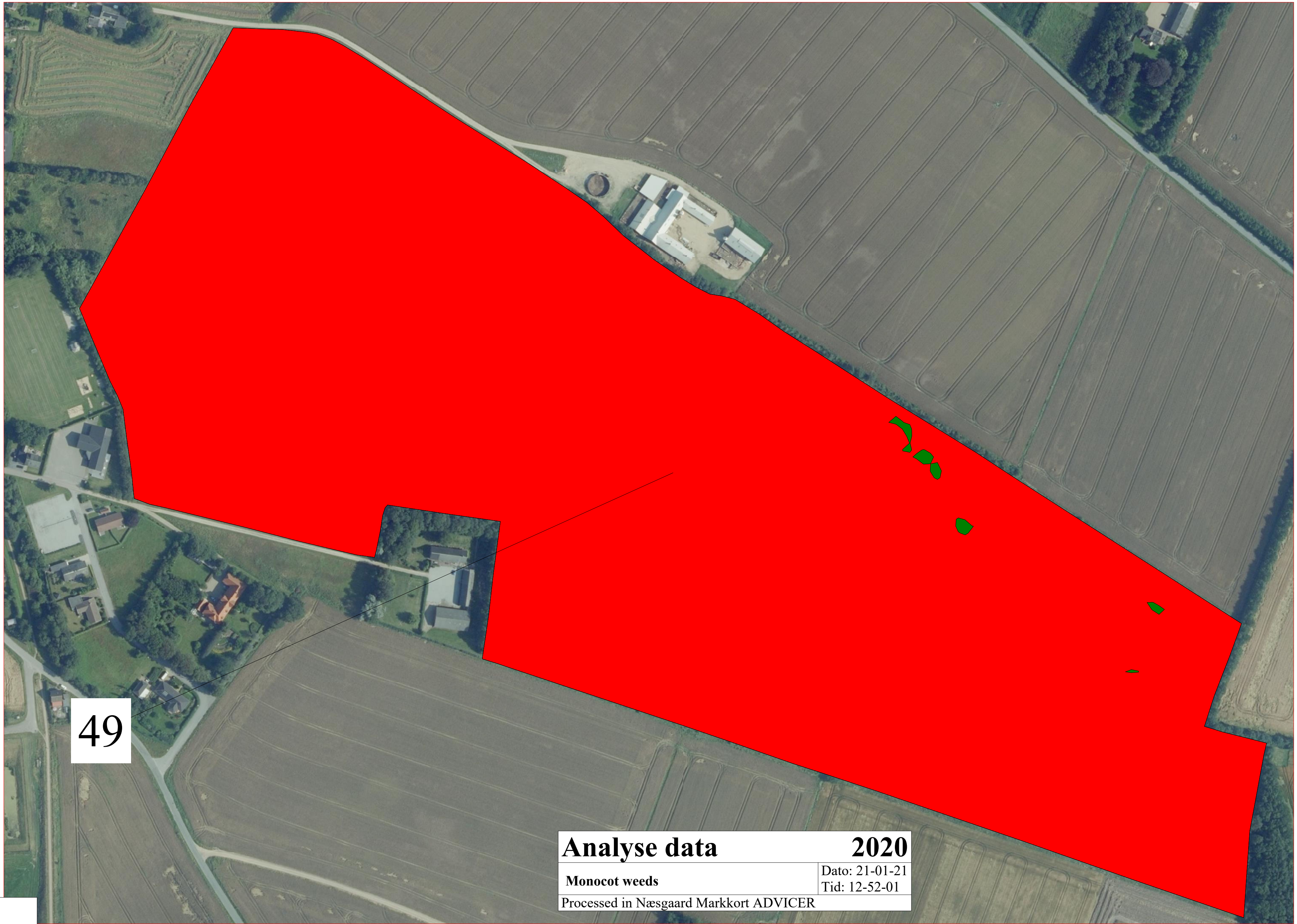
120-0
120-1
Jan Peter Nielsen
2020
Dicot weeds
Dato: 21-01-21
Tid: 10-08-27
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 0,1%
1,0->>> 99,9%


120-0
120-1
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,1%
0,8-1,2 0,2%
1,2-1,9 0,6%
1,9-2,8 1,7%
2,8-4,3 4,9%
4,3-6,6 9,5%
6,6-10,0 11,6%
10,0-15,2 17,8%
15,2-23,1 20,4%
23,1-35,1 17,2%
35,1-53,4 8,6%
53,4-81,1 4,4%
81,1-123,3 1,9%
123,3-187,4 0,8%
187,4-284,8 0,3%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Jan Peter Nielsen 2020
Dicot weeds
Dato: 21-01-21
Tid: 10-04-32
Processed in Næsgaard Markkort ADVICER



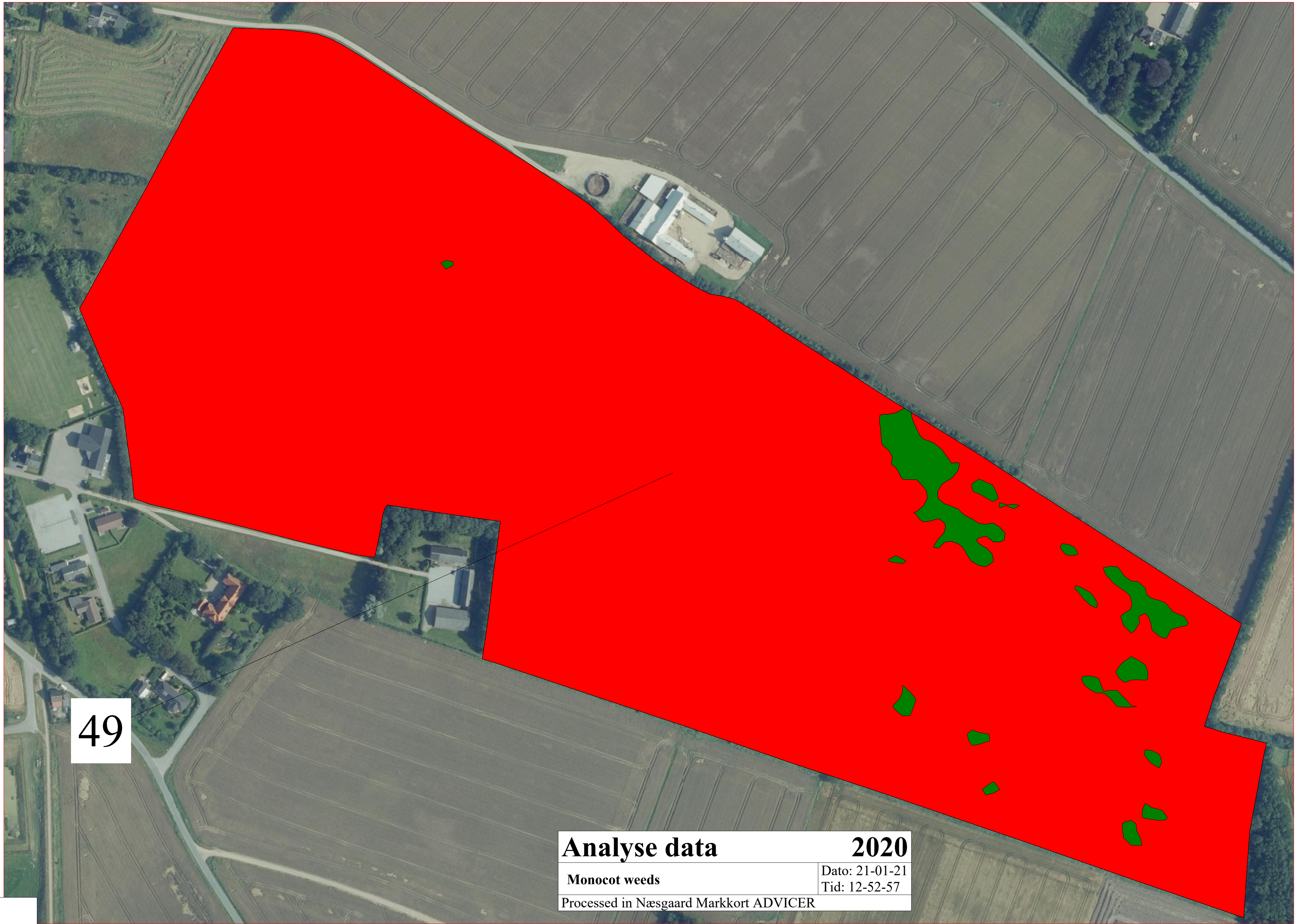
1 stk/m2

	0,0-1,0	0,0%
	1,0->>>	100,0%



2 stk/m2

(green)	0,0-2,0	0,2%
(red)	2,0->>>	99,8%



Analyse data **2020**

Monocot weeds

Dato: 21-01-21
Tid: 12-52-57

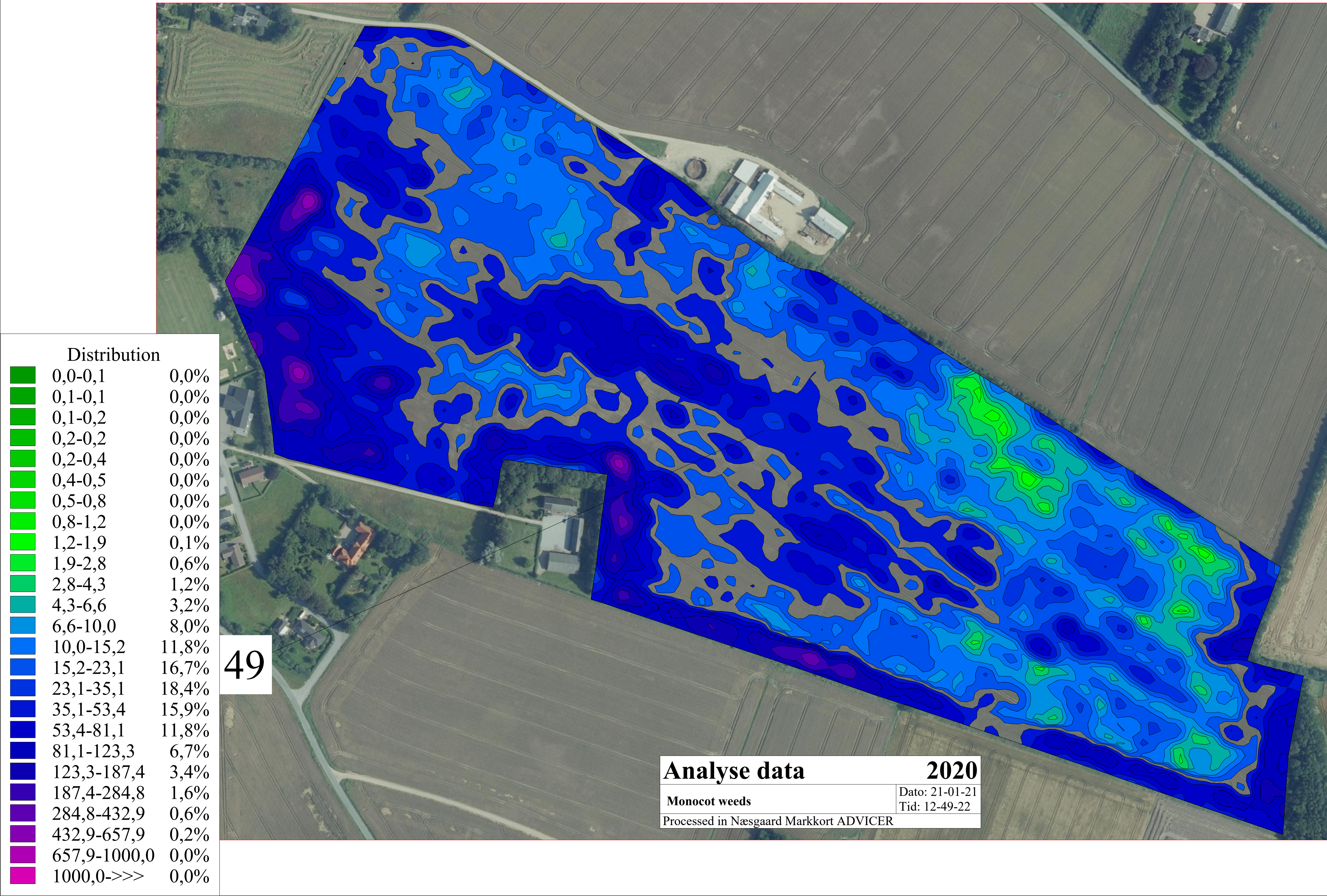
Processed in Næsgaard Markkort ADVICER

5 stk/m2

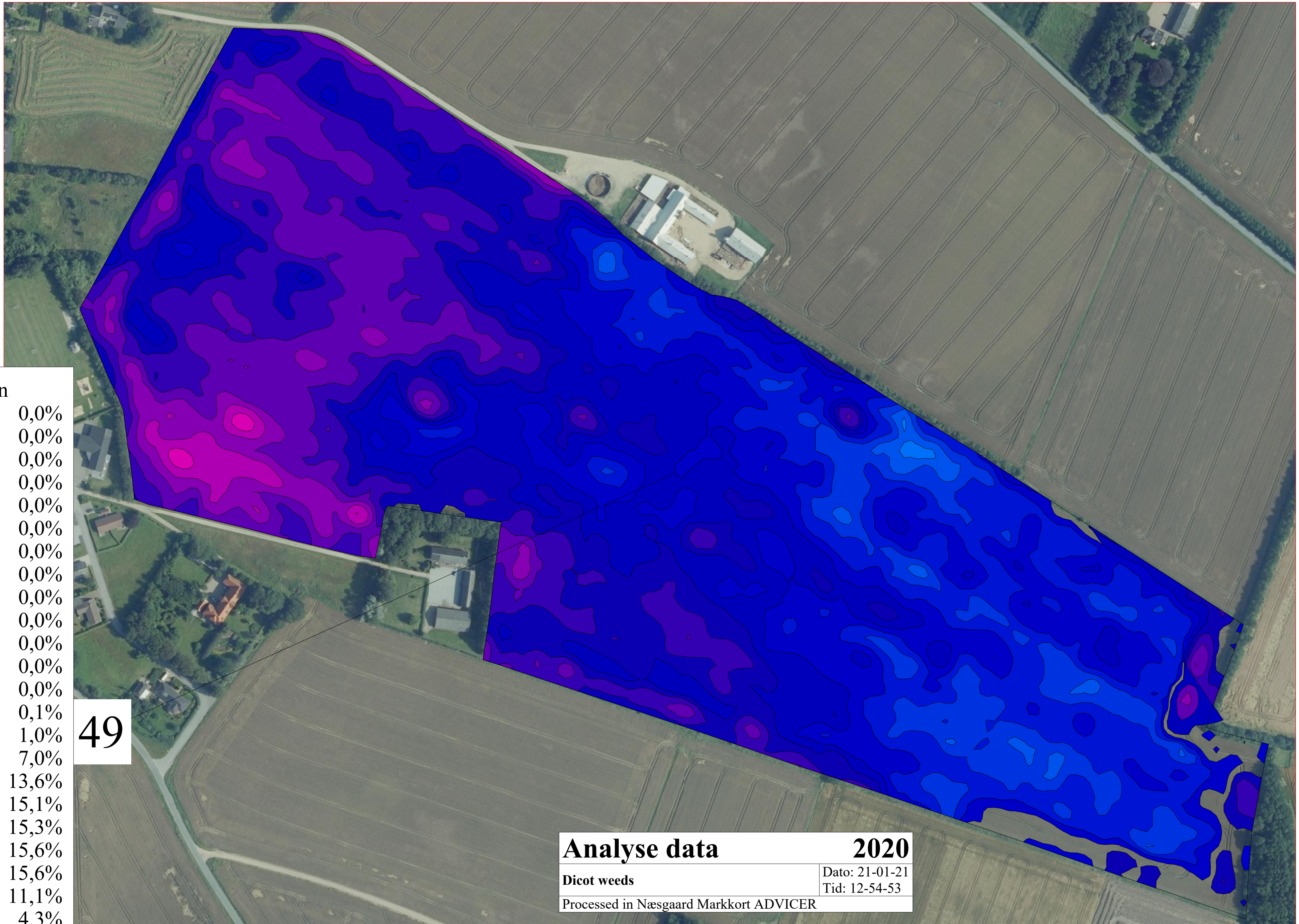
(green)	0,0-5,0	2,5%
(red)	5,0->>>	97,5%

10 stk/m2

(green)	0,0-10,0	10,9%
(red)	10,0->>>	89,1%


Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,0%
0,8-1,2 0,0%
1,2-1,9 0,1%
1,9-2,8 0,6%
2,8-4,3 1,2%
4,3-6,6 3,2%
6,6-10,0 8,0%
10,0-15,2 11,8%
15,2-23,1 16,7%
23,1-35,1 18,4%
35,1-53,4 15,9%
53,4-81,1 11,8%
81,1-123,3 6,7%
123,3-187,4 3,4%
187,4-284,8 1,6%
284,8-432,9 0,6%
432,9-657,9 0,2%
657,9-1000,0 0,0%
1000,0->>> 0,0%
49
Analyse data 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-49-22
Processed in Næsgaard Markkort ADVICER


49
Analyse data
2020
Dicot weeds
Dato: 21-01-21
Tid: 12-56-02
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 0,0%
1,0->>> 100,0%



Analyse data **2020**

Dicot weeds

Dato: 21-01-21
Tid: 12-54-53

Processed in Næsgaard Markkort ADVICER

Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,0%
0,8-1,2	0,0%
1,2-1,9	0,0%
1,9-2,8	0,0%
2,8-4,3	0,0%
4,3-6,6	0,0%
6,6-10,0	0,0%
10,0-15,2	0,1%
15,2-23,1	1,0%
23,1-35,1	7,0%
35,1-53,4	13,6%
53,4-81,1	15,1%
81,1-123,3	15,3%
123,3-187,4	15,6%
187,4-284,8	15,6%
284,8-432,9	11,1%
432,9-657,9	4,3%
657,9-1000,0	1,2%
1000,0->>>	0,1%

Kærsgårdvej 21 **2020**

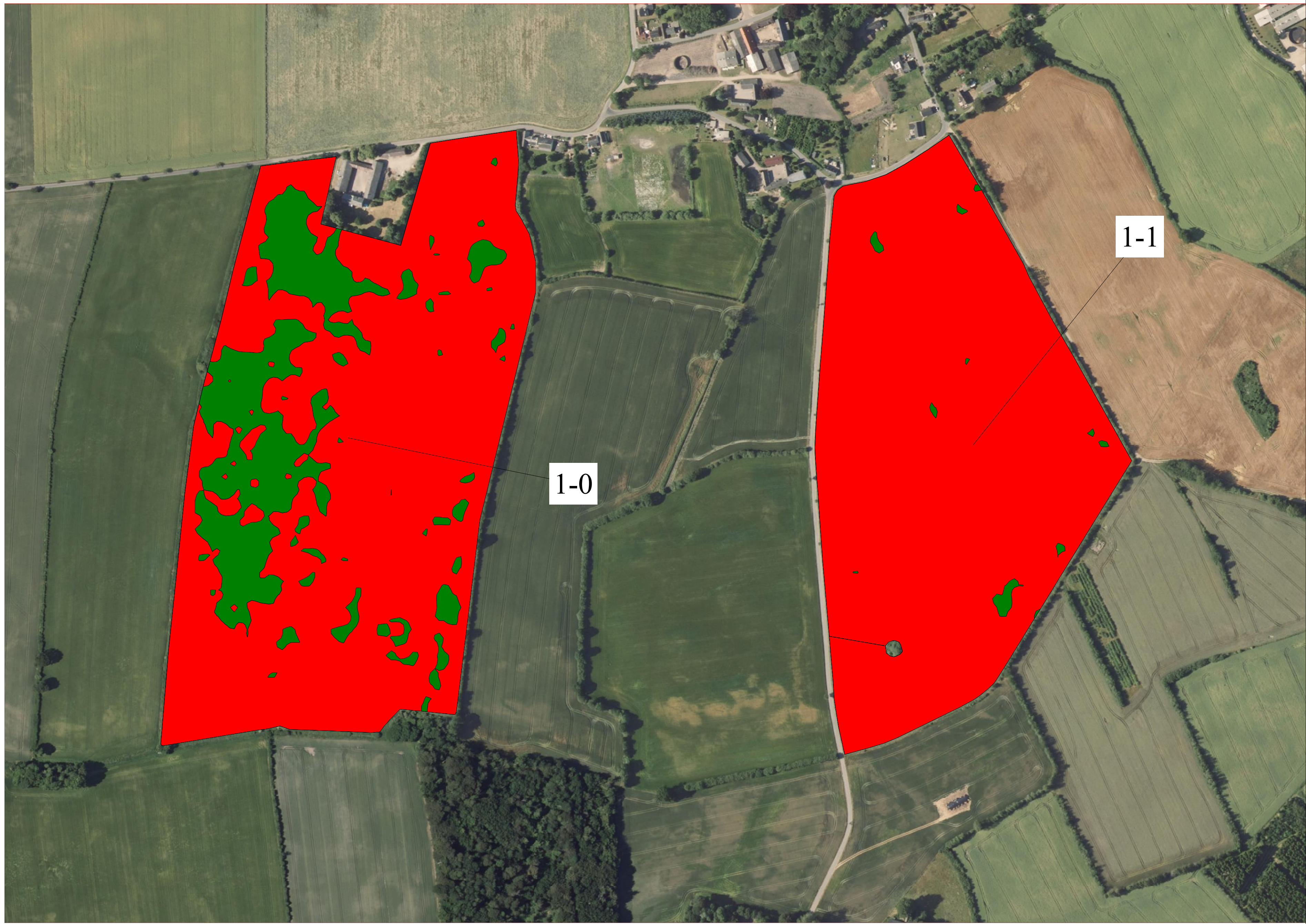
Monocot weeds

Dato: 21-12-20
Tid: 21-21-38

Prossed in Næsgaard Markkort ADVICER

2 stk. pr m2

(green)	0,0-2,0	18,9%
(red)	2,0->>>	81,1%



Kærsgårdvej 21	2020
Monocot weeds	Dato: 21-12-20 Tid: 21-18-53
Prossed in Næsgaard Markkort ADVICER	

1 stk. pr m2

(green)	0,0-1,0	11,4%
(red)	1,0->>>	88,6%

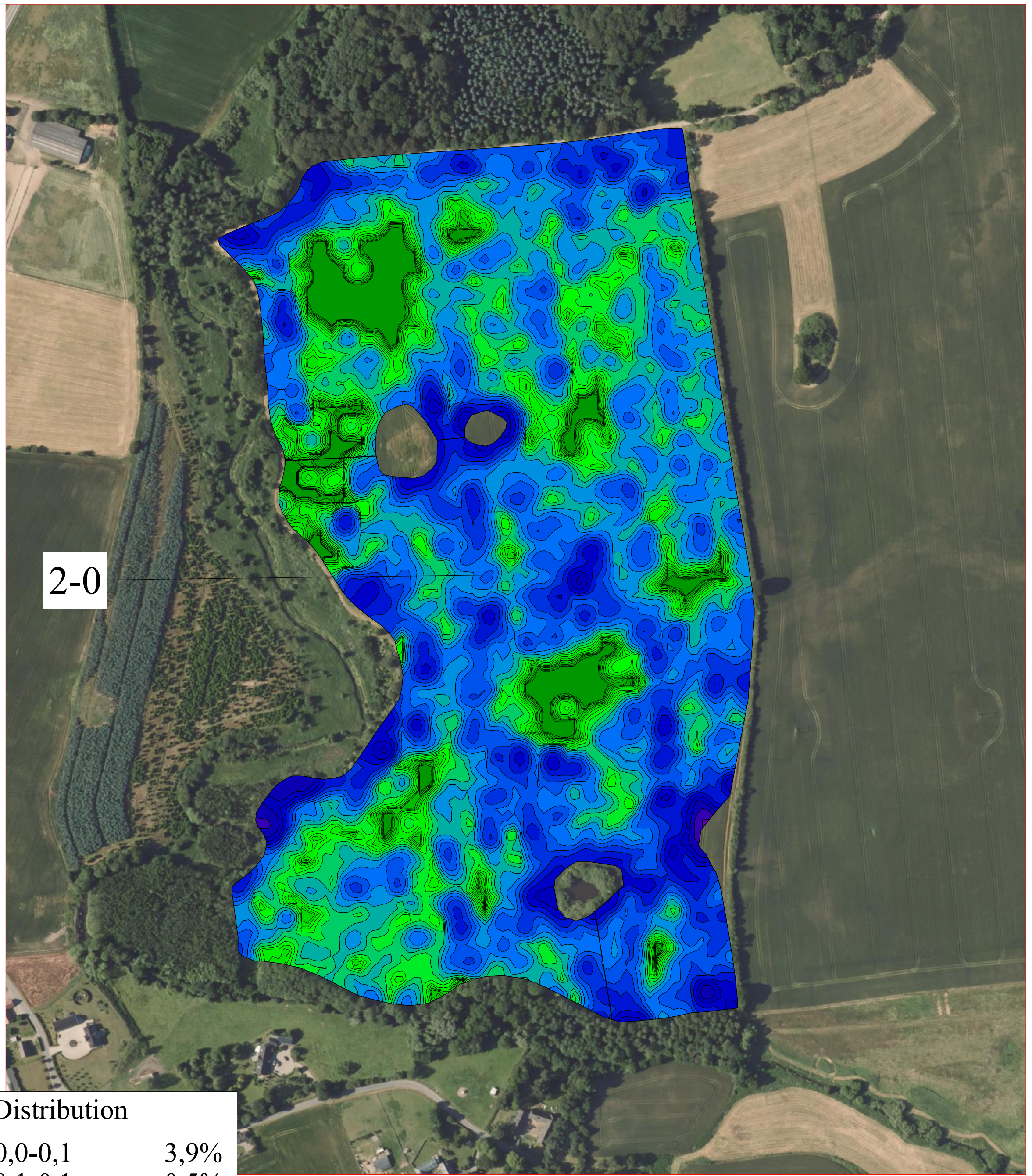
Kærsgårdvej 21	**2020**
Monocot weeds	Dato: 21-12-20 Tid: 21-25-19
Prossed in Næsgaard Markkort ADVICER	

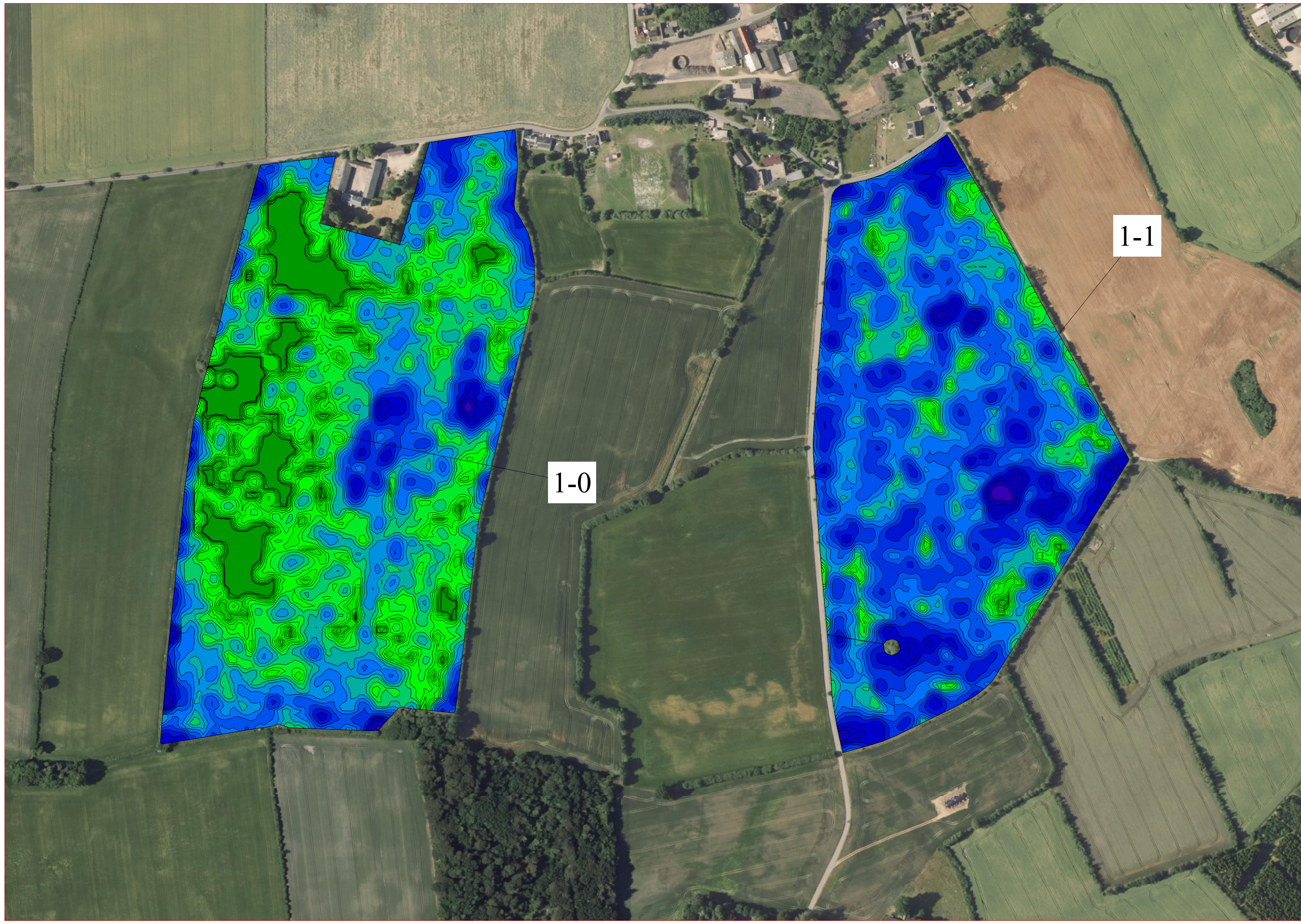
5 stk. pr m2	
0,0-5,0	37,9%
5,0->>>	62,1%

Kærsgårdvej 21	2020
Monocot weeds	Dato: 21-12-20 Tid: 21-27-23
Prossed in Næsgaard Markkort ADVICER	

10 stk. pr m2

(green)	0,0-10,0	58,1%
(red)	10,0->>>	41,9%





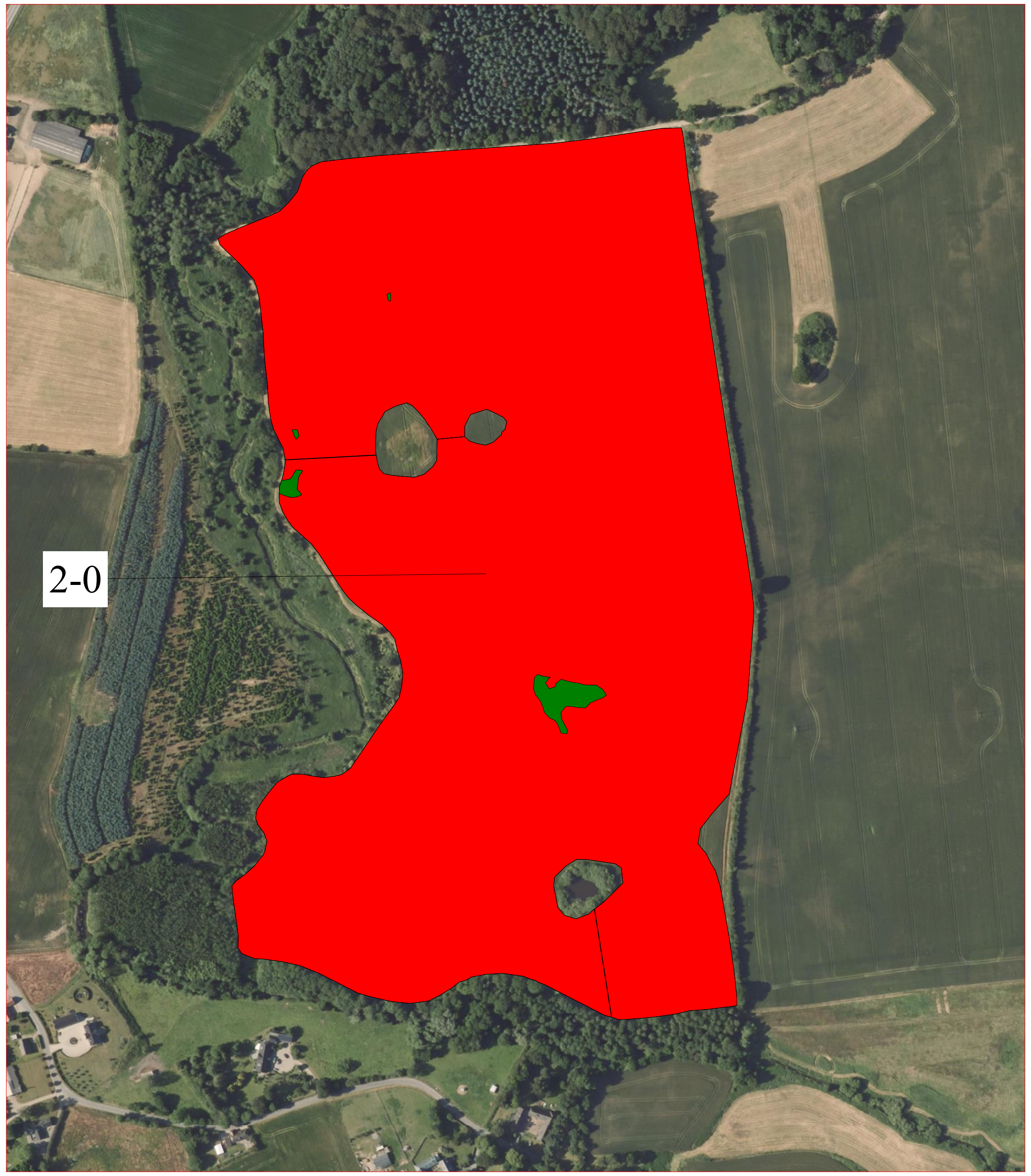
Distribution	
0,0-0,1	3,9%
0,1-0,1	0,5%
0,1-0,2	0,5%
0,2-0,2	0,7%
0,2-0,4	1,0%
0,4-0,5	1,3%
0,5-0,8	2,0%
0,8-1,2	3,2%
1,2-1,9	4,8%
1,9-2,8	7,1%
2,8-4,3	9,2%
4,3-6,6	11,3%
6,6-10,0	12,6%
10,0-15,2	12,2%
15,2-23,1	11,5%
23,1-35,1	8,8%
35,1-53,4	5,3%
53,4-81,1	2,6%
81,1-123,3	1,0%
123,3-187,4	0,4%
187,4-284,8	0,1%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

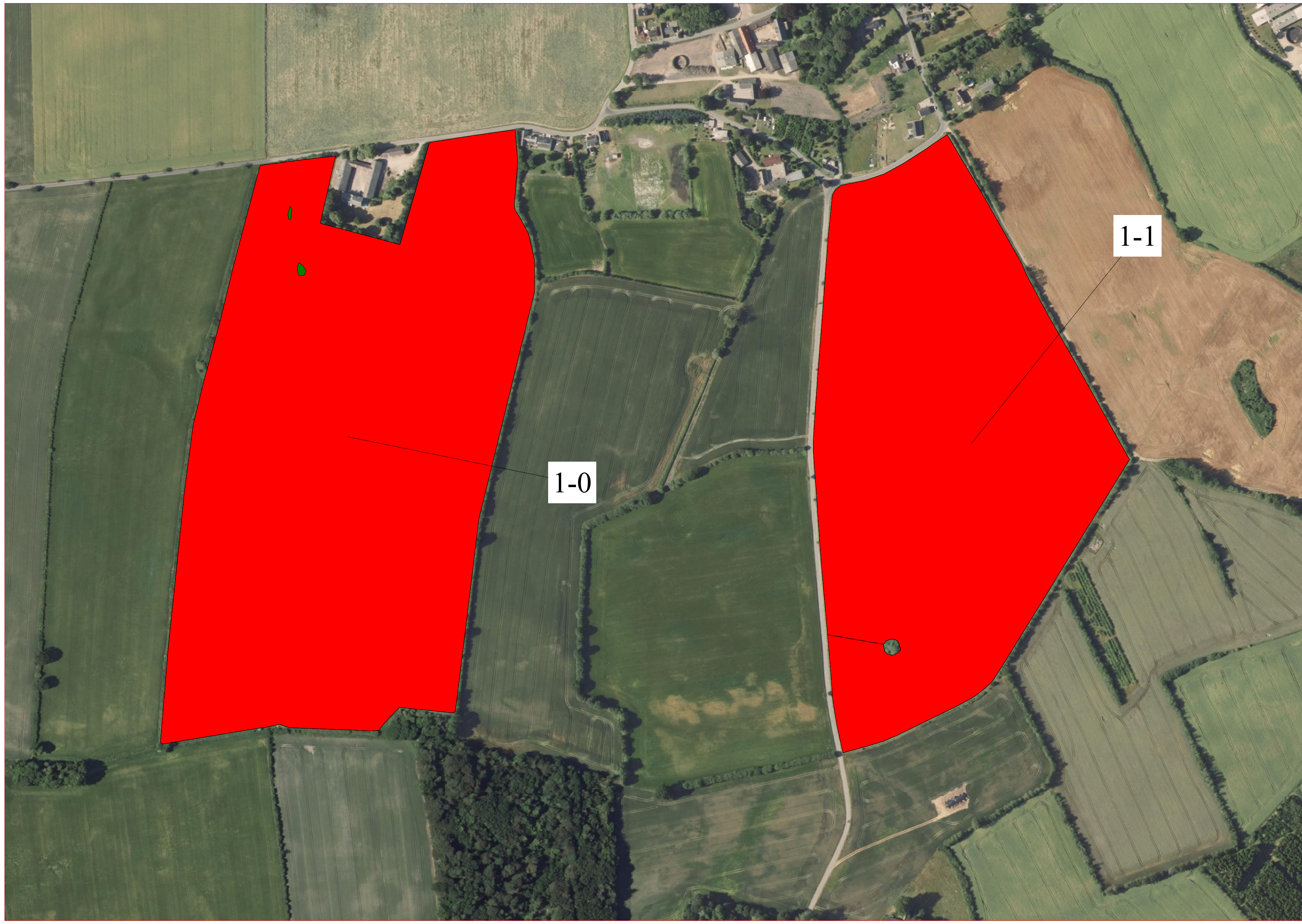
Kærsgårdvej 21 **2020**

Monocot weeds

Dato: 21-12-20
Tid: 21-16-20

Prossed in Næsgaard Markkort ADVICER

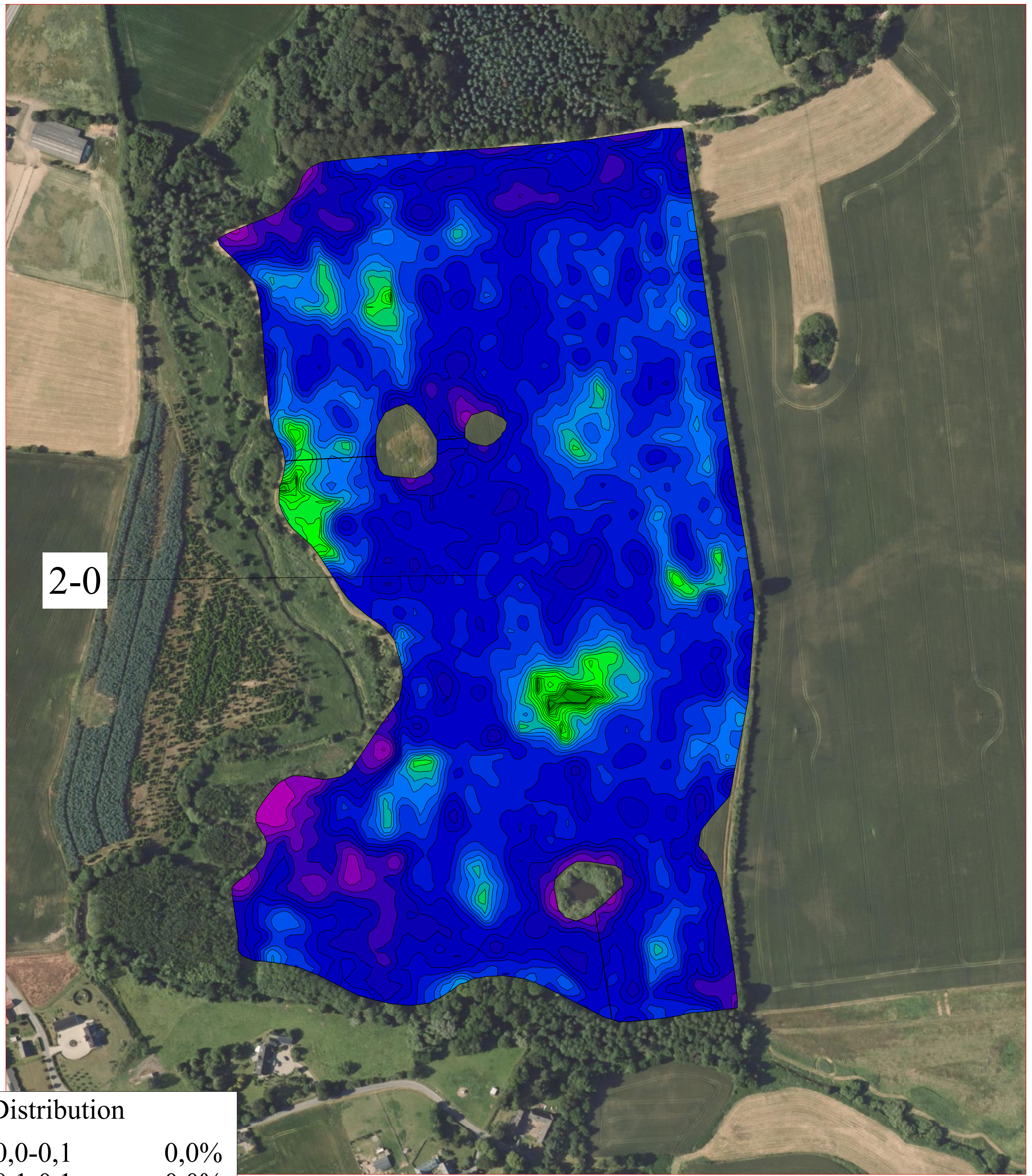


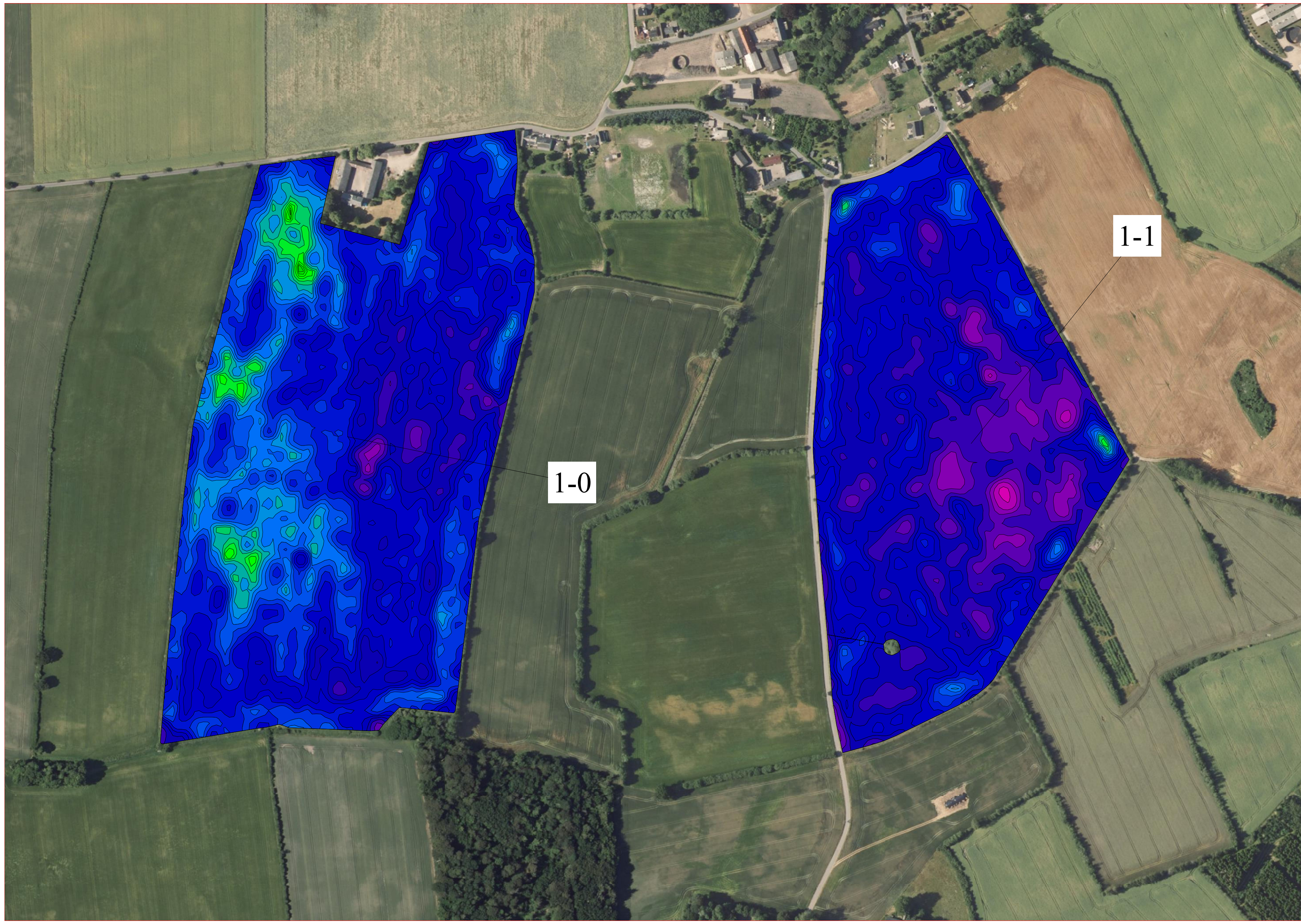


Kærsgårdvej 21	2020
Dicot weeds	Dato: 21-12-20 Tid: 21-32-28
Prossed in Næsgaard Markkort ADVICER	

1 stk. pr m2

(green)	0,0-1,0	0,3%
(red)	1,0->>>	99,7%





Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,1%
0,8-1,2	0,1%
1,2-1,9	0,3%
1,9-2,8	0,6%
2,8-4,3	0,9%
4,3-6,6	1,5%
6,6-10,0	2,6%
10,0-15,2	4,0%
15,2-23,1	5,9%
23,1-35,1	10,1%
35,1-53,4	15,4%
53,4-81,1	18,3%
81,1-123,3	17,3%
123,3-187,4	11,9%
187,4-284,8	6,6%
284,8-432,9	3,0%
432,9-657,9	1,0%
657,9-1000,0	0,2%
1000,0->>>	0,0%

Kærsgårdvej 21 **2020**

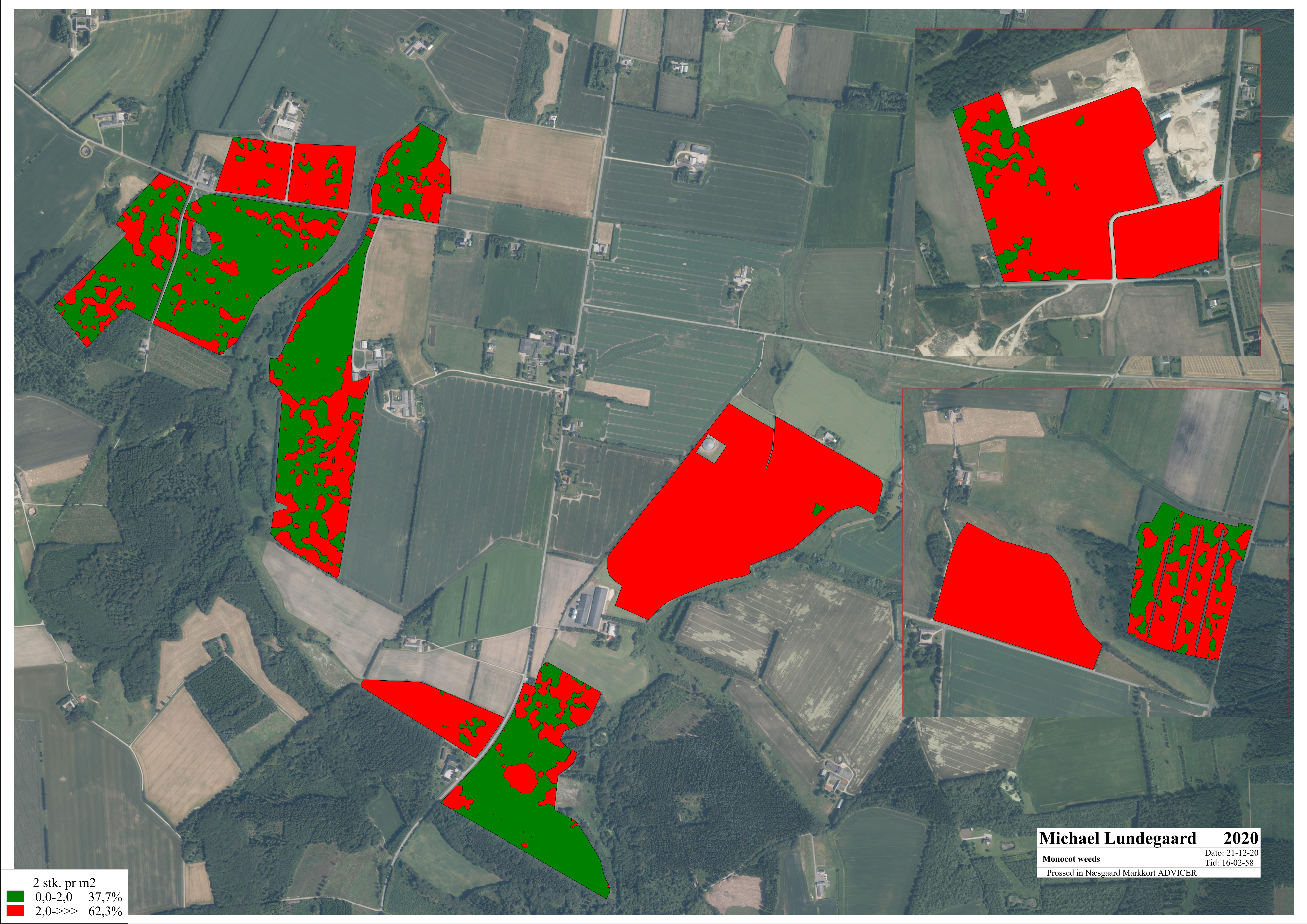
Dicot weeds

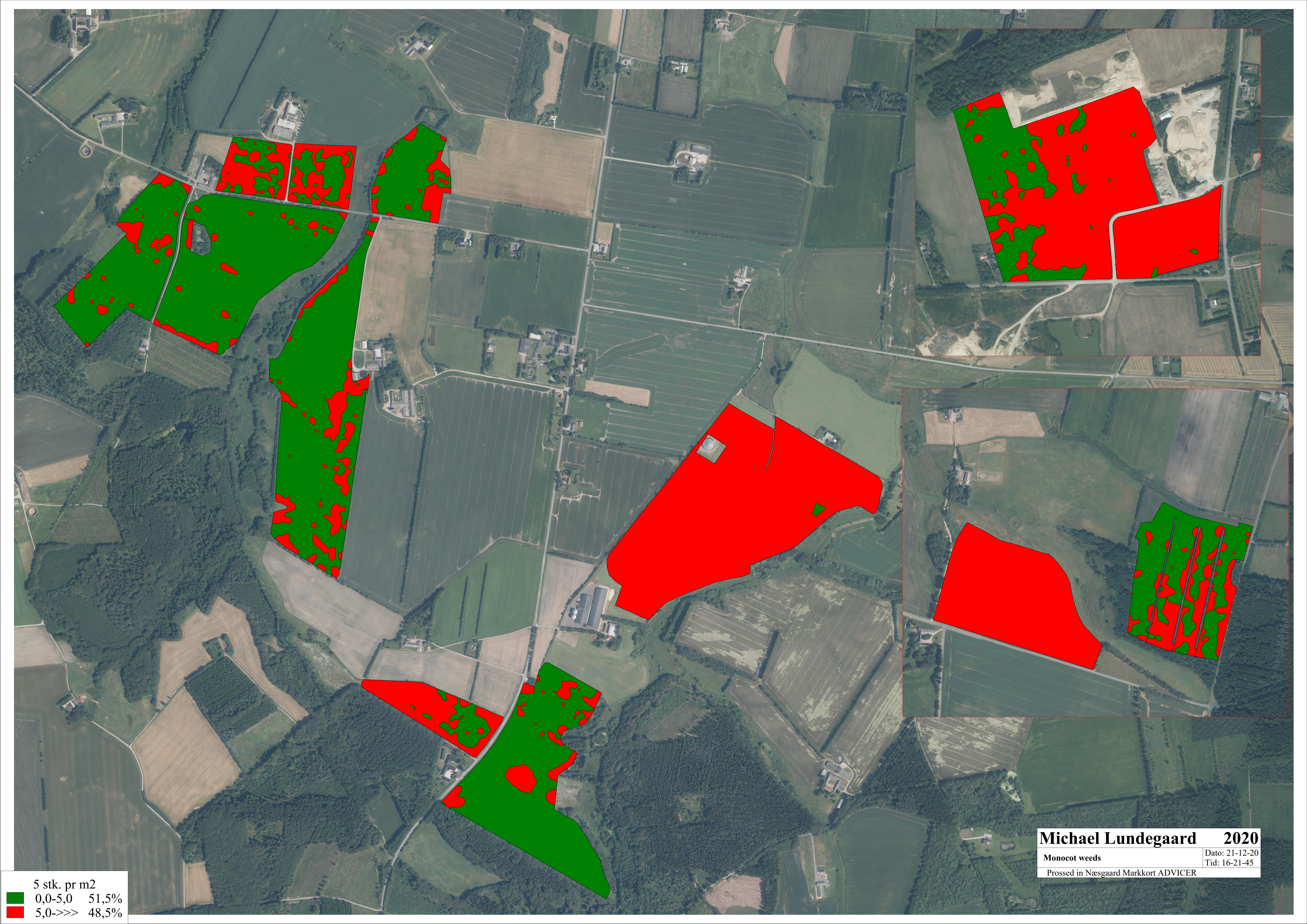
Dato: 21-12-20
Tid: 21-29-22

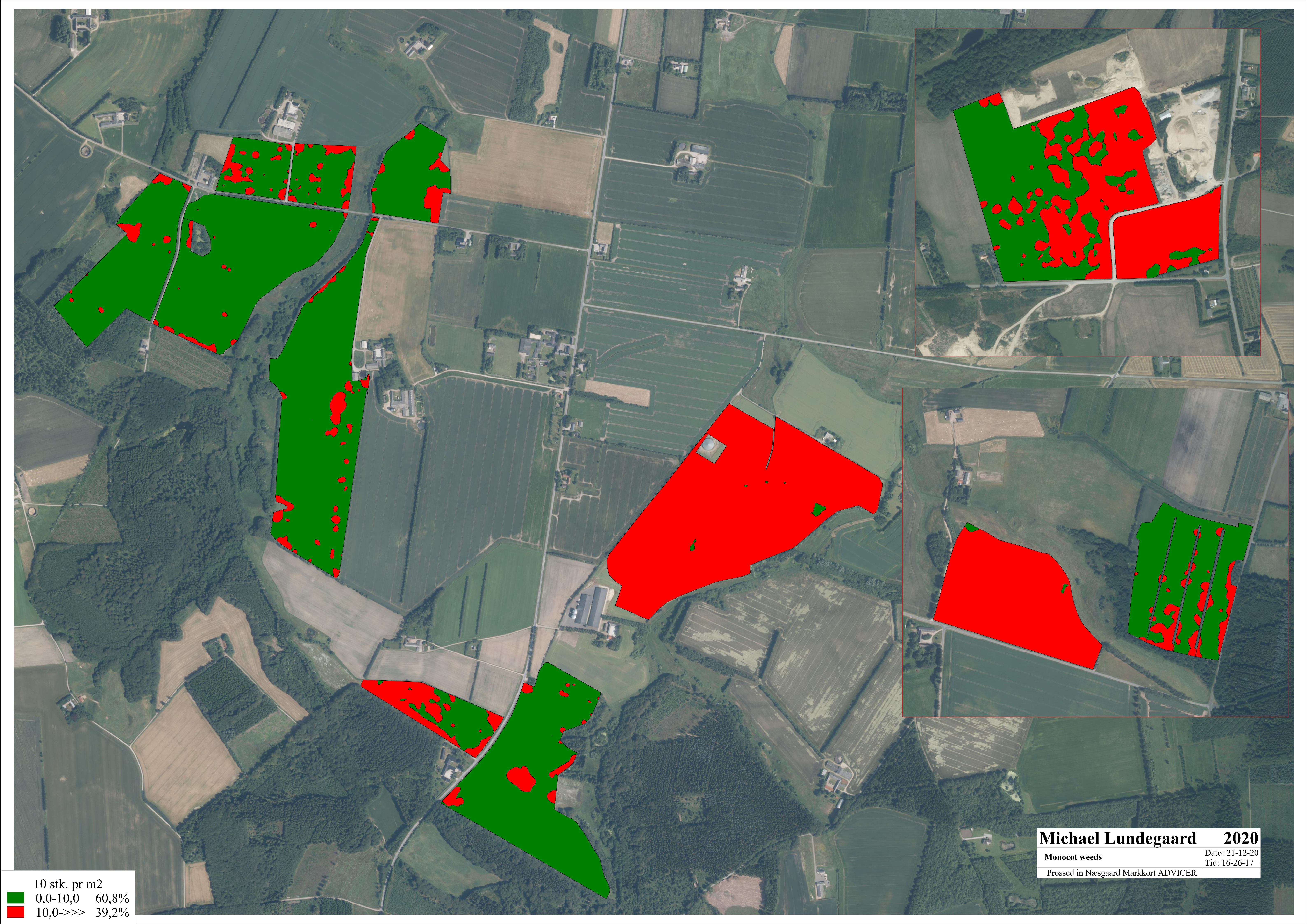
Prossed in Næsgaard Markkort ADVICER

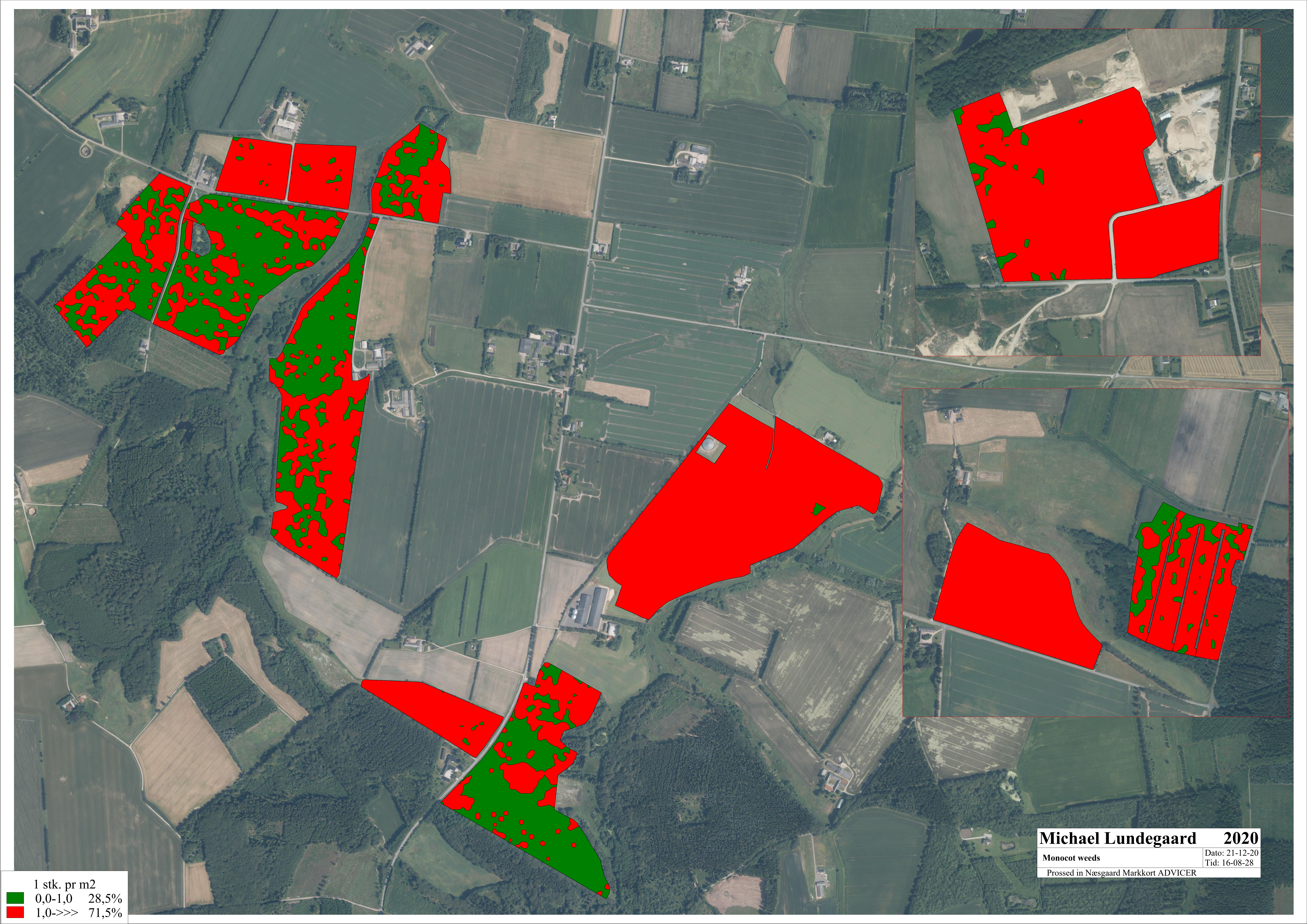
Kærsgårdvej 21	**2020**
Thistles	Dato: 01-01-21 Tid: 21-47-47
Prossed in Næsgaard Markkort ADVICER	

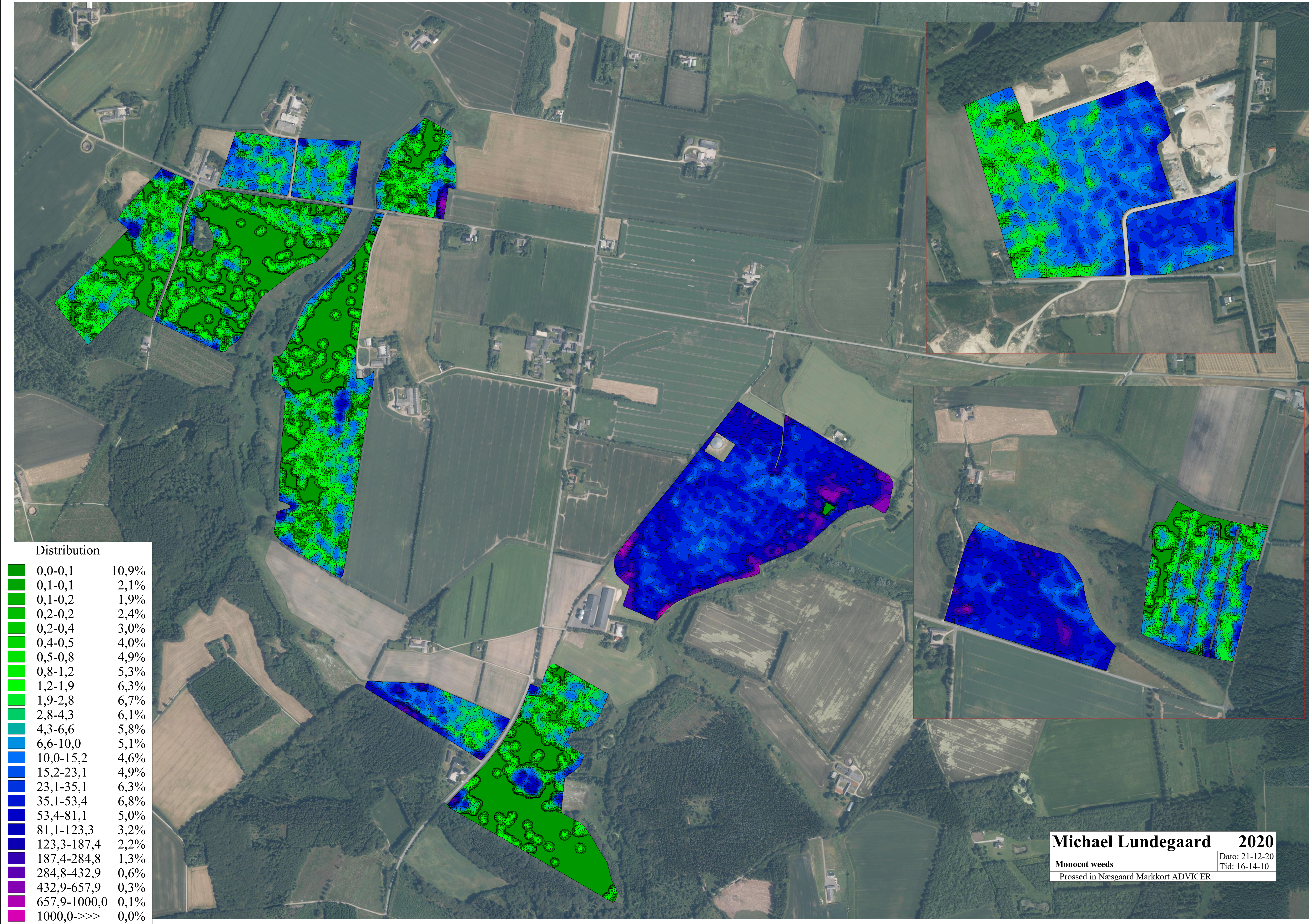
1 stk. pr m2
- 0,0-1,0 97,4%
- 1,0->>> 2,6%

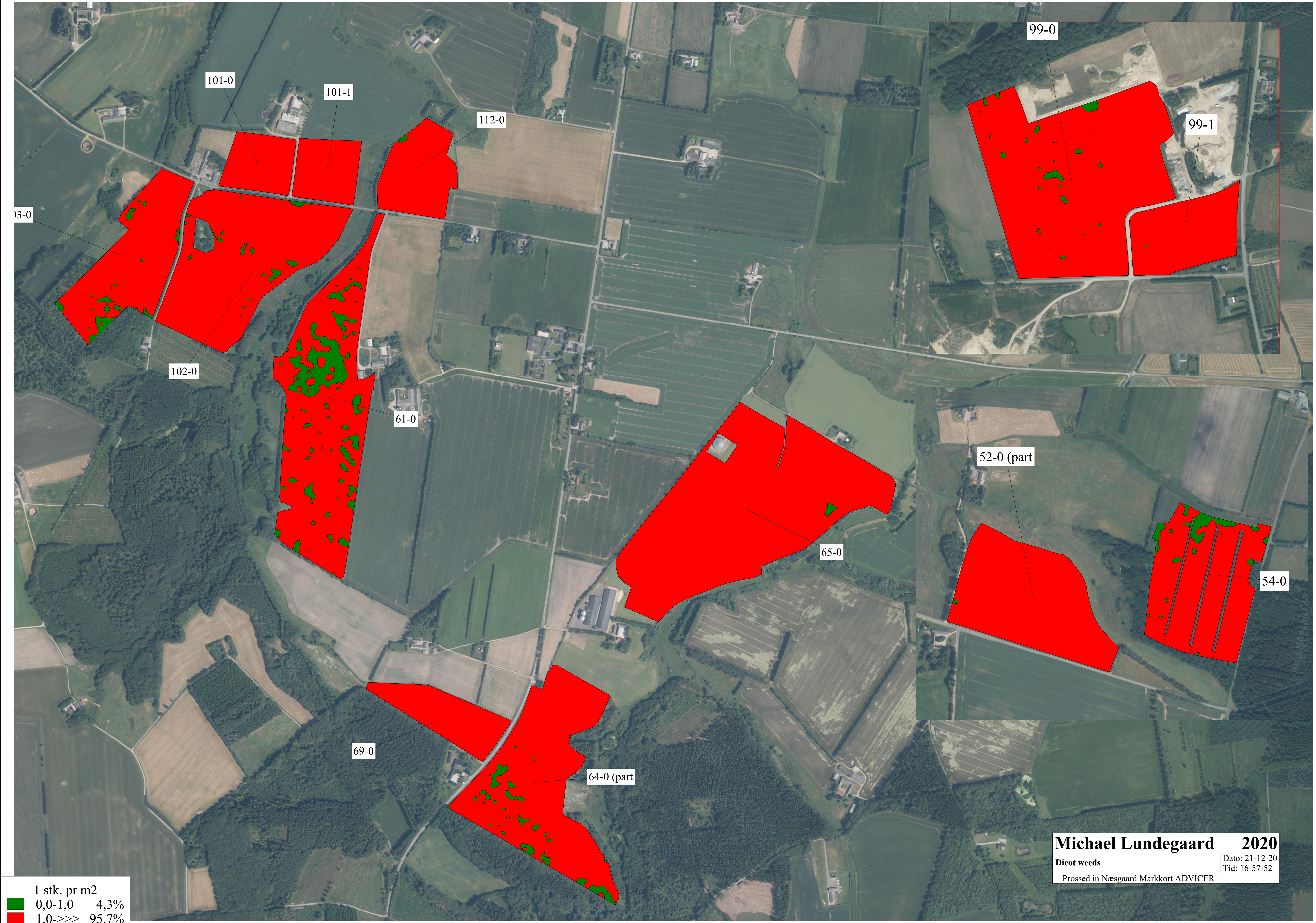

Michael Lundegaard 2020
Monocot weeds
Dato: 21-12-20
Tid: 16-02-58
Prossed in Næsgaard Markkort ADVICER
2 stk. pr m2
0,0-2,0 37,7%
2,0->>> 62,3%


5 stk. pr m2
0,0-5,0 51,5%
5,0->>> 48,5%
Michael Lundegaard 2020
Monocot weeds
Dato: 21-12-20
Tid: 16-21-45
Prossed in Næsgaard Markkort ADVICER


Michael Lundegaard 2020
Monocot weeds
Dato: 21-12-20
Tid: 16-26-17
Prossed in Næsgaard Markkort ADVICER
10 stk. pr m2
0,0-10,0 60,8%
10,0->>> 39,2%


Michael Lundegaard 2020
Monocot weeds
Dato: 21-12-20
Tid: 16-08-28
Prossed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 28,5%
1,0->>> 71,5%


Distribution
0,0-0,1 10,9%
0,1-0,1 2,1%
0,1-0,2 1,9%
0,2-0,2 2,4%
0,2-0,4 3,0%
0,4-0,5 4,0%
0,5-0,8 4,9%
0,8-1,2 5,3%
1,2-1,9 6,3%
1,9-2,8 6,7%
2,8-4,3 6,1%
4,3-6,6 5,8%
6,6-10,0 5,1%
10,0-15,2 4,6%
15,2-23,1 4,9%
23,1-35,1 6,3%
35,1-53,4 6,8%
53,4-81,1 5,0%
81,1-123,3 3,2%
123,3-187,4 2,2%
187,4-284,8 1,3%
284,8-432,9 0,6%
432,9-657,9 0,3%
657,9-1000,0 0,1%
1000,0->>> 0,0%
Michael Lundegaard 2020
Monocot weeds
Dato: 21-12-20
Tid: 16-14-10
Prossed in Næsgaard Markkort ADVICER

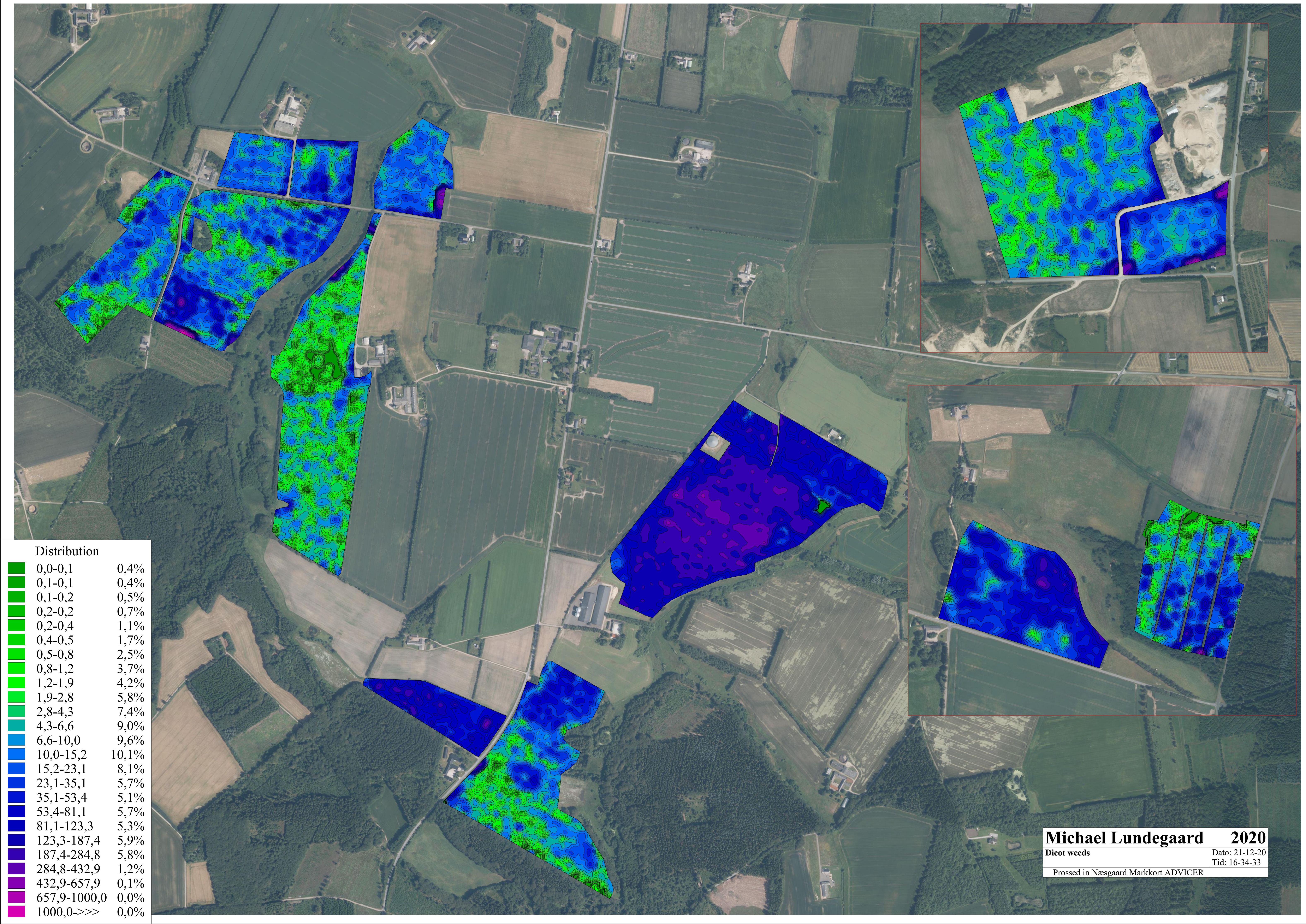


Michael Lundegaard 2020

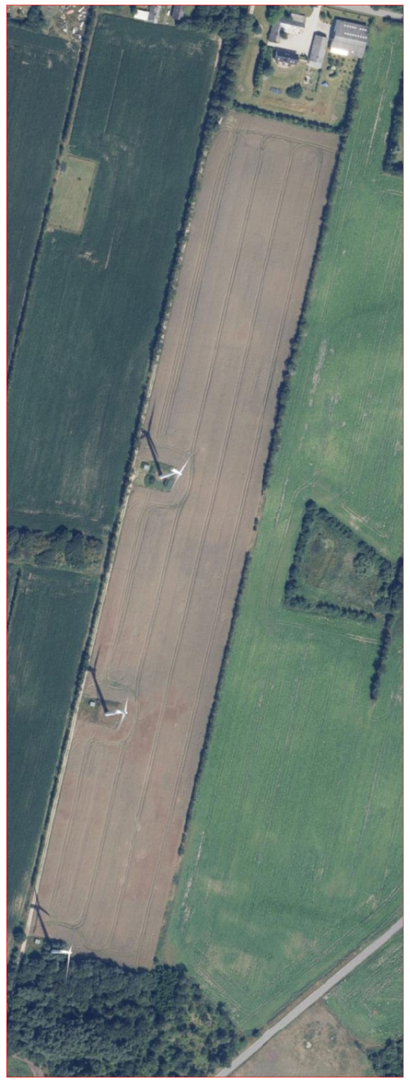
Dicot weeds

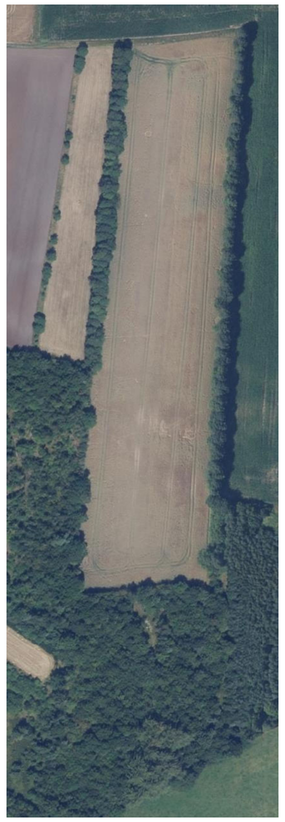
Dato: 21-12-20
Tid: 16-57-52

Prossed in Næsgaard Markkort ADVICER


Distribution
0,0-0,1 0,4%
0,1-0,1 0,4%
0,1-0,2 0,5%
0,2-0,2 0,7%
0,2-0,4 1,1%
0,4-0,5 1,7%
0,5-0,8 2,5%
0,8-1,2 3,7%
1,2-1,9 4,2%
1,9-2,8 5,8%
2,8-4,3 7,4%
4,3-6,6 9,0%
6,6-10,0 9,6%
10,0-15,2 10,1%
15,2-23,1 8,1%
23,1-35,1 5,7%
35,1-53,4 5,1%
53,4-81,1 5,7%
81,1-123,3 5,3%
123,3-187,4 5,9%
187,4-284,8 5,8%
284,8-432,9 1,2%
432,9-657,9 0,1%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Michael Lundegaard 2020
Dicot weeds
Dato: 21-12-20
Tid: 16-34-33
Prossed in Næsgaard Markkort ADVICER

101-0
1 stk. pr m2
0,0-1,0 90,2%
1,0->>> 9,8%
Michael Lundegaard 2020
Thistles
Dato: 01-01-21
Tid: 22-11-54
Prossed in Næsgaard Markkort ADVICER

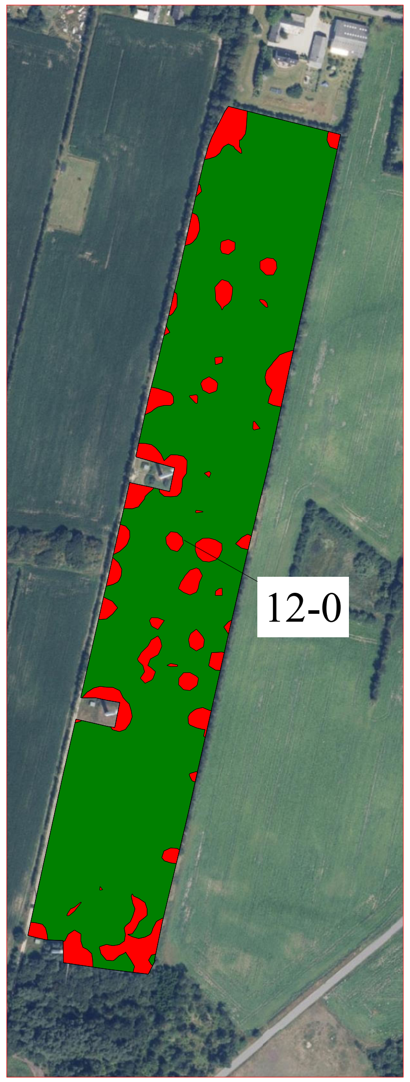




Niels Åge Fristrup	**2020**
Monocot weeds Spring barley 2019	Dato: 15-01-21 Tid: 15-49-57
Prossed in Næsgaard Markkort ADVICER	

1 stk/m2

(green)	0,0-1,0	0,0%
(red)	1,0->>>	100,0%



1 stk. pr m2

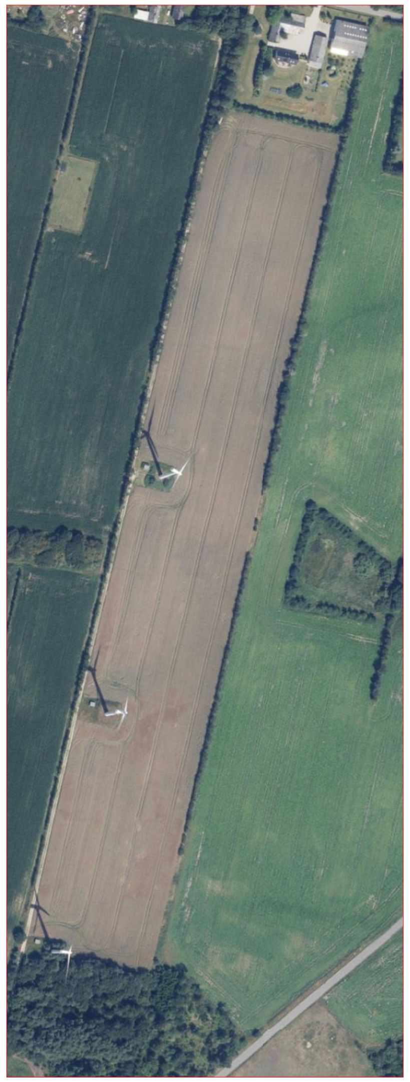
(green)	0,0-1,0	38,1%
(red)	1,0->>>	61,9%

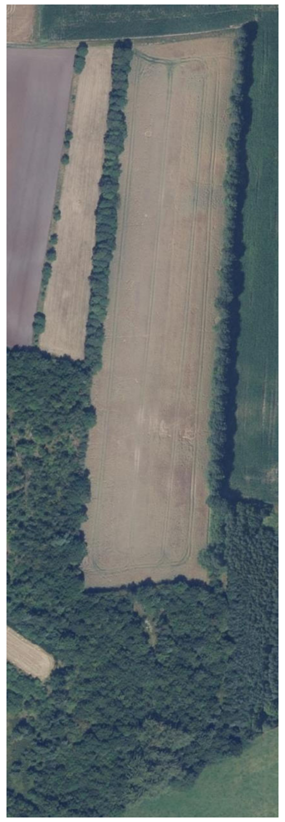
Niels Åge Fristrup **2020**

Monocot weeds
Spring barley 2019

Dato: 23-12-20
Tid: 10-58-56

Prossed in Næsgaard Markkort ADVICER





Niels Åge Fristrup	2020
Monocot weeds Spring barley 2019	Dato: 15-01-21 Tid: 15-51-09
Prossed in Næsgaard Markkort ADVICER	

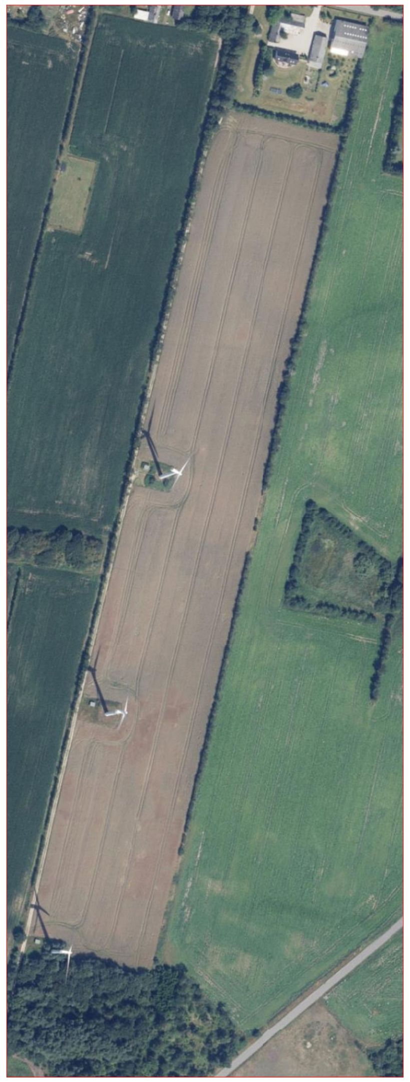
2 stk/m2

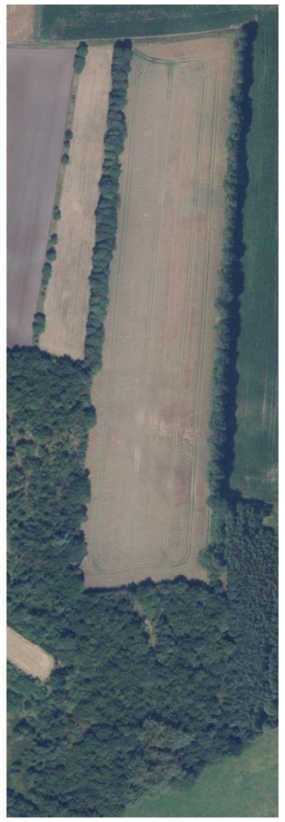
(green)	0,0-2,0	0,0%
(red)	2,0->>>	100,0%

Niels Åge Fristrup	**2020**
Monocot weeds	Dato: 23-12-20 Tid: 11-01-23
Prossed in Næsgaard Markkort ADVICER	

2 stk. pr m2

green	0,0-2,0	57,4%
red	2,0->>>	42,6%





Niels Åge Fristrup	**2020**
Monocot weeds Spring barley 2019	Dato: 15-01-21 Tid: 15-52-32
Prossed in Næsgaard Markkort ADVICER	

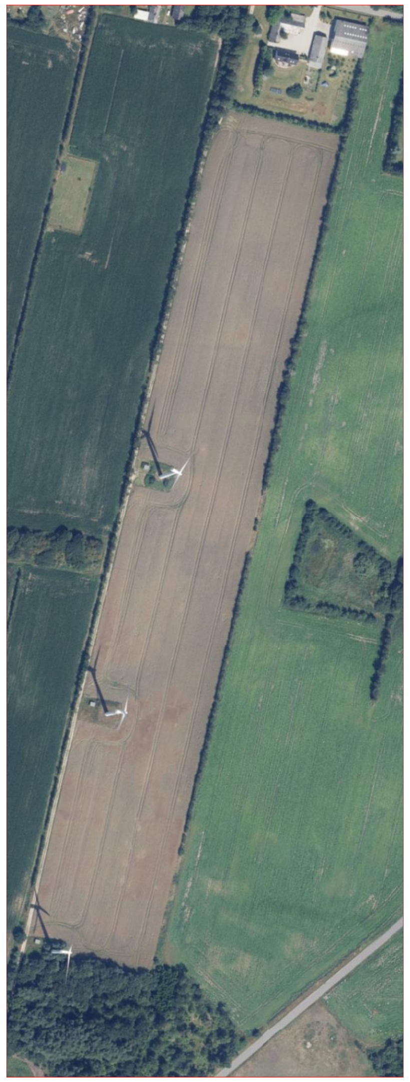
5 stk/m2

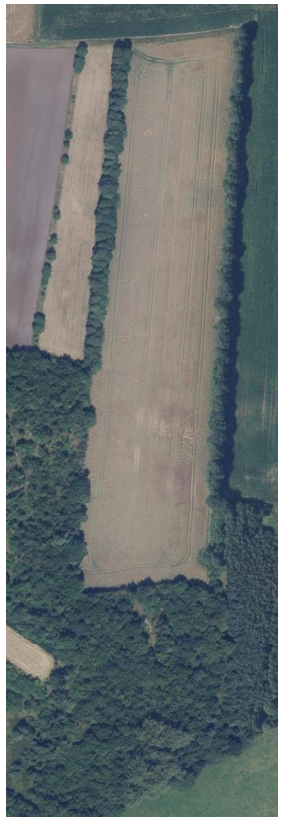
(green)	0,0-5,0	0,2%
(red)	5,0->>>	99,8%

Niels Åge Fristrup	**2020**
Monocot Weeds	Dato: 23-12-20 Tid: 11-05-29
Prossed in Næsgaard Markkort ADVICER	

5 stk. pr m2

(green)	0,0-5,0	83,4%
(red)	5,0->>>	16,6%





Niels Åge Fristrup		**2020**
Monocot weeds Spring barley 2019		Dato: 15-01-21 Tid: 15-53-50
Prossed in Næsgaard Markkort ADVICER		

10 stk/m2

green	0,0-10,0	4,8%
red	10,0->>>	95,2%

Niels Åge Fristrup **2020**

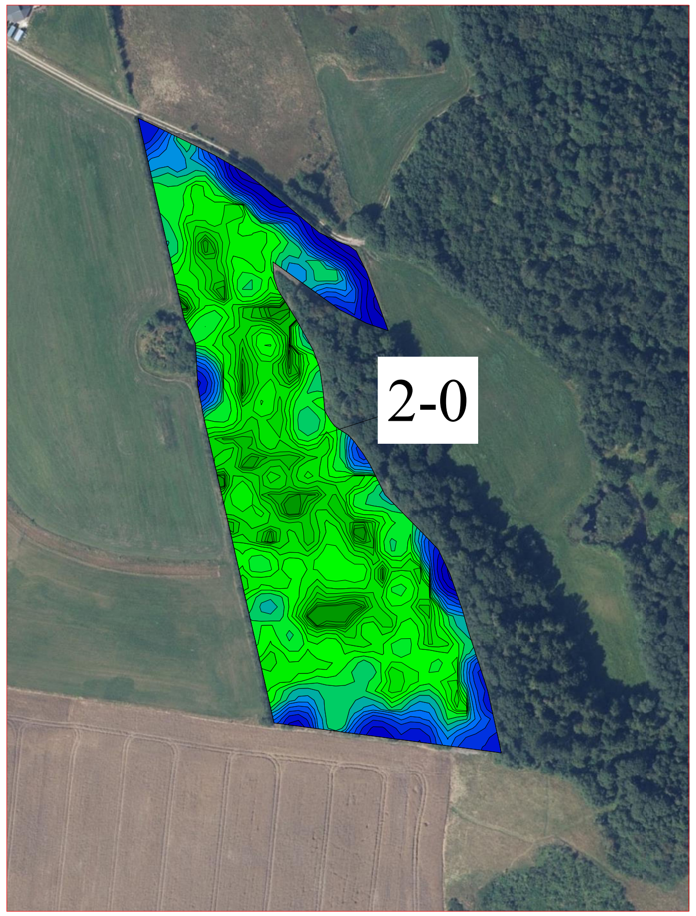
Monocot weeds

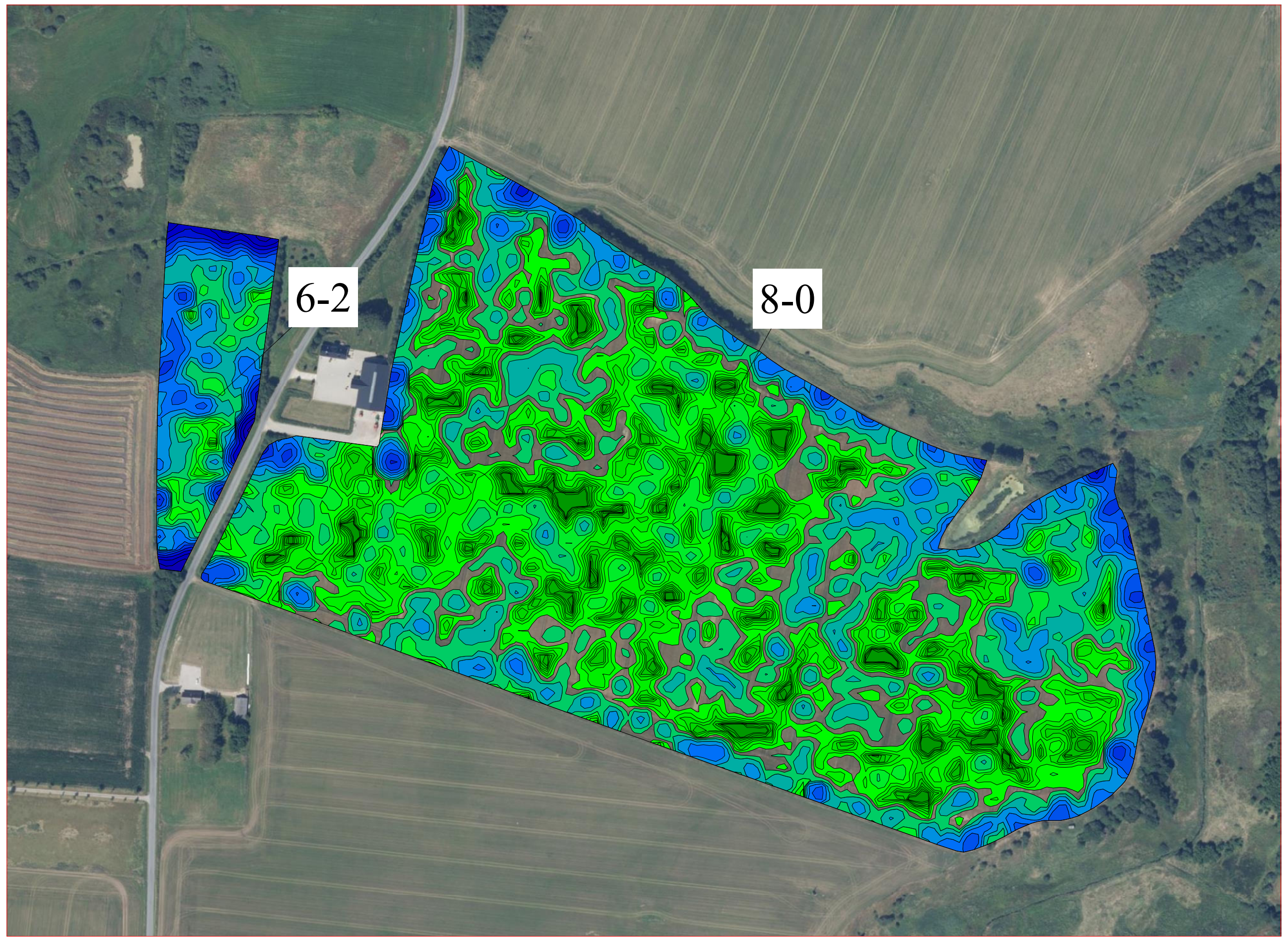
Dato: 23-12-20
Tid: 11-08-35

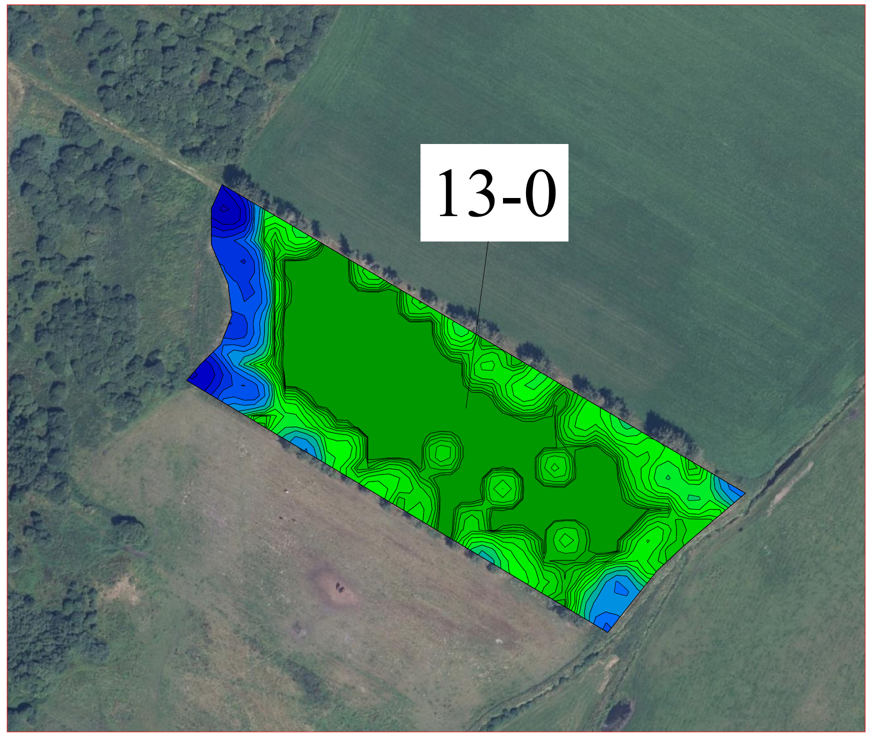
Prossed in Næsgaard Markkort ADVICER

10 stk. pr m2

0,0-10,0	93,1%
10,0->>>	6,9%







Distribution

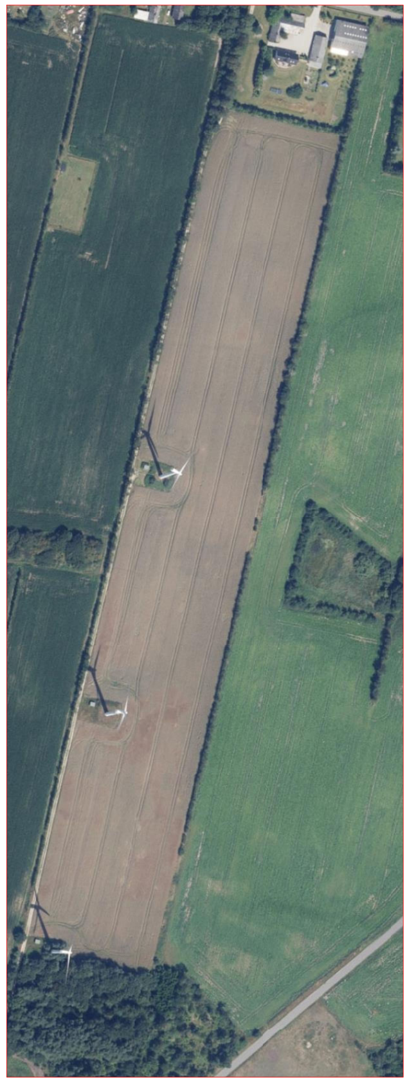
0,0-0,1	8,9%
0,1-0,1	1,6%
0,1-0,2	2,2%
0,2-0,2	2,9%
0,2-0,4	4,1%
0,4-0,5	6,0%
0,5-0,8	7,6%
0,8-1,2	10,2%
1,2-1,9	11,9%
1,9-2,8	13,1%
2,8-4,3	11,6%
4,3-6,6	8,1%
6,6-10,0	4,8%
10,0-15,2	2,9%
15,2-23,1	1,8%
23,1-35,1	1,0%
35,1-53,4	0,5%
53,4-81,1	0,3%
81,1-123,3	0,3%
123,3-187,4	0,1%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

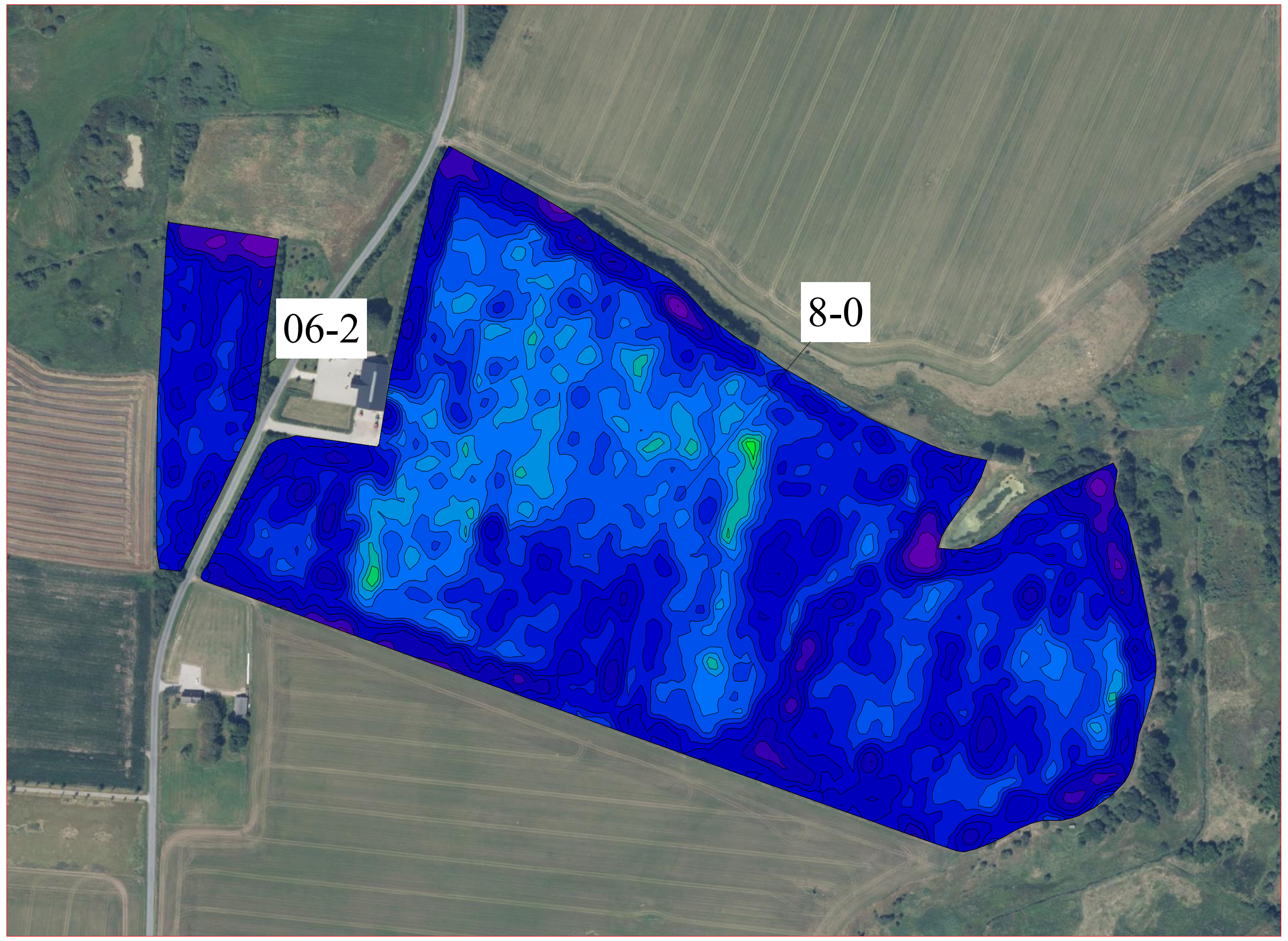
Niels Åge Fristrup **2020**

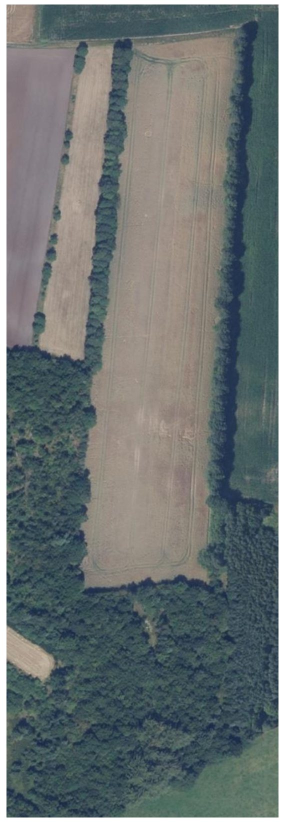
Monocot weeds

Dato: 23-12-20
Tid: 10-56-33

Prossed in Næsgaard Markkort ADVICER





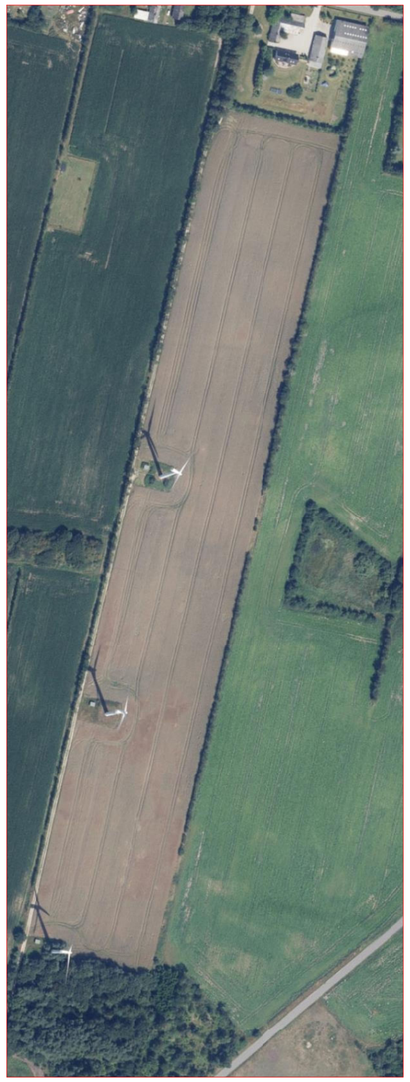


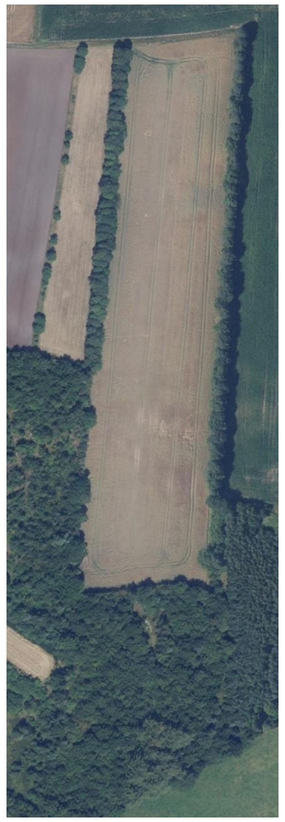
Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,0%
0,8-1,2	0,0%
1,2-1,9	0,0%
1,9-2,8	0,0%
2,8-4,3	0,1%
4,3-6,6	0,8%
6,6-10,0	4,4%
10,0-15,2	11,4%
15,2-23,1	13,2%
23,1-35,1	16,2%
35,1-53,4	17,5%
53,4-81,1	16,8%
81,1-123,3	11,7%
123,3-187,4	5,4%
187,4-284,8	2,0%
284,8-432,9	0,5%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Niels Åge Fristrup **2020**

Monocot weeds Date: 15-01-21
Spring barley 2019 Time: 15-47-18
Prossed in Næsgaard Markkort ADVICER

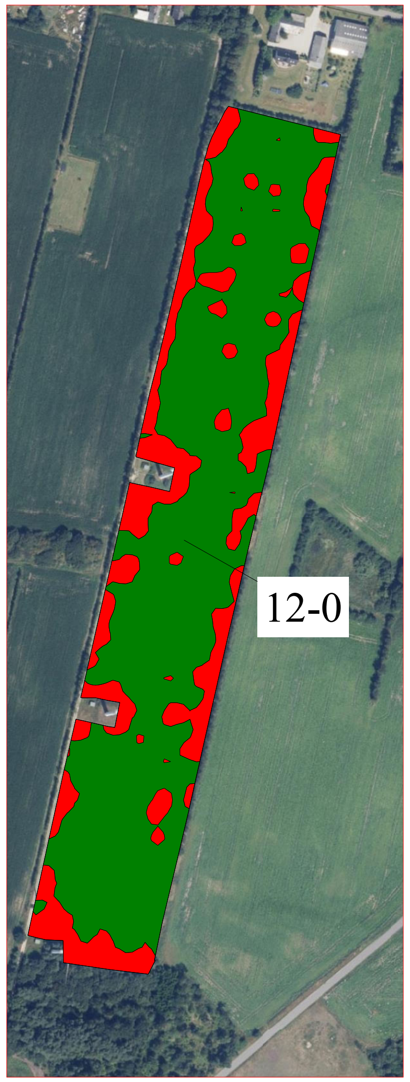




Niels Åge Fristrup	**2020**
Dicot weeds Spring barley 2019	Dato: 15-01-21 Tid: 15-57-51
Prossed in Næsgaard Markkort ADVICER	

1 stk/m2

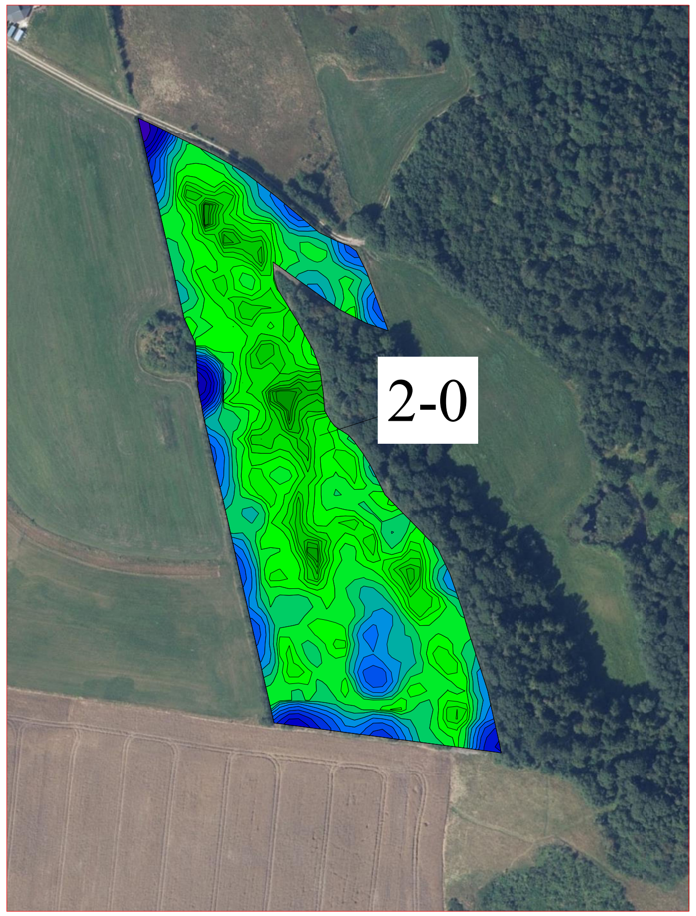
green	0,0-1,0	0,0%
red	1,0->>>	100,0%

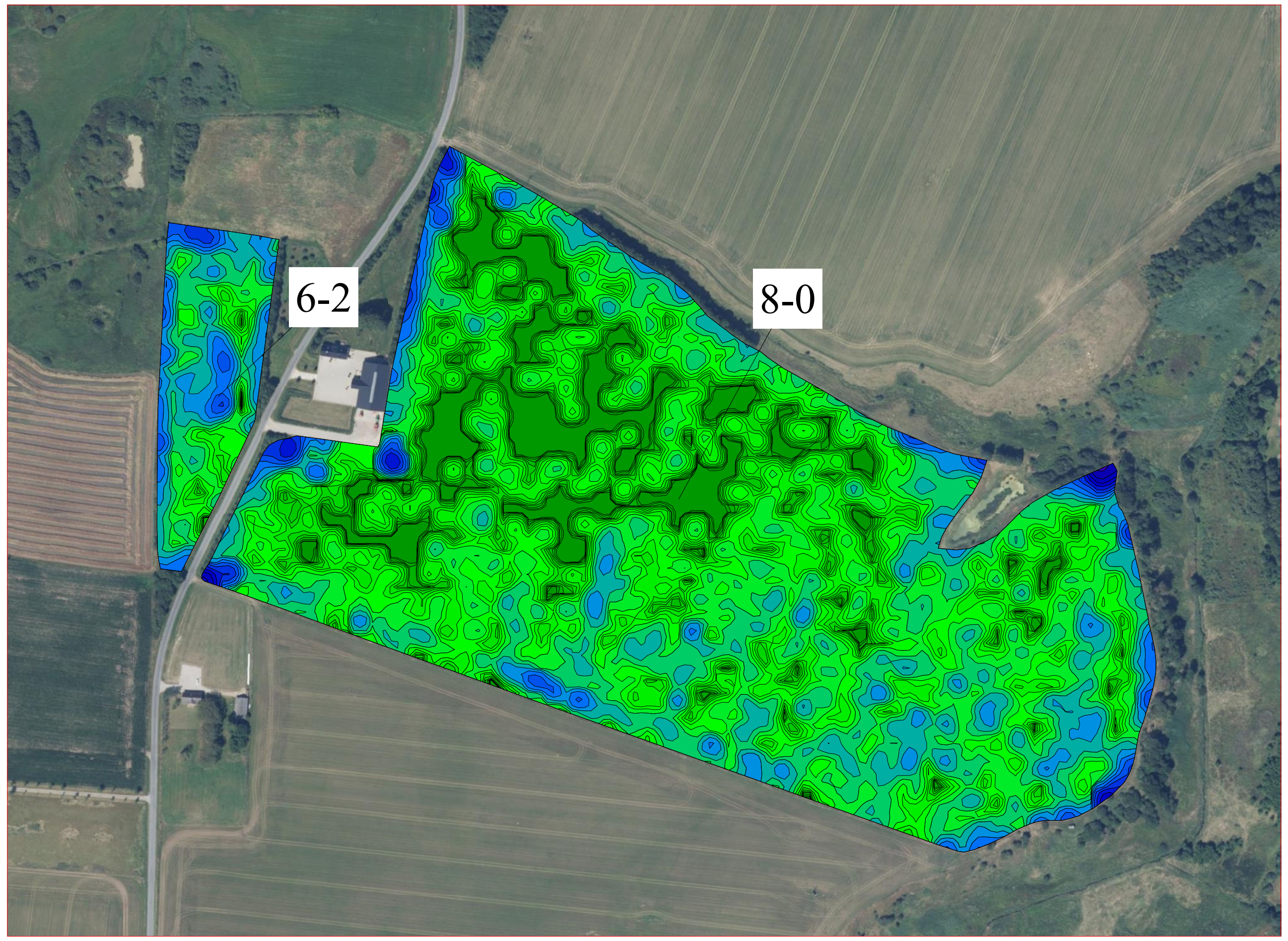


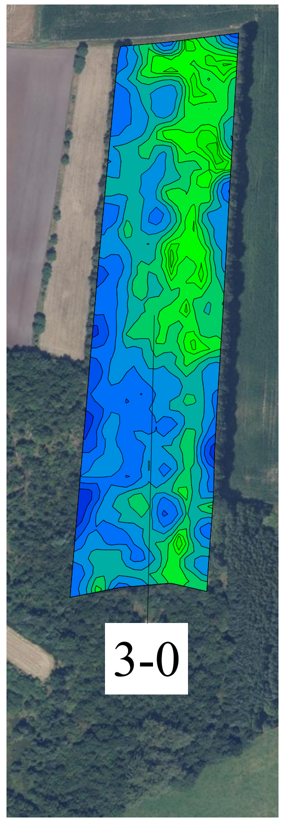
Niels Åge Fristrup	2020
Dicot weeds	Dato: 23-12-20 Tid: 11-17-39
Prossed in Næsgaard Markkort ADVICER	

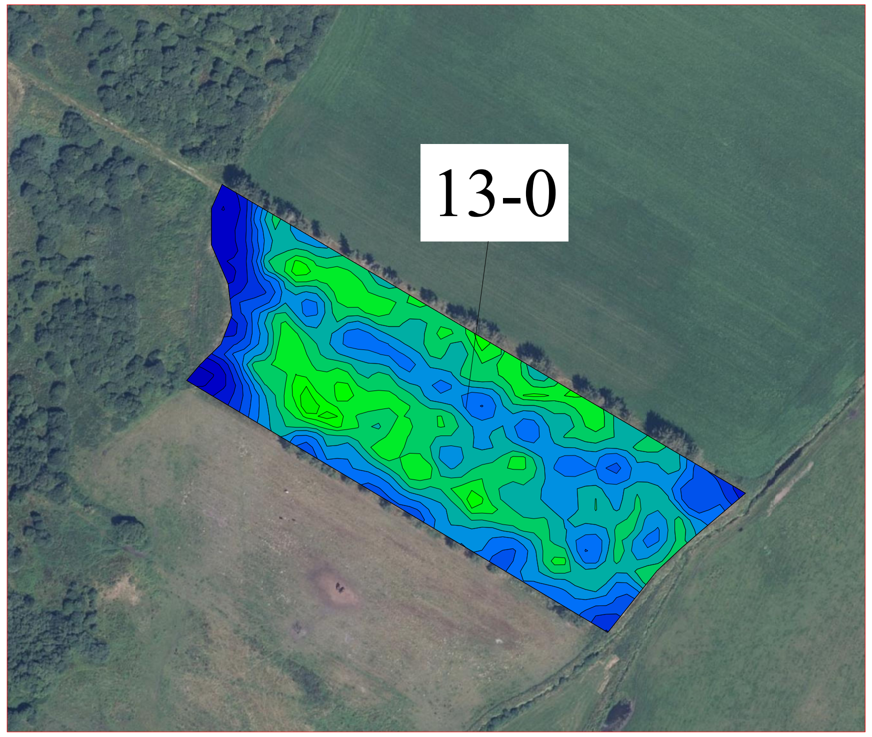
1 stk. pr m2

green	0,0-1,0	42,5%
red	1,0->>>	57,5%









Distribution

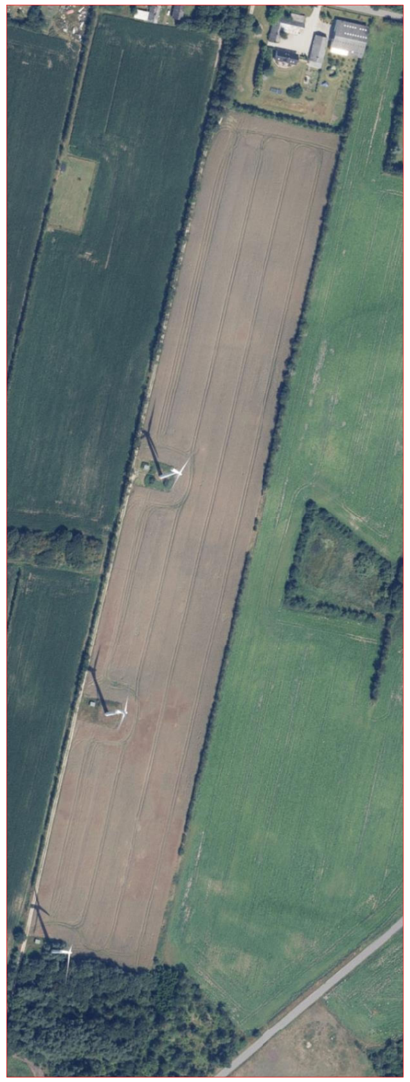
0,0-0,1	9,1%
0,1-0,1	1,4%
0,1-0,2	1,7%
0,2-0,2	2,3%
0,2-0,4	3,1%
0,4-0,5	5,0%
0,5-0,8	5,9%
0,8-1,2	7,0%
1,2-1,9	9,3%
1,9-2,8	15,6%
2,8-4,3	14,6%
4,3-6,6	10,7%
6,6-10,0	7,0%
10,0-15,2	4,0%
15,2-23,1	1,6%
23,1-35,1	0,8%
35,1-53,4	0,4%
53,4-81,1	0,3%
81,1-123,3	0,1%
123,3-187,4	0,1%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

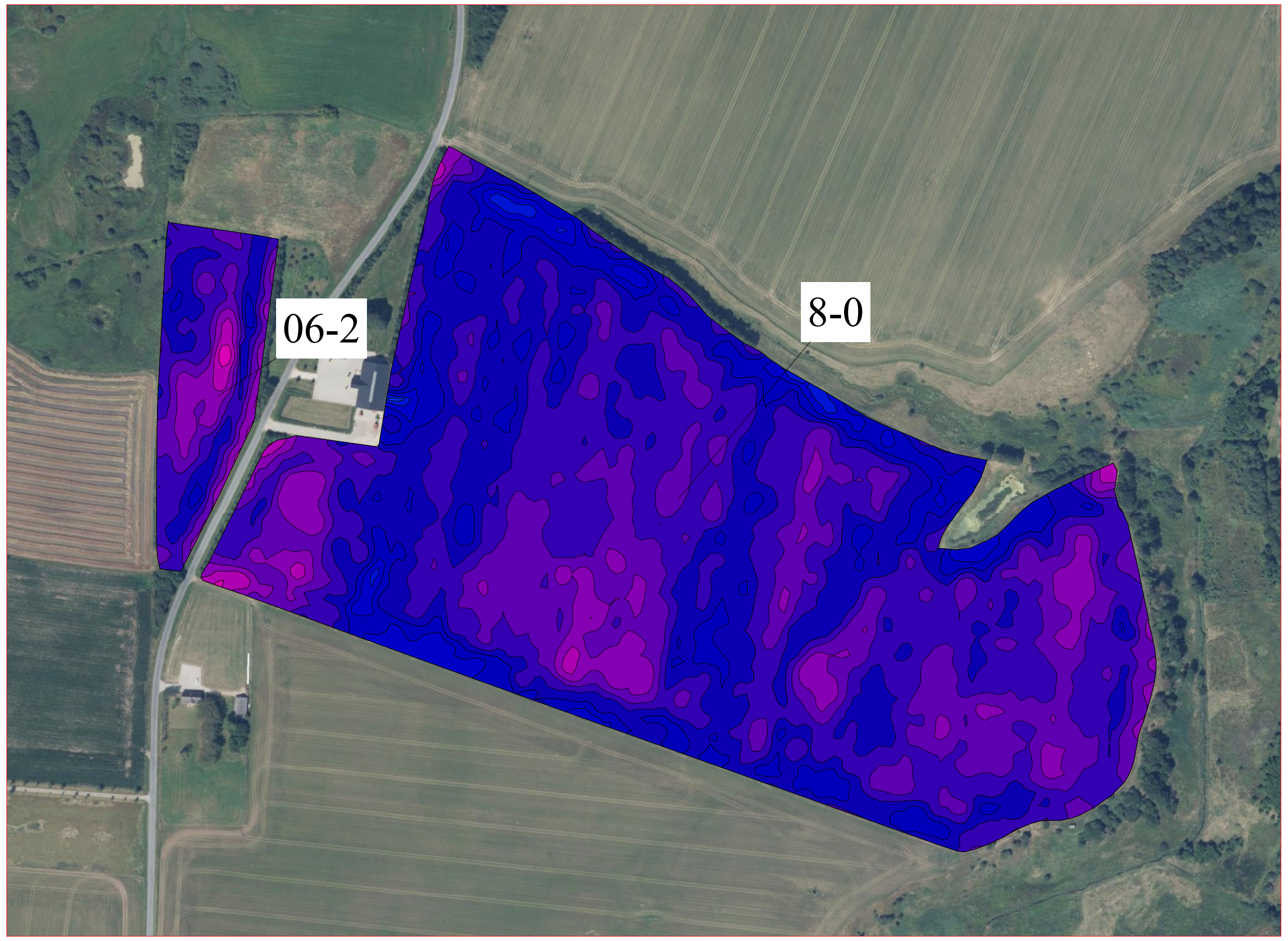
Niels Åge Fristrup **2020**

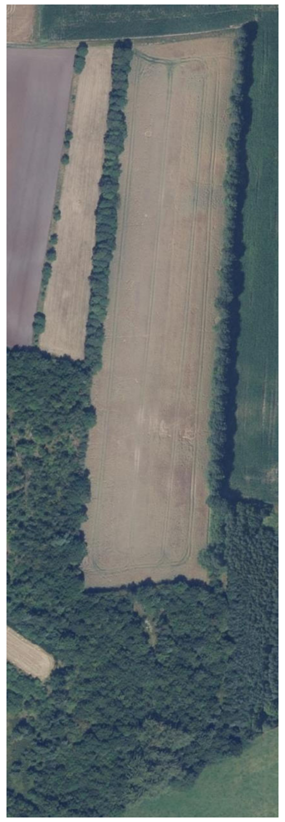
Dicot weeds

Dato: 23-12-20
Tid: 11-15-51

Prossed in Næsgaard Markkort ADVICER





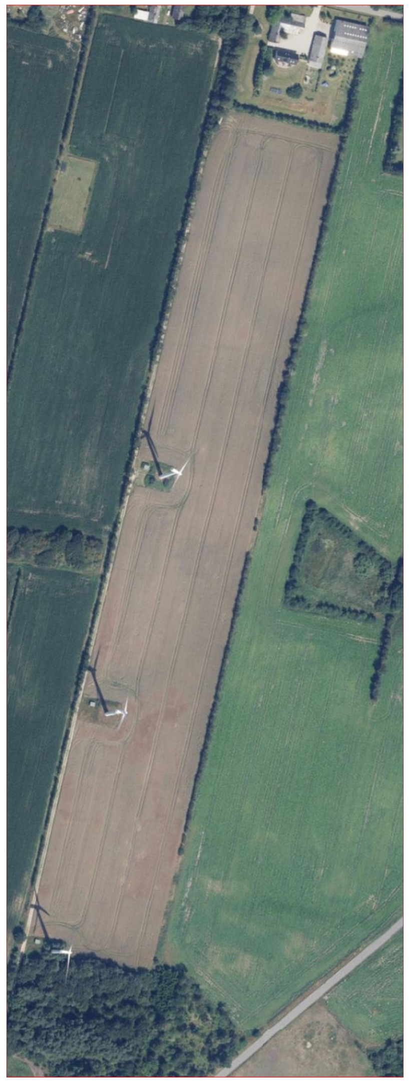


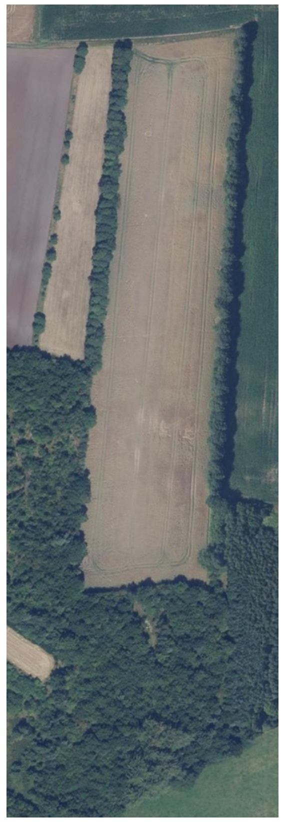
Distribution	
0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,0%
0,8-1,2	0,0%
1,2-1,9	0,0%
1,9-2,8	0,0%
2,8-4,3	0,0%
4,3-6,6	0,0%
6,6-10,0	0,0%
10,0-15,2	0,0%
15,2-23,1	0,0%
23,1-35,1	0,0%
35,1-53,4	0,3%
53,4-81,1	2,2%
81,1-123,3	8,8%
123,3-187,4	25,6%
187,4-284,8	35,0%
284,8-432,9	20,9%
432,9-657,9	6,5%
657,9-1000,0	0,7%
1000,0->>>	0,1%

Niels Åge Fristrup **2020**

Dicot weeds
Spring barley 2019
Dato: 15-01-21
Tid: 15-55-36
Prossed in Næsgaard Markkort ADVICER

1 meter grid





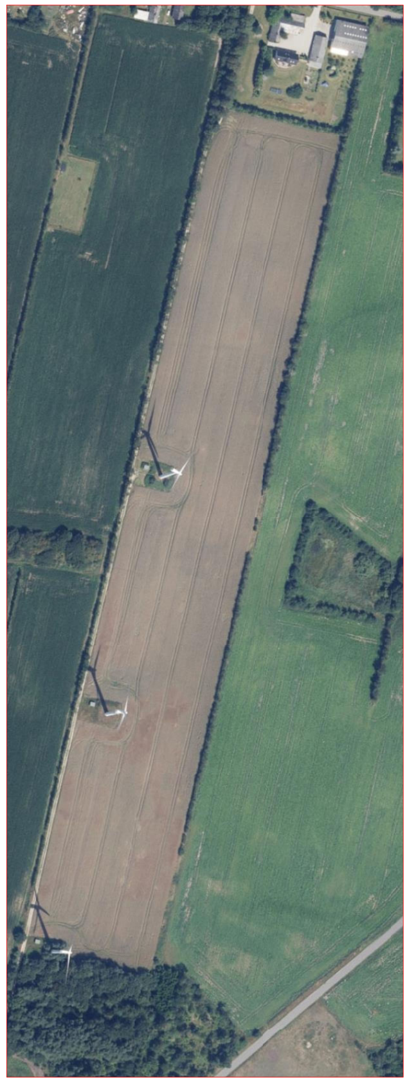
Niels Åge Fristrup	2020
Thistles	Dato: 23-12-20 Tid: 11-28-12
Prossed in Næsgaard Markkort ADVICER	

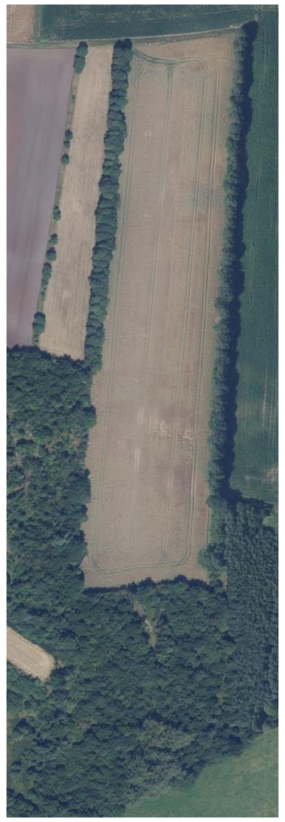
1 stk. pr m2

0,0-1,0 97,6%

1,0->>> 2,4%

5 meter grid





Niels Åge Fristrup **2020**

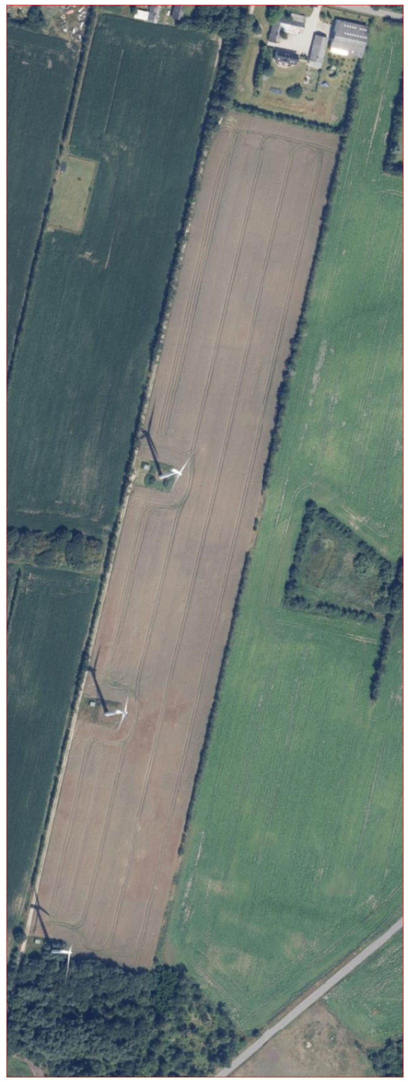
Thistles Dato: 23-12-20
Tid: 11-27-04

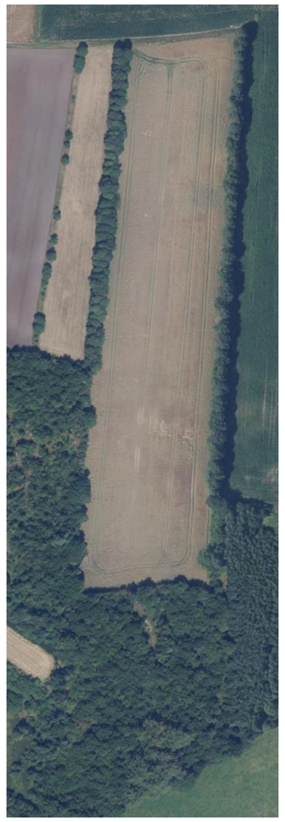
Prossed in Næsgaard Markkort ADVICER

1 stk. pr m2

0,0-1,0 98,0%

1,0->>> 2,0%





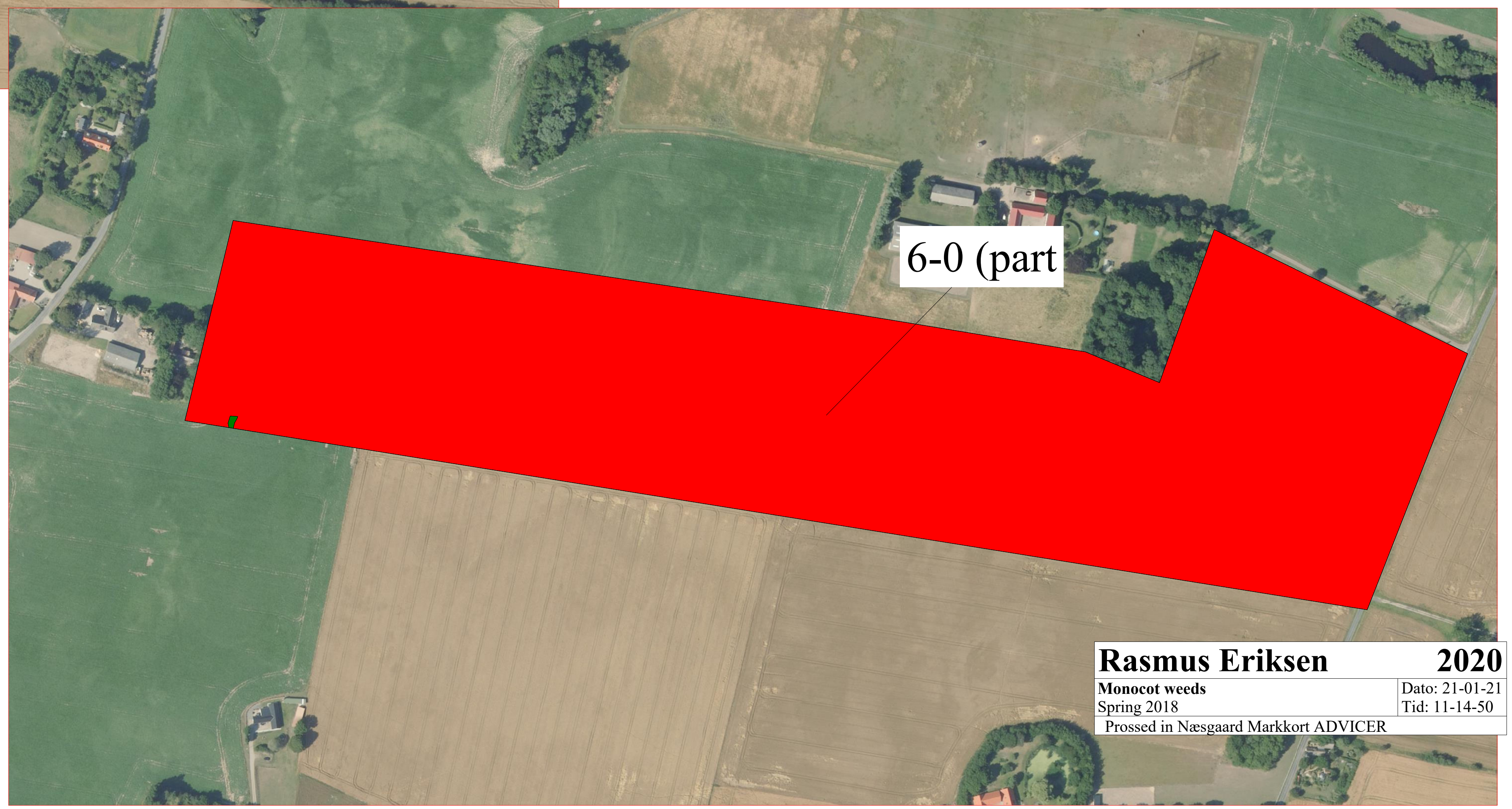
Distribution	
0,0-0,1	79,6%
0,1-0,1	3,0%
0,1-0,2	2,7%
0,2-0,2	2,4%
0,2-0,4	2,2%
0,4-0,5	2,8%
0,5-0,8	3,6%
0,8-1,2	2,6%
1,2-1,9	0,9%
1,9-2,8	0,3%
2,8-4,3	0,1%
4,3-6,6	0,0%
6,6-10,0	0,0%
10,0-15,2	0,0%
15,2-23,1	0,0%
23,1-35,1	0,0%
35,1-53,4	0,0%
53,4-81,1	0,0%
81,1-123,3	0,0%
123,3-187,4	0,0%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Niels Åge Fristrup	2020
Thistles	Dato: 23-12-20 Tid: 11-22-31
Prossed in Næsgaard Markkort ADVICER	

1 stk/m2

0,0-1,0 16,0%

1,0->>> 84,0%



Rasmus Eriksen **2020**

Monocot weeds Dato: 21-01-21
Spring 2018 Tid: 11-14-50
Prossed in Næsgaard Markkort ADVICER

1 stk/m2		
(green)	0,0-1,0	14,9%
(red)	1,0->>>	85,1%


4-0 (parti
Rasmus Eriksen
2020
Monocot weeds
Dato: 21-12-20
Tid: 18-14-50
Prossed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 57,5%
1,0->>> 42,5%

2 stk/m2

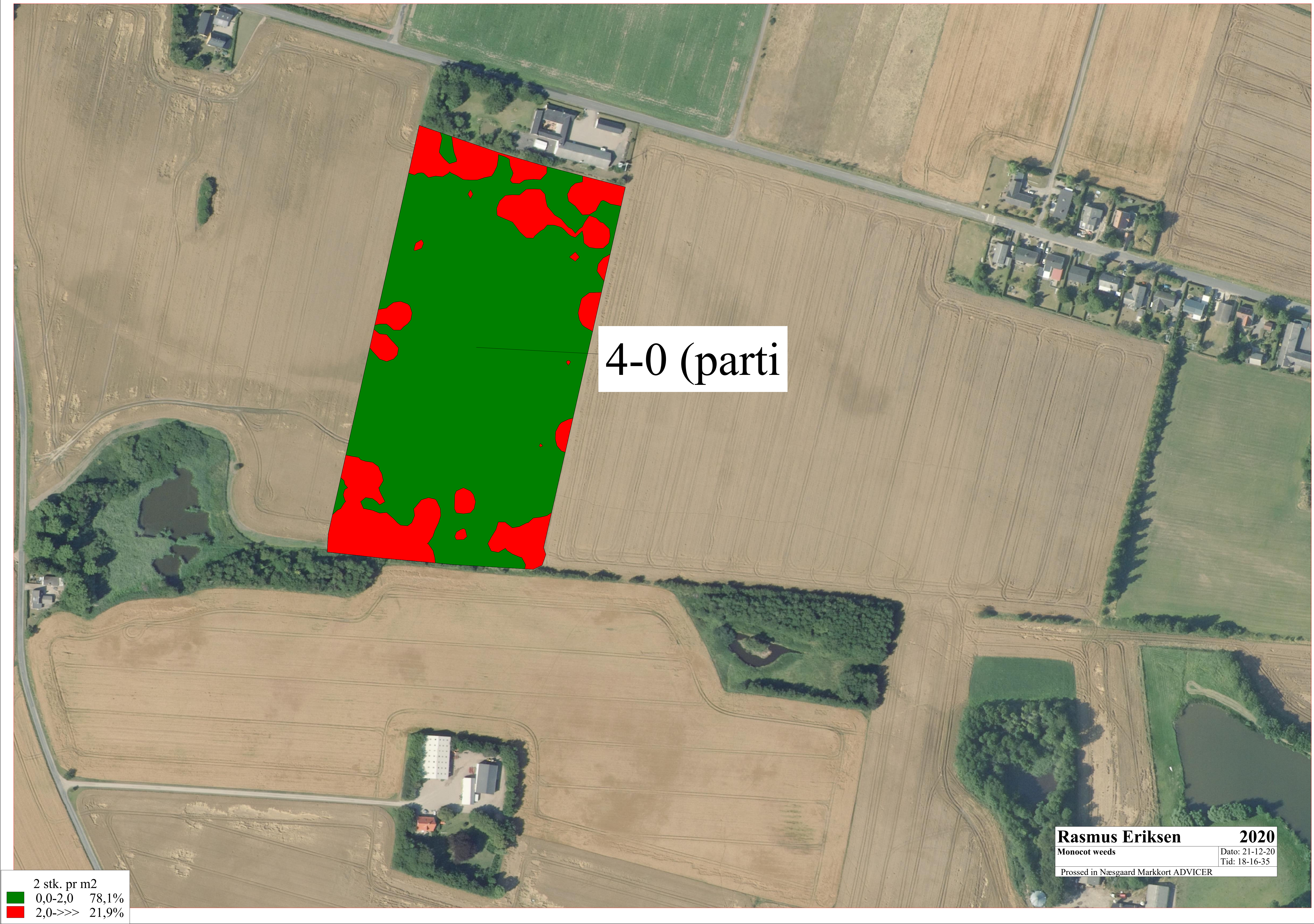
green	0,0-2,0	28,5%
red	2,0->>>	71,5%

Rasmus Eriksen **2020**

Monocot weeds
Spring 2018
Dato: 21-01-21
Tid: 11-16-09
Prossed in Næsgaard Markkort ADVICER

2 stk/m2

(green)	0,0-2,0	16,6%
(red)	2,0->>>	83,4%

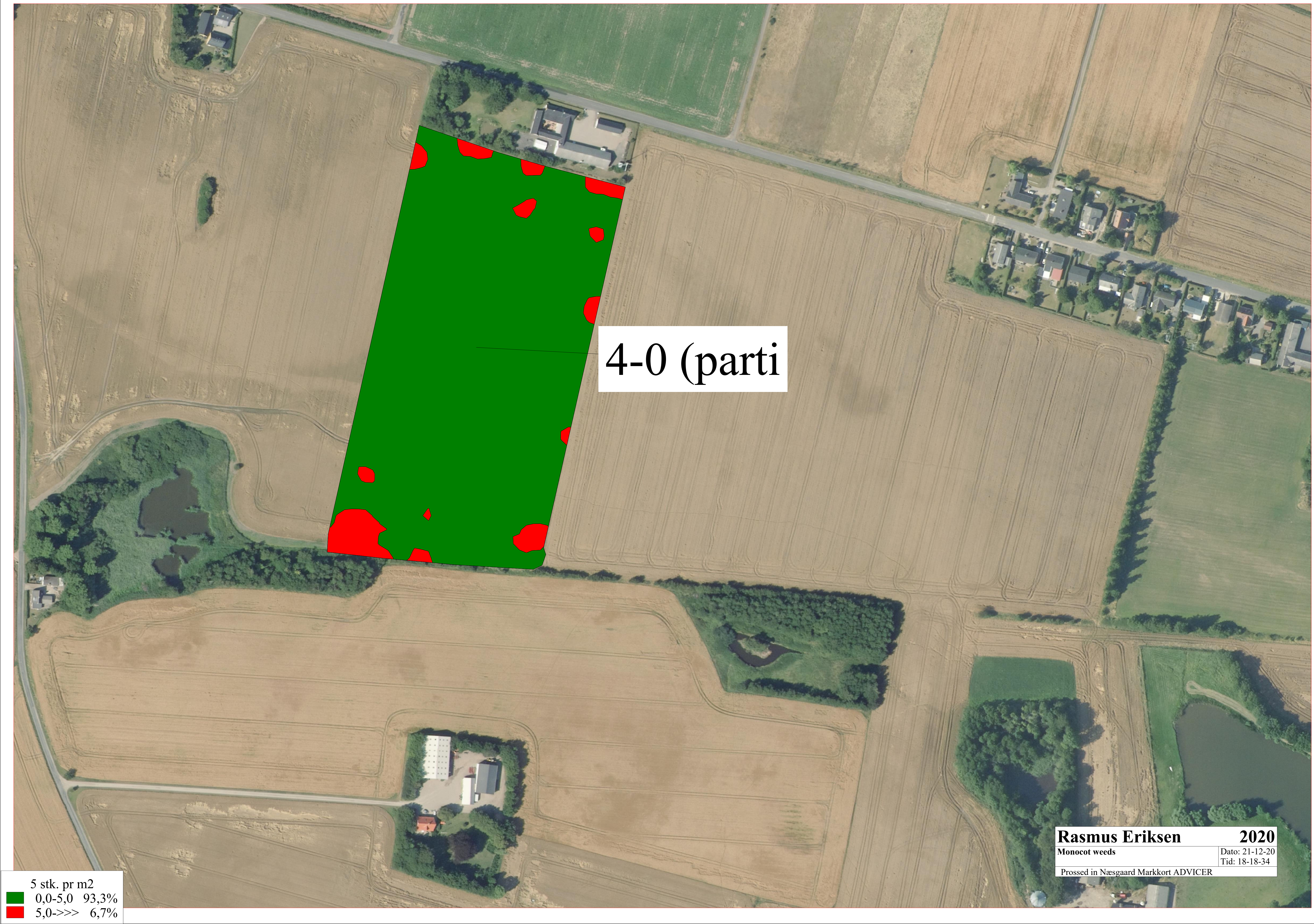

4-0 (parti
Rasmus Eriksen
2020
Monocot weeds
Dato: 21-12-20
Tid: 18-16-35
Prossed in Næsgaard Markkort ADVICER
2 stk. pr m2
0,0-2,0 78,1%
2,0->>> 21,9%

5 stk/m2

green	0,0-5,0	63,8%
red	5,0->>>	36,2%

5 stk/m2

(green)	0,0-5,0	19,9%
(red)	5,0->>>	80,1%


4-0 (parti
Rasmus Eriksen 2020
Monocot weeds
Dato: 21-12-20
Tid: 18-18-34
Prossed in Næsgaard Markkort ADVICER
5 stk. pr m2
0,0-5,0 93,3%
5,0->>> 6,7%

10 stk/m2

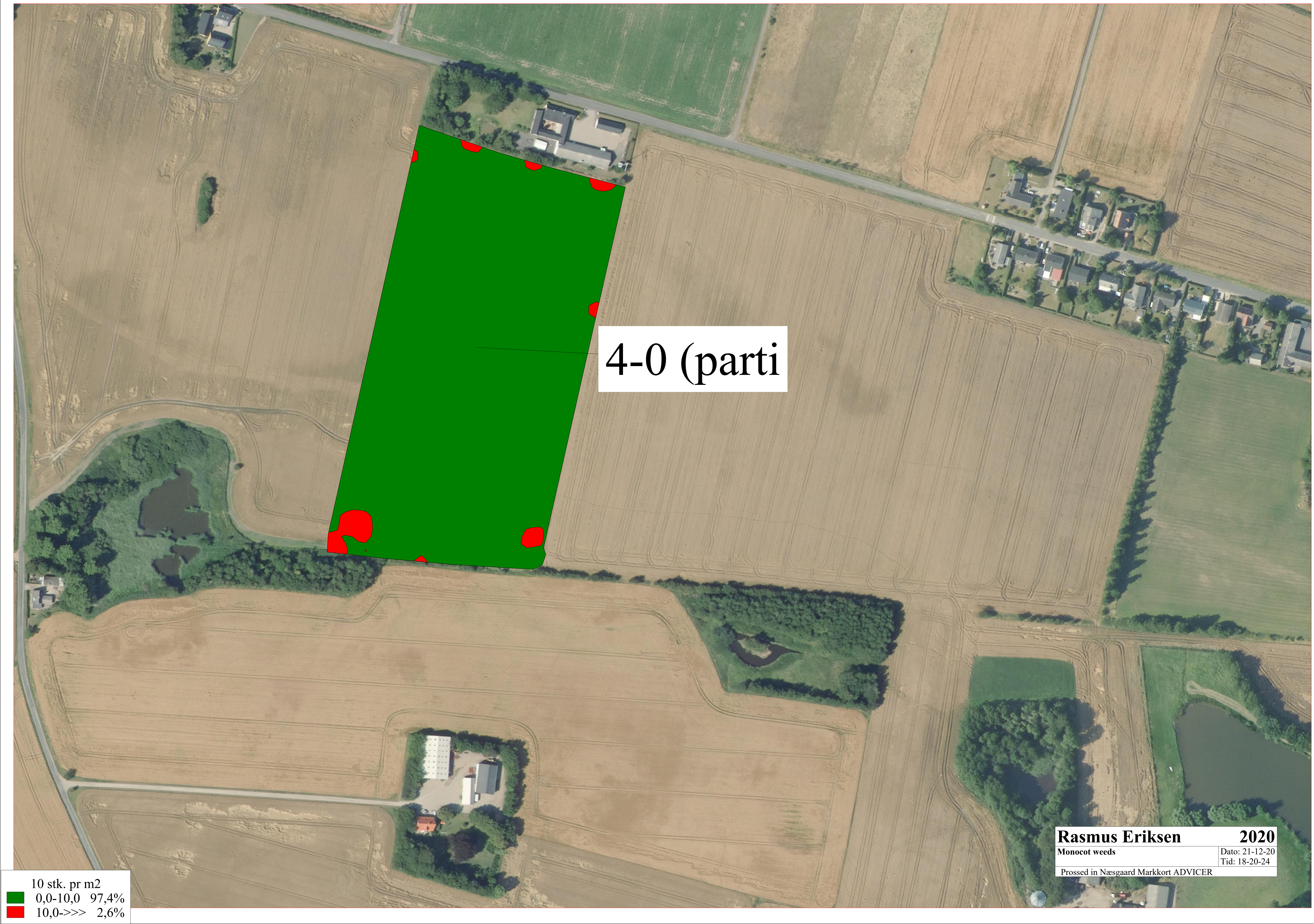
green	0,0-10,0	89,7%
red	10,0->>>	10,3%

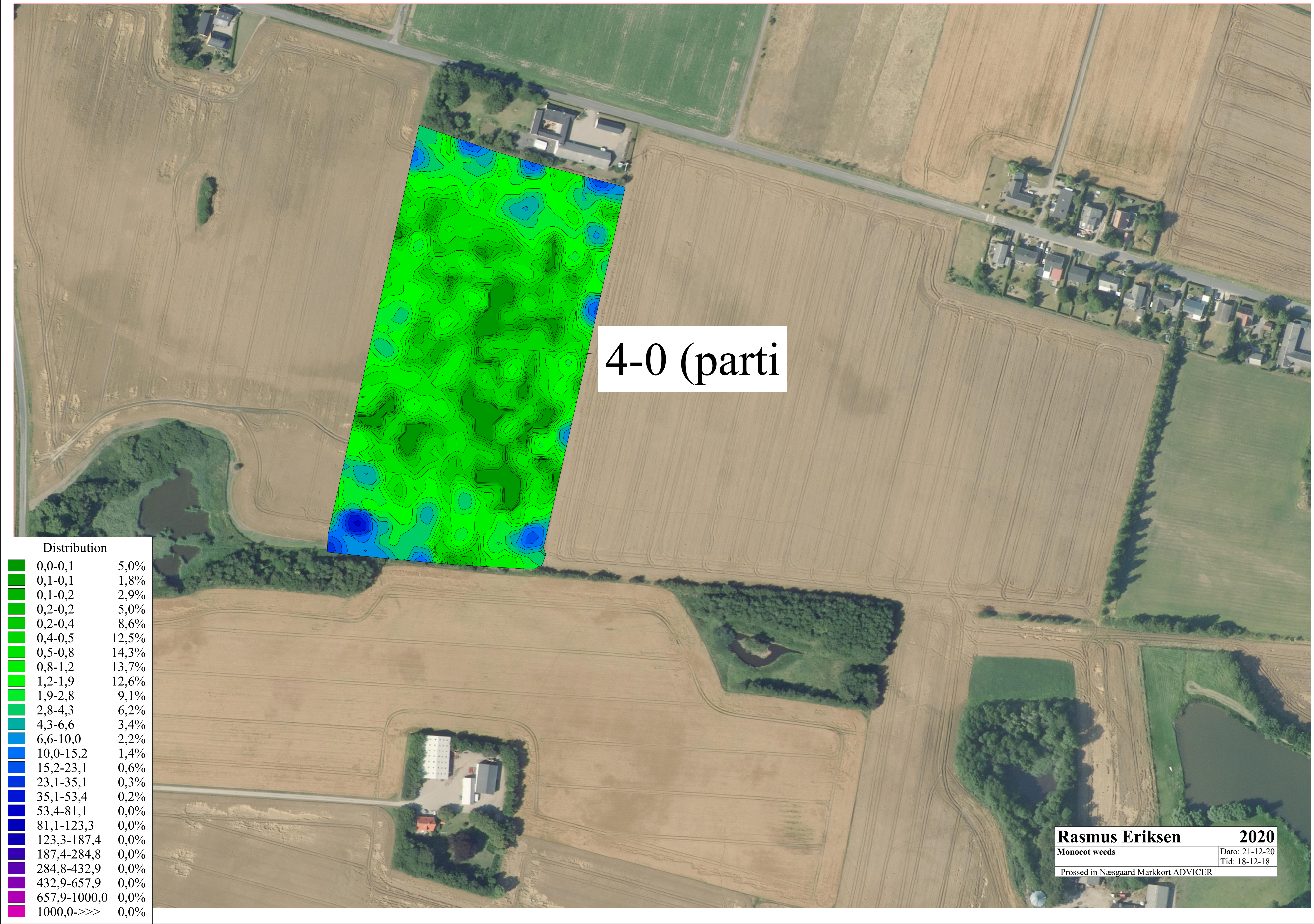
Rasmus Eriksen **2020**

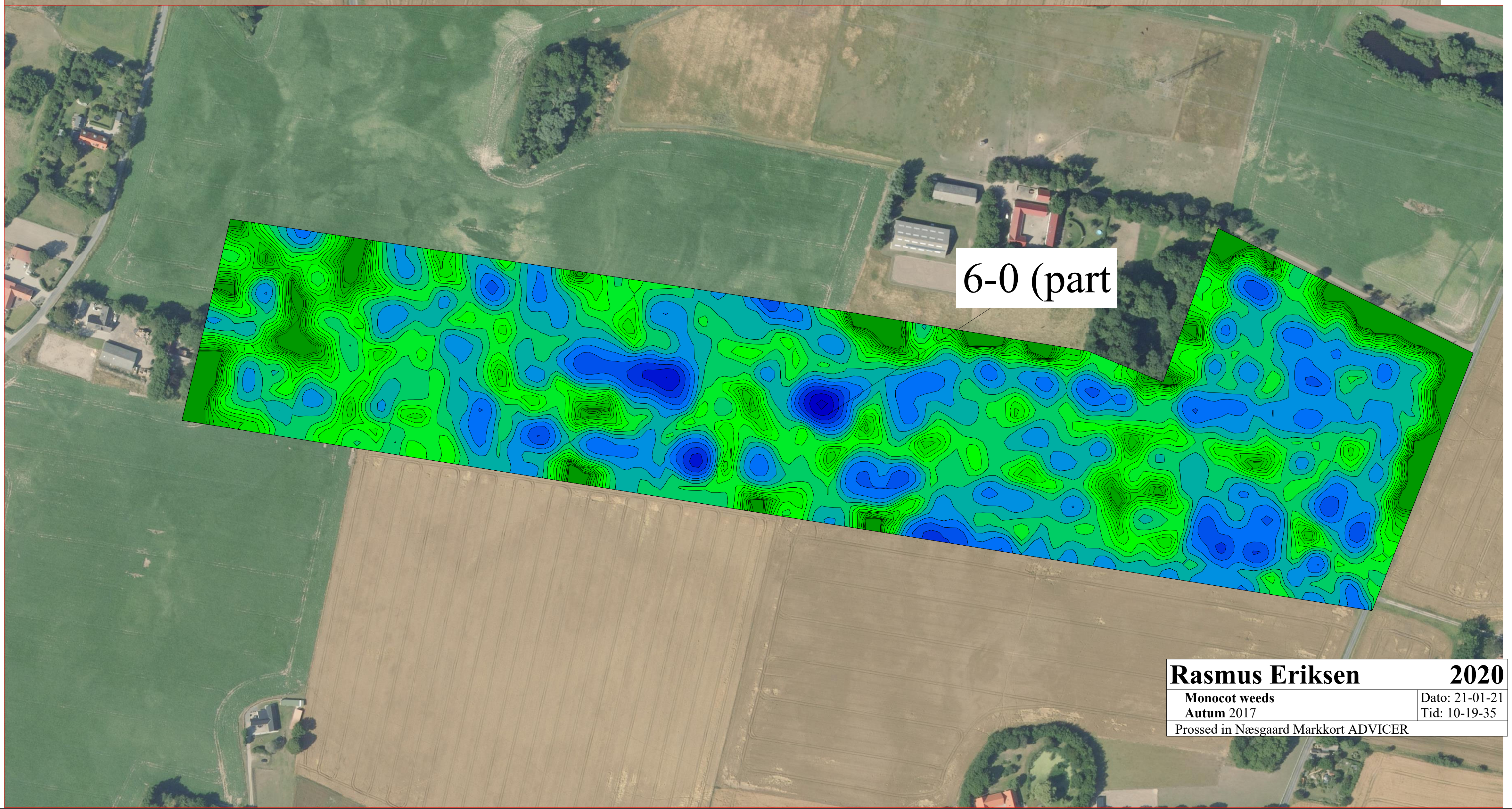
Monocot weeds
Spring 2018
Dato: 21-01-21
Tid: 11-20-45
Prossed in Næsgaard Markkort ADVICER

10 stk/m2

(green)	0,0-10,0	23,8%
(red)	10,0->>>	76,2%

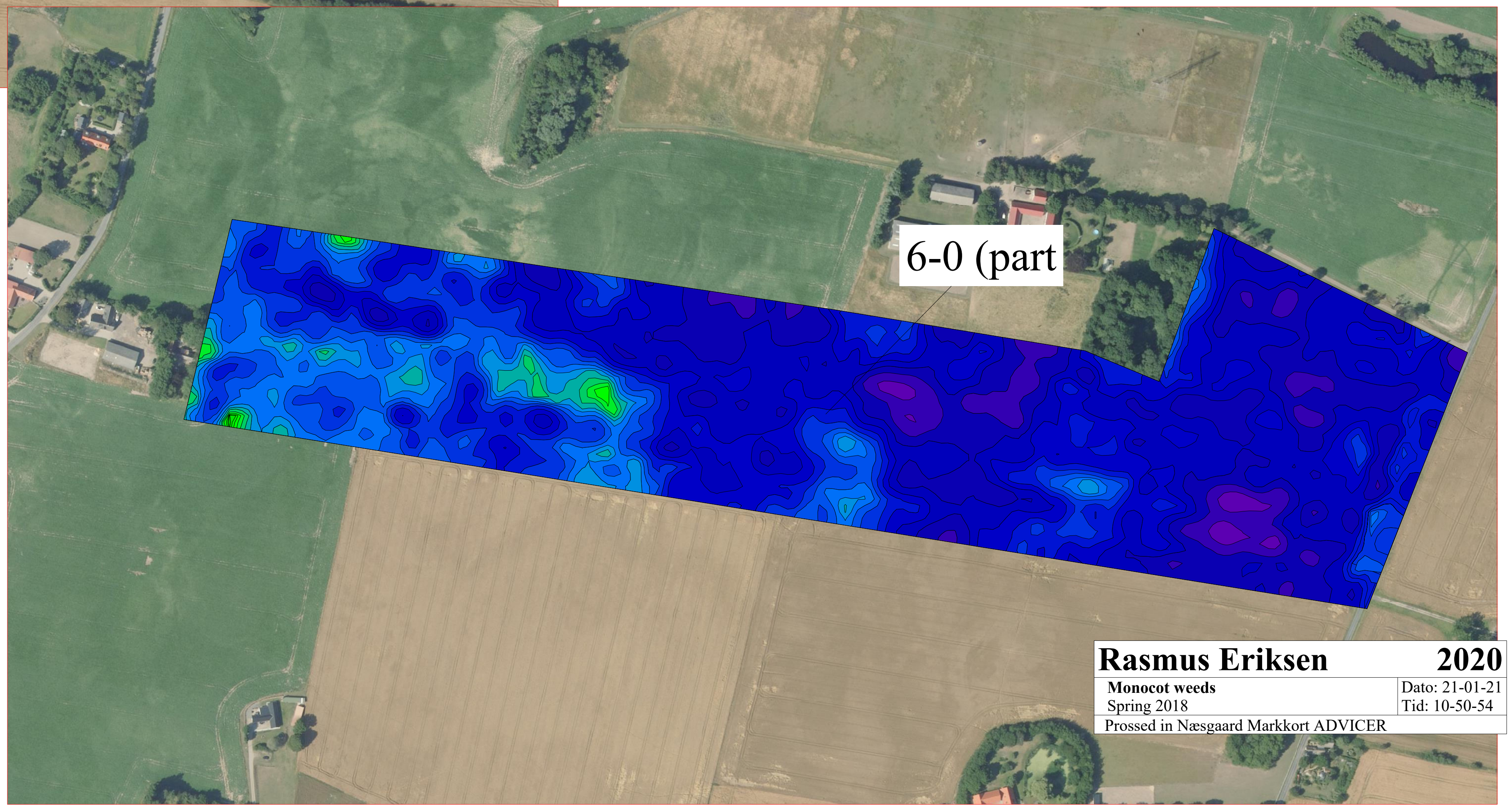

4-0 (parti
Rasmus Eriksen
2020
Monocot weeds
Dato: 21-12-20
Tid: 18-20-24
Prossed in Næsgaard Markkort ADVICER
10 stk. pr m2
0,0-10,0 97,4%
10,0->>> 2,6%


4-0 (parti
Distribution
0,0-0,1 5,0%
0,1-0,1 1,8%
0,1-0,2 2,9%
0,2-0,2 5,0%
0,2-0,4 8,6%
0,4-0,5 12,5%
0,5-0,8 14,3%
0,8-1,2 13,7%
1,2-1,9 12,6%
1,9-2,8 9,1%
2,8-4,3 6,2%
4,3-6,6 3,4%
6,6-10,0 2,2%
10,0-15,2 1,4%
15,2-23,1 0,6%
23,1-35,1 0,3%
35,1-53,4 0,2%
53,4-81,1 0,0%
81,1-123,3 0,0%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Rasmus Eriksen 2020
Monocot weeds
Dato: 21-12-20
Tid: 18-12-18
Prossed in Næsgaard Markkort ADVICER



Distribution

0,0-0,1	3,0%
0,1-0,1	0,8%
0,1-0,2	1,0%
0,2-0,2	1,3%
0,2-0,4	1,9%
0,4-0,5	2,0%
0,5-0,8	3,2%
0,8-1,2	5,2%
1,2-1,9	8,8%
1,9-2,8	13,2%
2,8-4,3	12,6%
4,3-6,6	21,1%
6,6-10,0	15,1%
10,0-15,2	7,0%
15,2-23,1	2,5%
23,1-35,1	0,9%
35,1-53,4	0,4%
53,4-81,1	0,1%
81,1-123,3	0,0%
123,3-187,4	0,0%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%



Distribution

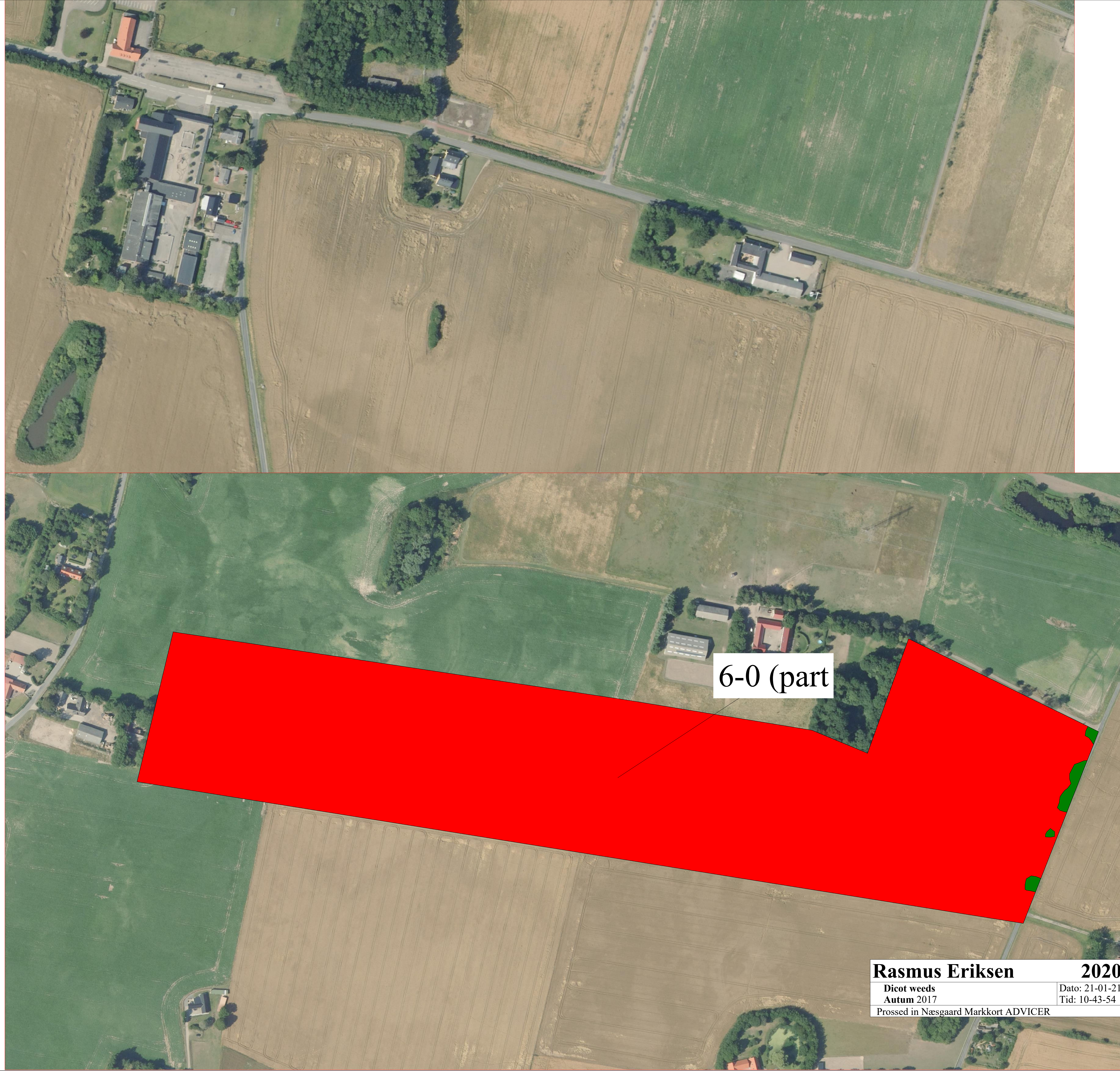
0,0-0,1	10,3%
0,1-0,1	1,0%
0,1-0,2	1,0%
0,2-0,2	0,9%
0,2-0,4	0,9%
0,4-0,5	1,2%
0,5-0,8	1,1%
0,8-1,2	0,9%
1,2-1,9	1,0%
1,9-2,8	1,2%
2,8-4,3	1,6%
4,3-6,6	2,0%
6,6-10,0	3,5%
10,0-15,2	4,7%
15,2-23,1	6,0%
23,1-35,1	8,2%
35,1-53,4	8,6%
53,4-81,1	11,7%
81,1-123,3	17,8%
123,3-187,4	12,0%
187,4-284,8	3,9%
284,8-432,9	0,5%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Rasmus Eriksen **2020**

Monocot weeds
Spring 2018

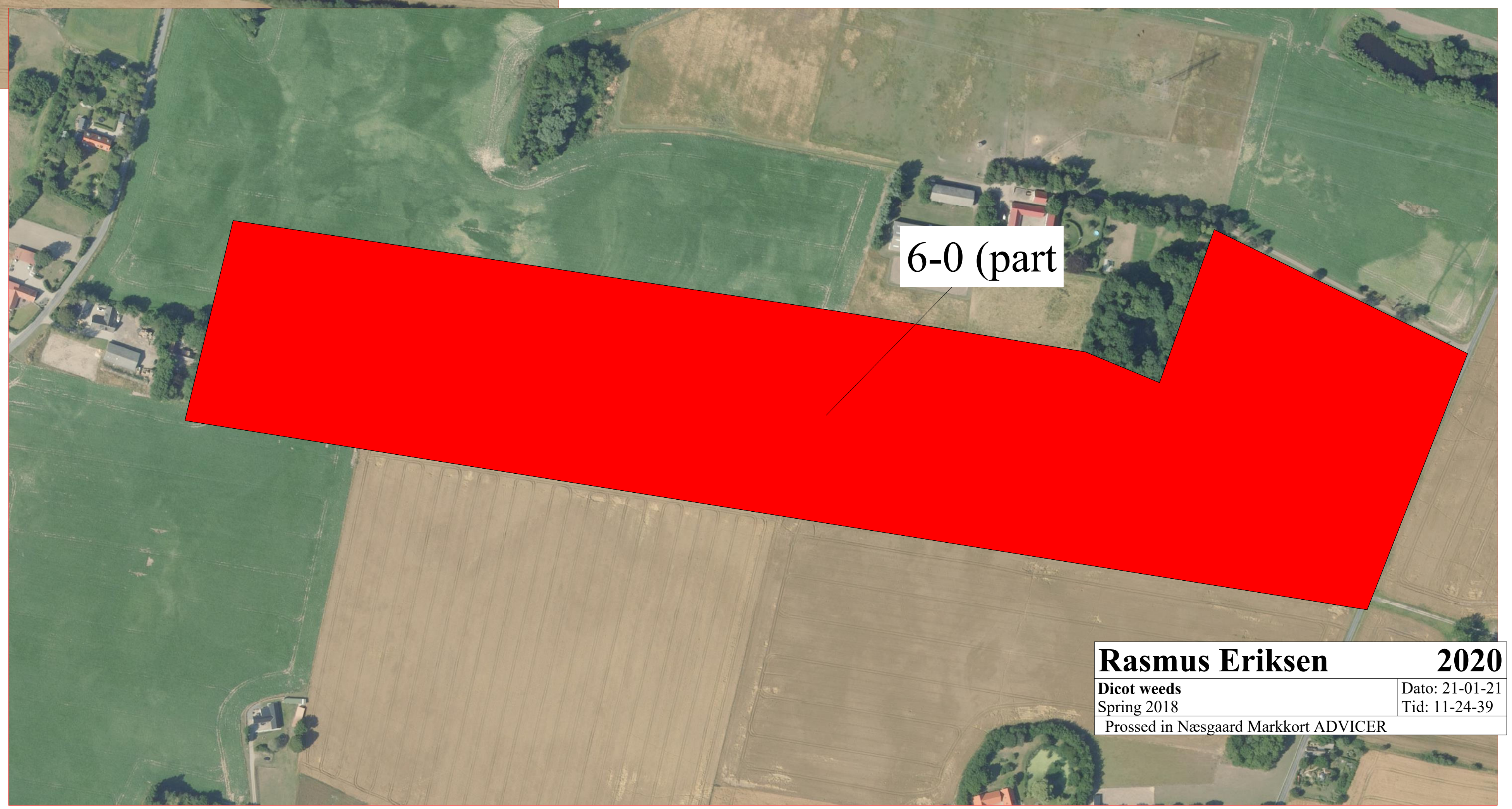
Dato: 21-01-21
Tid: 10-50-54

Prossed in Næsgaard Markkort ADVICER



1 stk/m2

	0,0-1,0	0,6%
	1,0->>>	99,4%

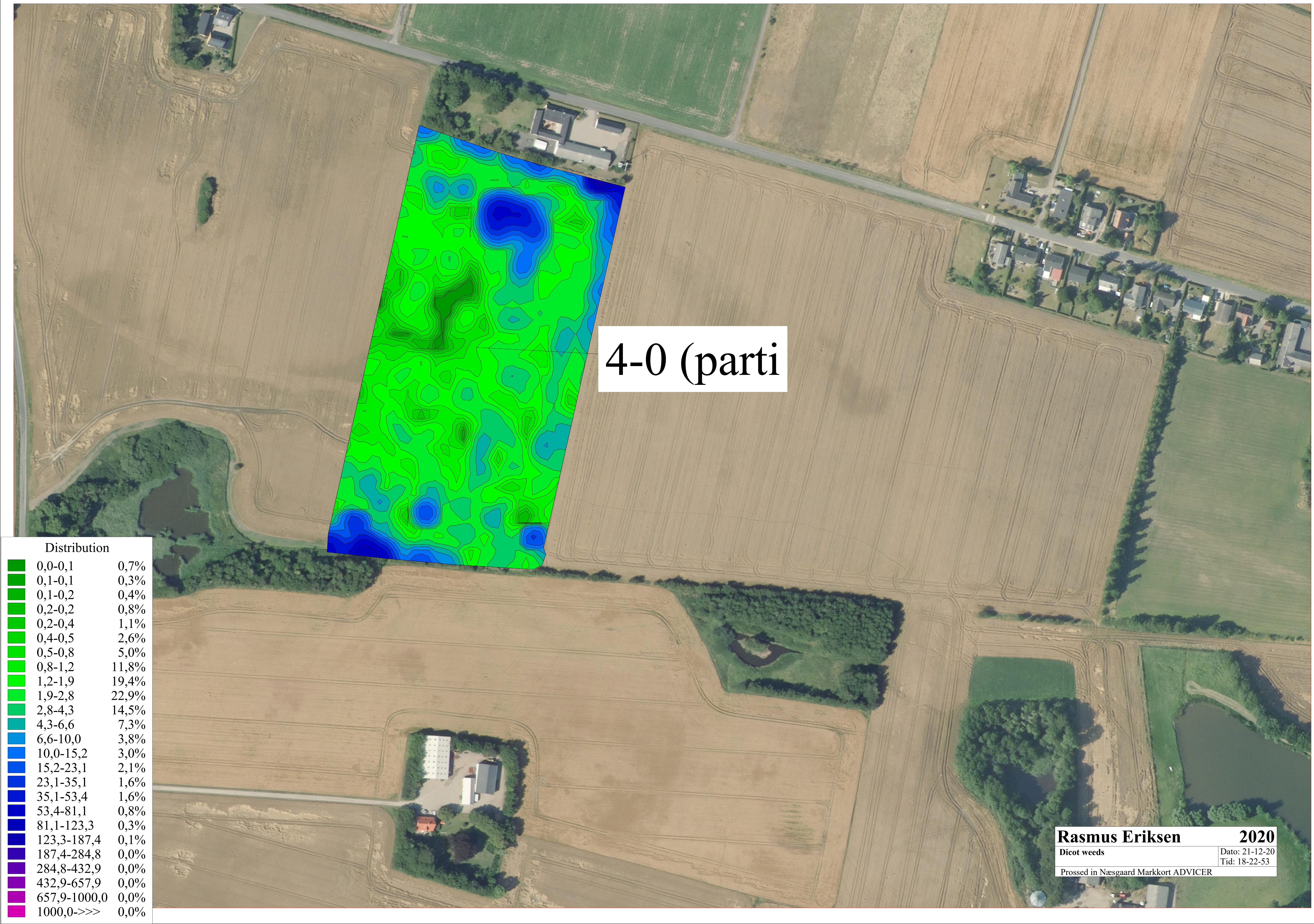


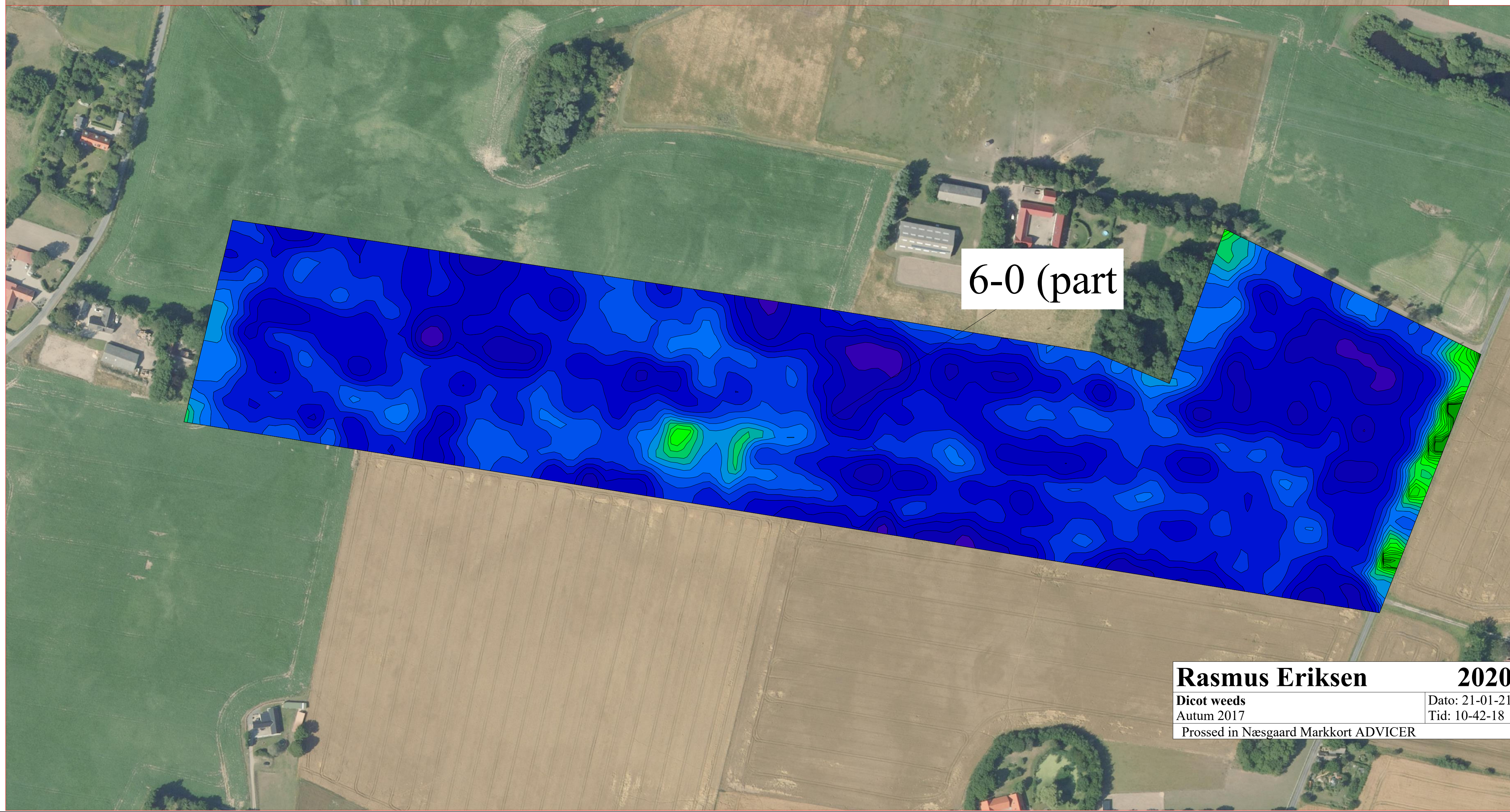
Rasmus Eriksen	**2020**
Dicot weeds Spring 2018	Dato: 21-01-21 Tid: 11-24-39
Prossed in Næsgaard Markkort ADVICER	

1 stk/m2

Green	0,0-1,0	5,2%
Red	1,0->>>	94,8%

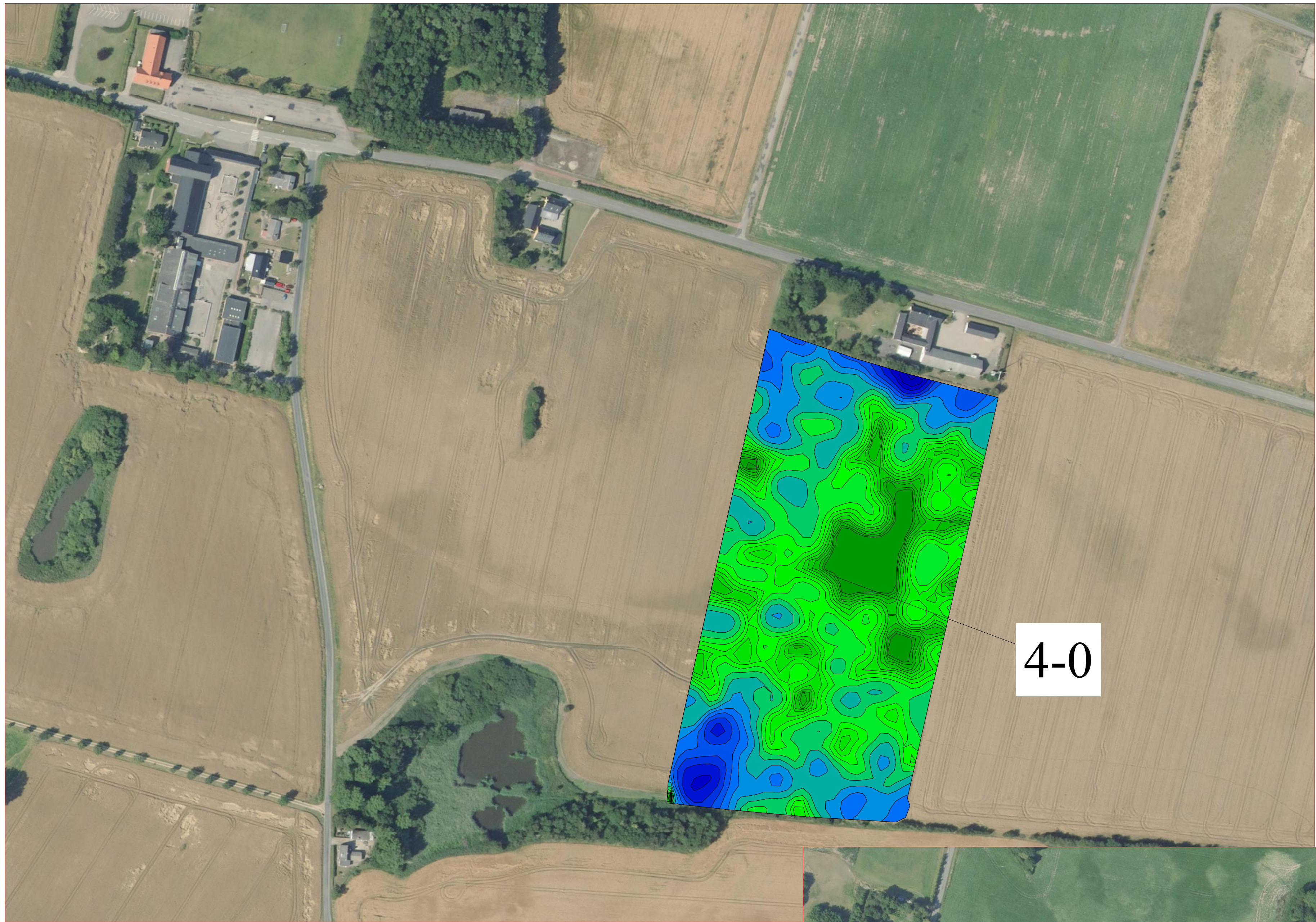

4-0 (parti
Rasmus Eriksen
2020
Dicot weeds
Dato: 21-12-20
Tid: 18-25-41
Prossed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 15,8%
1,0->>> 84,2%

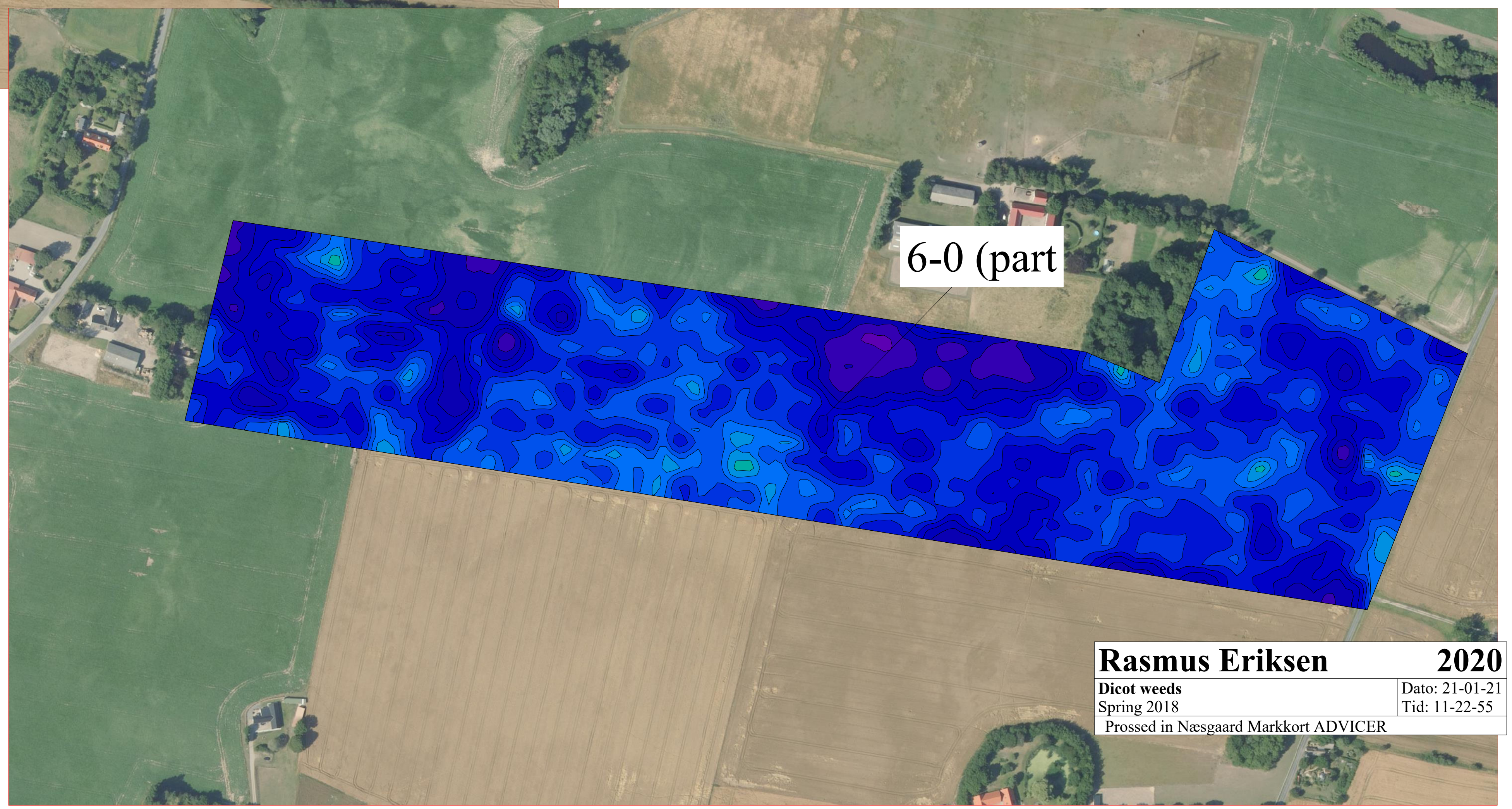

4-0 (parti
Distribution
0,0-0,1 0,7%
0,1-0,1 0,3%
0,1-0,2 0,4%
0,2-0,2 0,8%
0,2-0,4 1,1%
0,4-0,5 2,6%
0,5-0,8 5,0%
0,8-1,2 11,8%
1,2-1,9 19,4%
1,9-2,8 22,9%
2,8-4,3 14,5%
4,3-6,6 7,3%
6,6-10,0 3,8%
10,0-15,2 3,0%
15,2-23,1 2,1%
23,1-35,1 1,6%
35,1-53,4 1,6%
53,4-81,1 0,8%
81,1-123,3 0,3%
123,3-187,4 0,1%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Rasmus Eriksen 2020
Dicot weeds
Dato: 21-12-20
Tid: 18-22-53
Prossed in Næsgaard Markkort ADVICER



Distribution

0,0-0,1	0,1%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,1%
0,2-0,4	0,1%
0,4-0,5	0,1%
0,5-0,8	0,1%
0,8-1,2	0,2%
1,2-1,9	0,3%
1,9-2,8	0,4%
2,8-4,3	0,7%
4,3-6,6	1,1%
6,6-10,0	2,0%
10,0-15,2	4,6%
15,2-23,1	11,1%
23,1-35,1	17,3%
35,1-53,4	19,2%
53,4-81,1	22,3%
81,1-123,3	14,0%
123,3-187,4	5,6%
187,4-284,8	0,9%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%





Distribution	
0,0-0,1	0,9%
0,1-0,1	1,1%
0,1-0,2	1,3%
0,2-0,2	1,7%
0,2-0,4	0,6%
0,4-0,5	0,8%
0,5-0,8	1,2%
0,8-1,2	2,1%
1,2-1,9	2,5%
1,9-2,8	2,9%
2,8-4,3	2,6%
4,3-6,6	2,6%
6,6-10,0	2,7%
10,0-15,2	5,4%
15,2-23,1	12,6%
23,1-35,1	17,1%
35,1-53,4	15,9%
53,4-81,1	12,0%
81,1-123,3	7,1%
123,3-187,4	4,8%
187,4-284,8	2,3%
284,8-432,9	0,1%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Rasmus Eriksen **2020**

Dicot weeds Dato: 21-01-21
Spring 2018 Tid: 11-22-55
Prossed in Næsgaard Markkort ADVICER

Robert Poulsen	**2020**
Monocot weeds	Dato: 15-01-21 Tid: 16-05-45

Prossed in Næsgaard Markkort ADVICER

1 stk/m2		
(green)	0,0-1,0	54,3%
(red)	1,0->>>	45,7%

Robert Poulsen	**2020**
Monocot weeds	Dato: 15-01-21 Tid: 16-07-19
Prossed in Næsgaard Markkort ADVICER	

2 stk/m2

(green)	0,0-2,0	68,8%
(red)	2,0->>>	31,2%

Robert Poulsen	**2020**
Monocot weeds	Dato: 15-01-21 Tid: 16-09-03
Prossed in Næsgaard Markkort ADVICER	

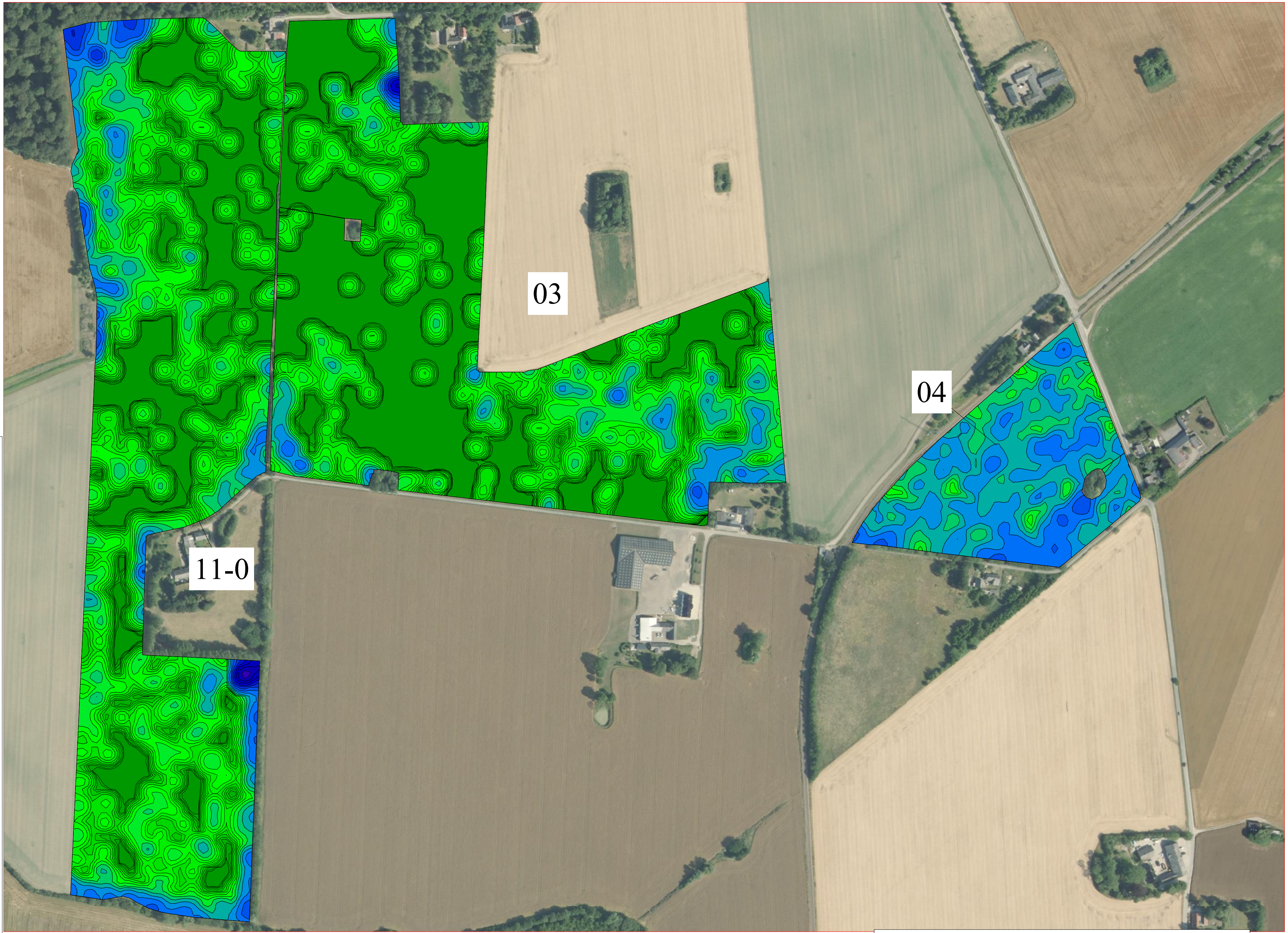
5 stk/m2

(green)	0,0-5,0	84,6%
(red)	5,0->>>	15,4%

Robert Poulsen	**2020**
Monocot weeds	Dato: 15-01-21 Tid: 16-10-23
Processed in Næsgaard Markkort ADVICER	

10 stk/m2

0,0-10,0	96,1%
10,0->>>	3,9%



Distribution

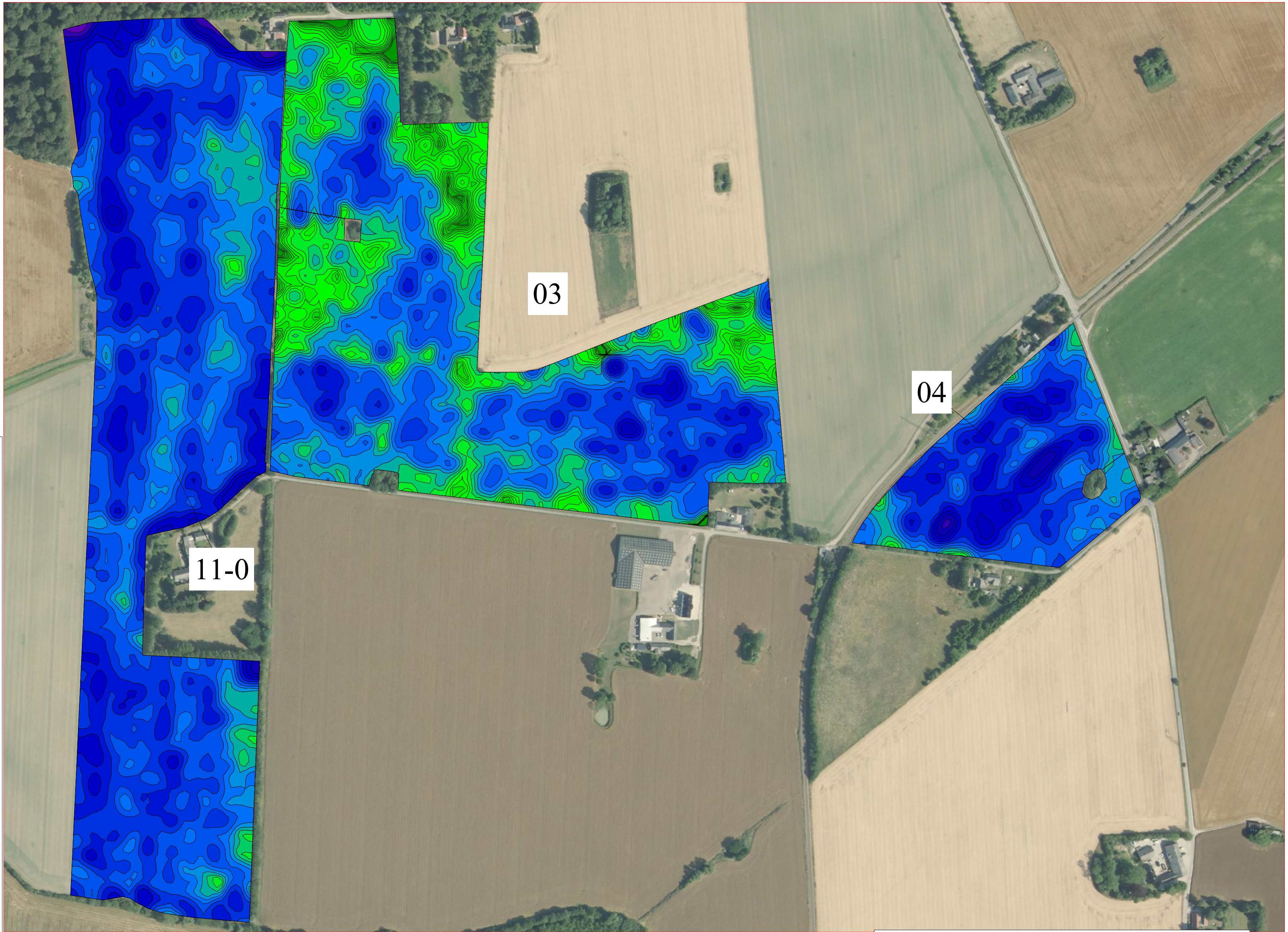
	0,0-0,1	17,5%
	0,1-0,1	4,1%
	0,1-0,2	4,5%
	0,2-0,2	5,4%
	0,2-0,4	6,6%
	0,4-0,5	7,7%
	0,5-0,8	9,1%
	0,8-1,2	8,5%
	1,2-1,9	8,4%
	1,9-2,8	7,7%
	2,8-4,3	6,2%
	4,3-6,6	6,3%
	6,6-10,0	5,0%
	10,0-15,2	2,1%
	15,2-23,1	0,5%
	23,1-35,1	0,2%
	35,1-53,4	0,0%
	53,4-81,1	0,0%
	81,1-123,3	0,0%
	123,3-187,4	0,0%
	187,4-284,8	0,0%
	284,8-432,9	0,0%
	432,9-657,9	0,0%
	657,9-1000,0	0,0%
	1000,0->>>	0,0%

Robert Poulsen	**2020**
Monocot weeds	Dato: 15-01-21 Tid: 16-03-23
Processed in Næsgaard Markkort ADVICER	

Robert Poulsen	2020
Dicot weeds	Dato: 15-01-21 Tid: 16-13-10
Processed in Næsgaard Markkort ADVICER	

1 stk/m2

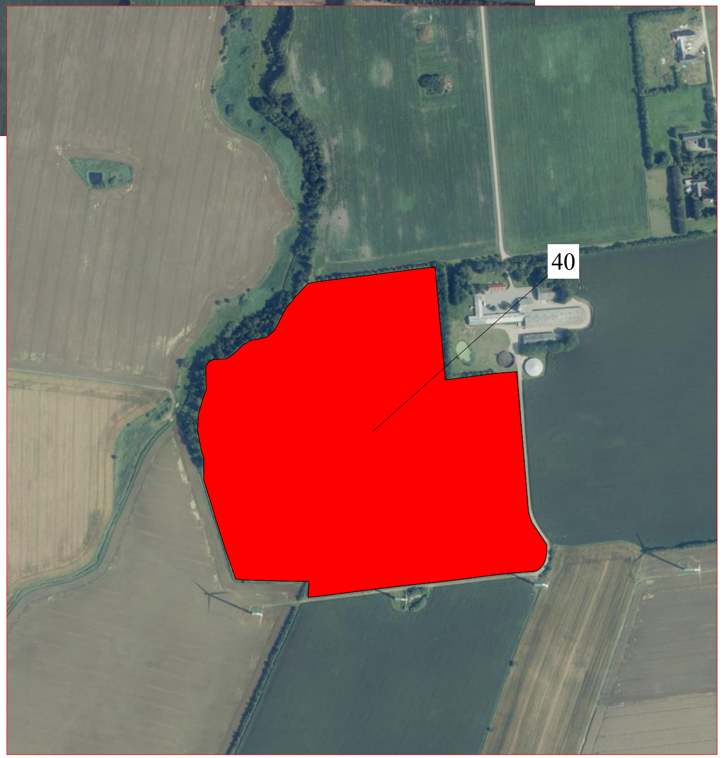
(green)	0,0-1,0	3,3%
(red)	1,0->>>	96,7%

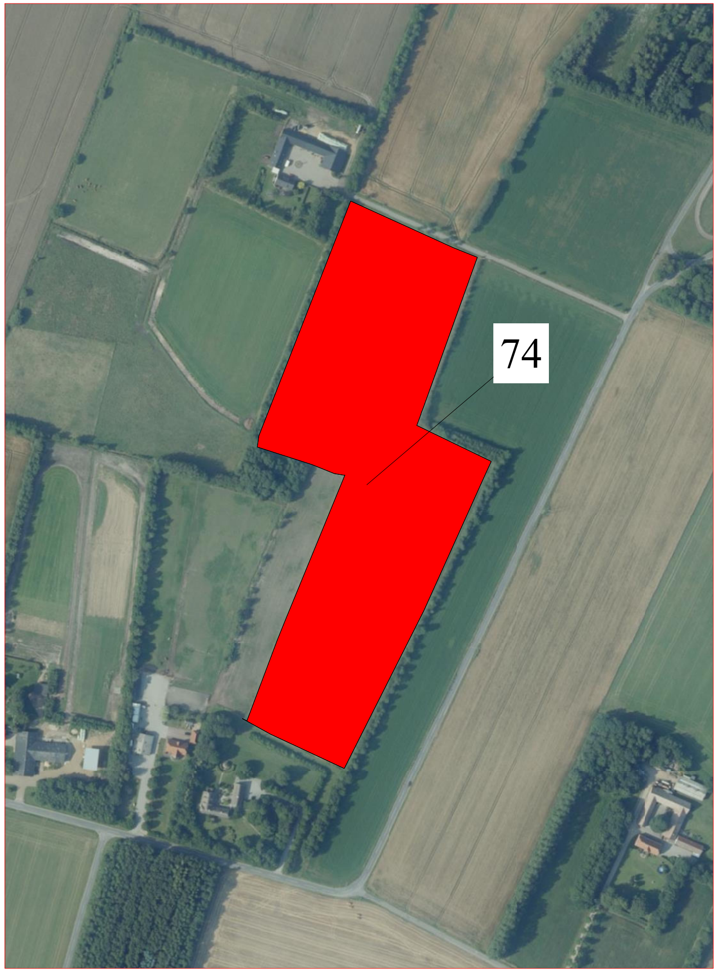


Distribution

	0,0-0,1	0,1%
	0,1-0,1	0,1%
	0,1-0,2	0,2%
	0,2-0,2	0,2%
	0,2-0,4	0,3%
	0,4-0,5	0,5%
	0,5-0,8	1,0%
	0,8-1,2	1,9%
	1,2-1,9	2,5%
	1,9-2,8	3,5%
	2,8-4,3	4,7%
	4,3-6,6	6,9%
	6,6-10,0	9,2%
	10,0-15,2	13,8%
	15,2-23,1	18,9%
	23,1-35,1	18,1%
	35,1-53,4	11,1%
	53,4-81,1	4,9%
	81,1-123,3	1,4%
	123,3-187,4	0,4%
	187,4-284,8	0,1%
	284,8-432,9	0,0%
	432,9-657,9	0,0%
	657,9-1000,0	0,0%
	1000,0->>>	0,0%

Robert Poulsen	**2020**
Dicot weeds	Dato: 15-01-21 Tid: 16-11-46
Processed in Næsgaard Markkort ADVICER	

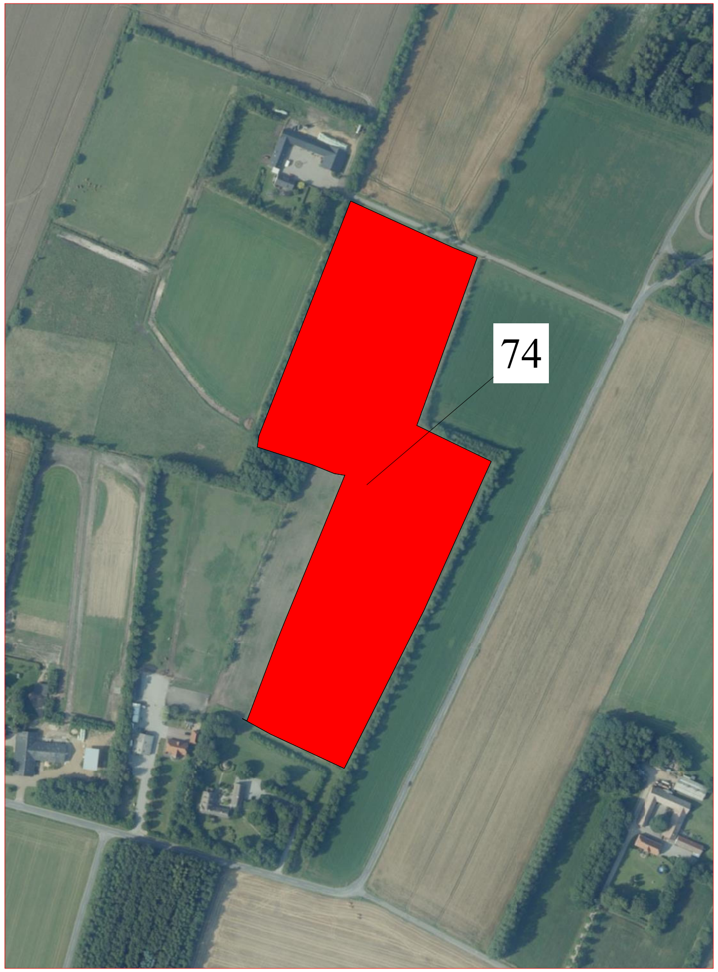




SEGES	2020
Monocot weeds	Dato: 21-01-21 Tid: 11-49-29
Processed in Næsgaard Markkort ADVICER	

1 stk/m2

(green)	0,0-1,0	0,1%
(red)	1,0->>>	99,9%



SEGES **2020**

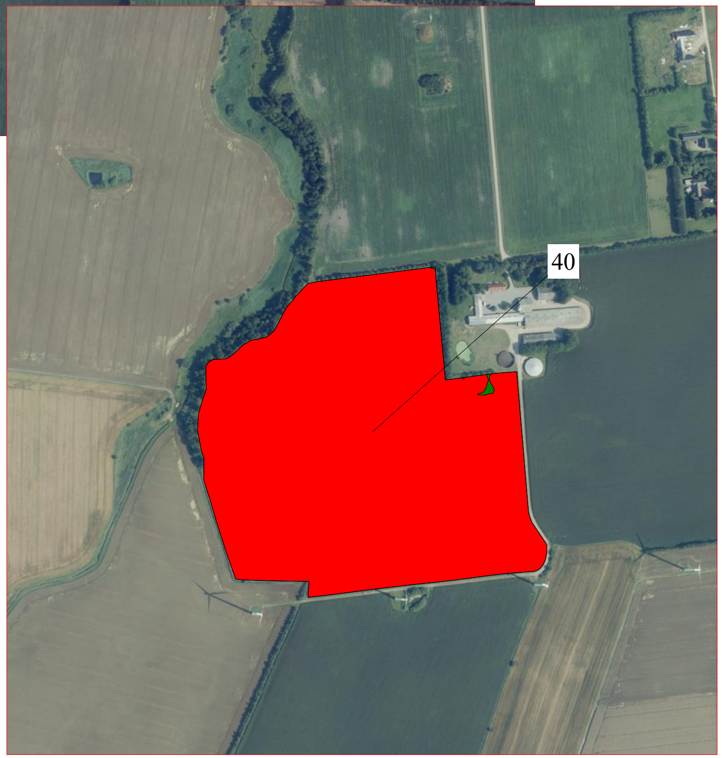
Monocot weeds

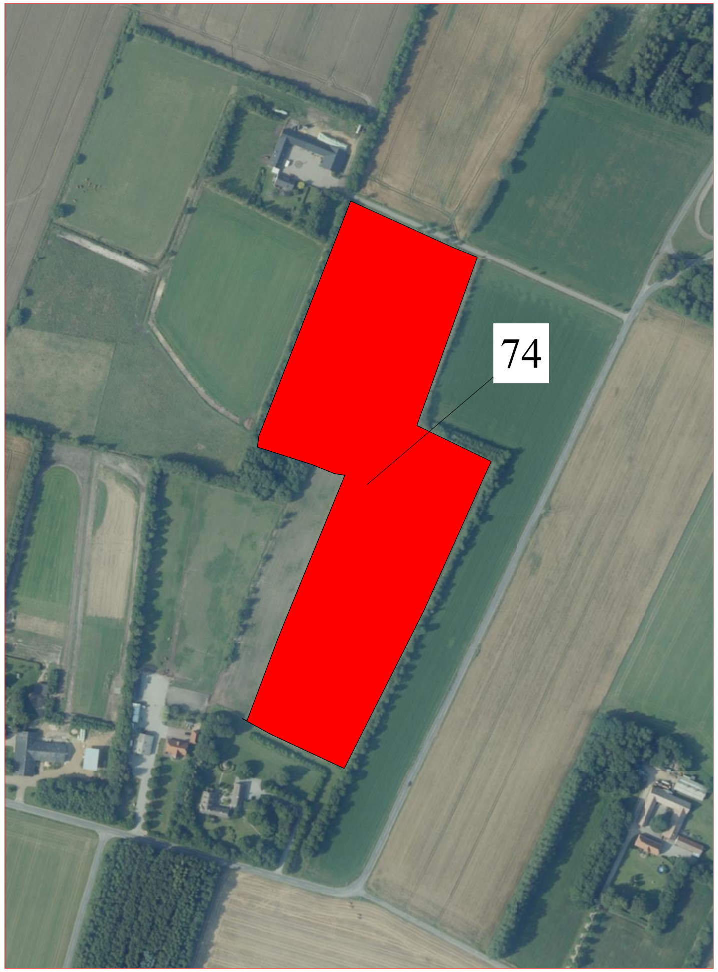
Dato: 21-01-21
Tid: 11-50-58

Processed in Næsgaard Markkort ADVICER

2 stk/m2

(green)	0,0-2,0	0,4%
(red)	2,0->>>	99,6%

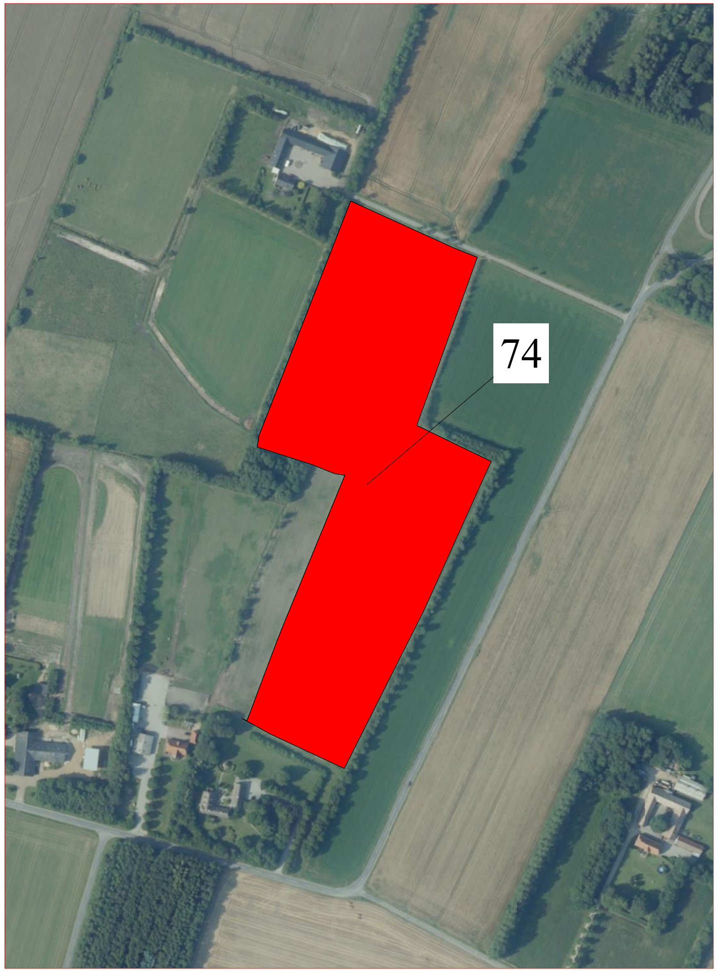


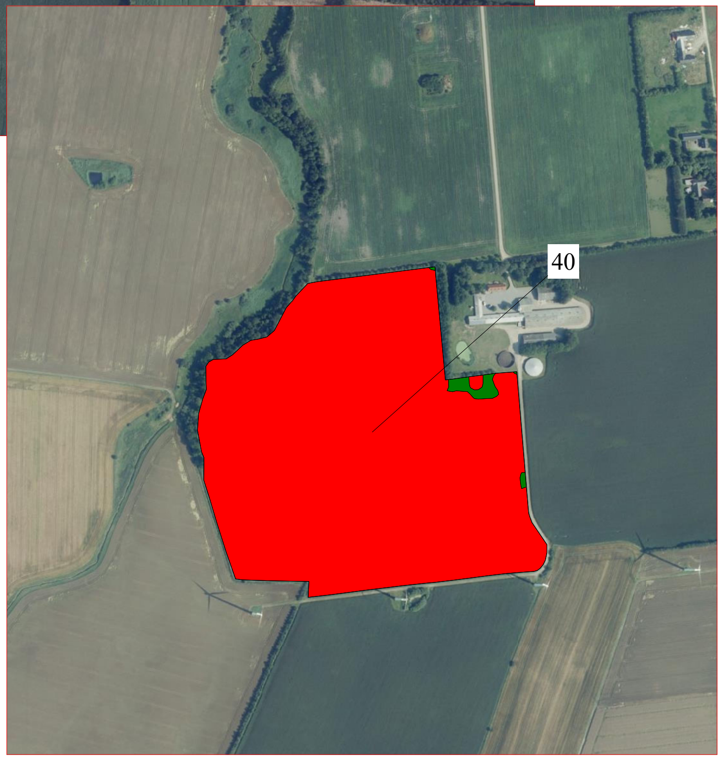


SEGES	2020
Monocot weeds	Dato: 21-01-21 Tid: 11-52-13
Processed in Næsgaard Markkort ADVICER	

5 stk/m2

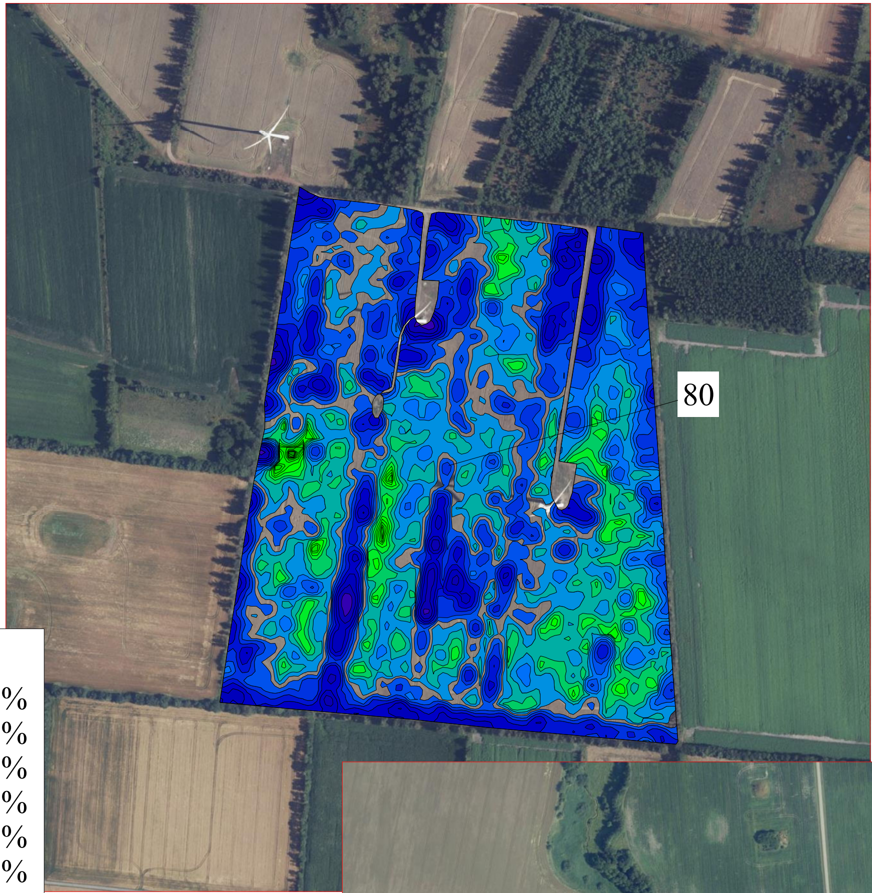
(green)	0,0-5,0	4,3%
(red)	5,0->>>	95,7%

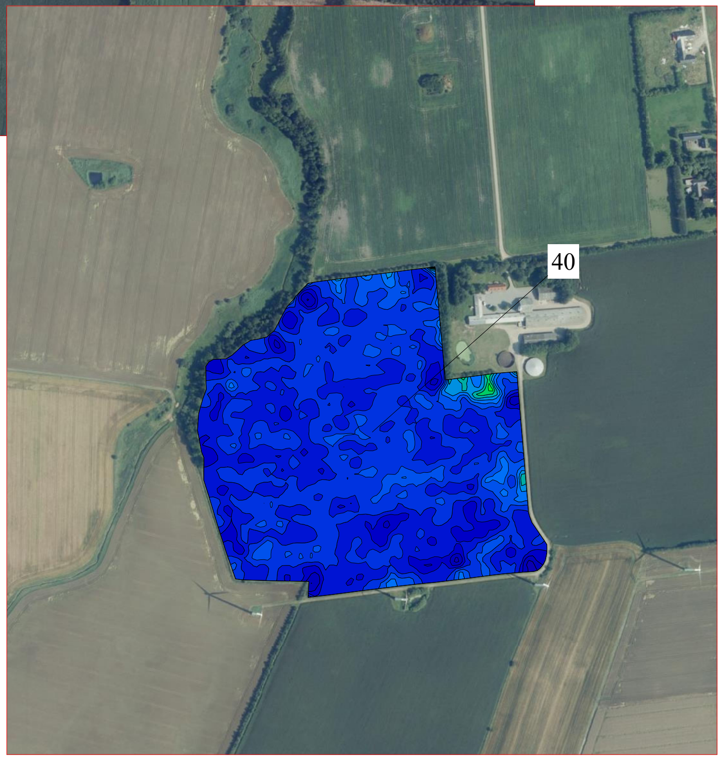


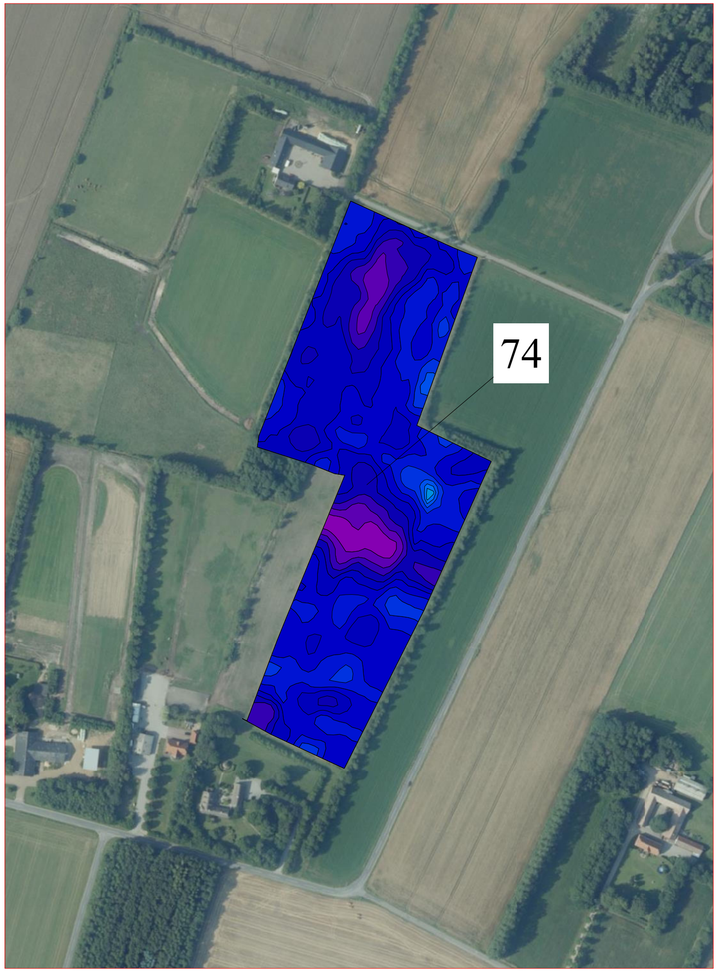


10 stk/m2	
0,0-10,0	17,5%
10,0->>>	82,5%

SEGES	2020
Monocot weeds	Dato: 21-01-21 Tid: 11-53-30
Processed in Næsgaard Markkort ADVICER	



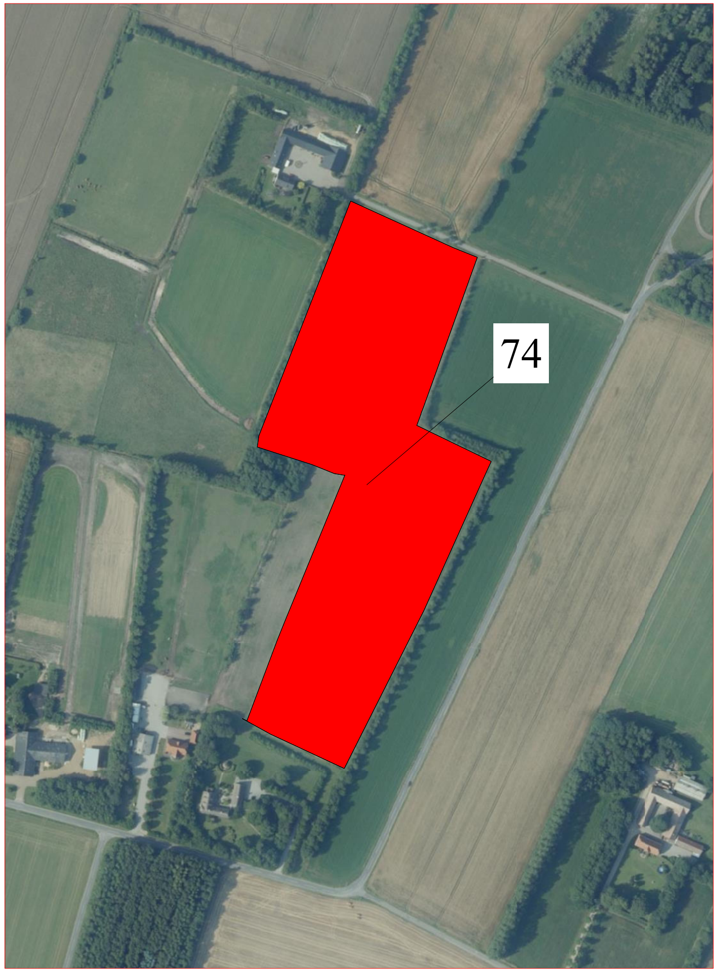




Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,1%
0,5-0,8	0,1%
0,8-1,2	0,2%
1,2-1,9	0,5%
1,9-2,8	1,5%
2,8-4,3	4,4%
4,3-6,6	8,0%
6,6-10,0	9,7%
10,0-15,2	8,4%
15,2-23,1	11,7%
23,1-35,1	21,0%
35,1-53,4	18,6%
53,4-81,1	8,6%
81,1-123,3	3,9%
123,3-187,4	1,9%
187,4-284,8	0,8%
284,8-432,9	0,4%
432,9-657,9	0,2%
657,9-1000,0	0,0%
1000,0->>>	0,0%

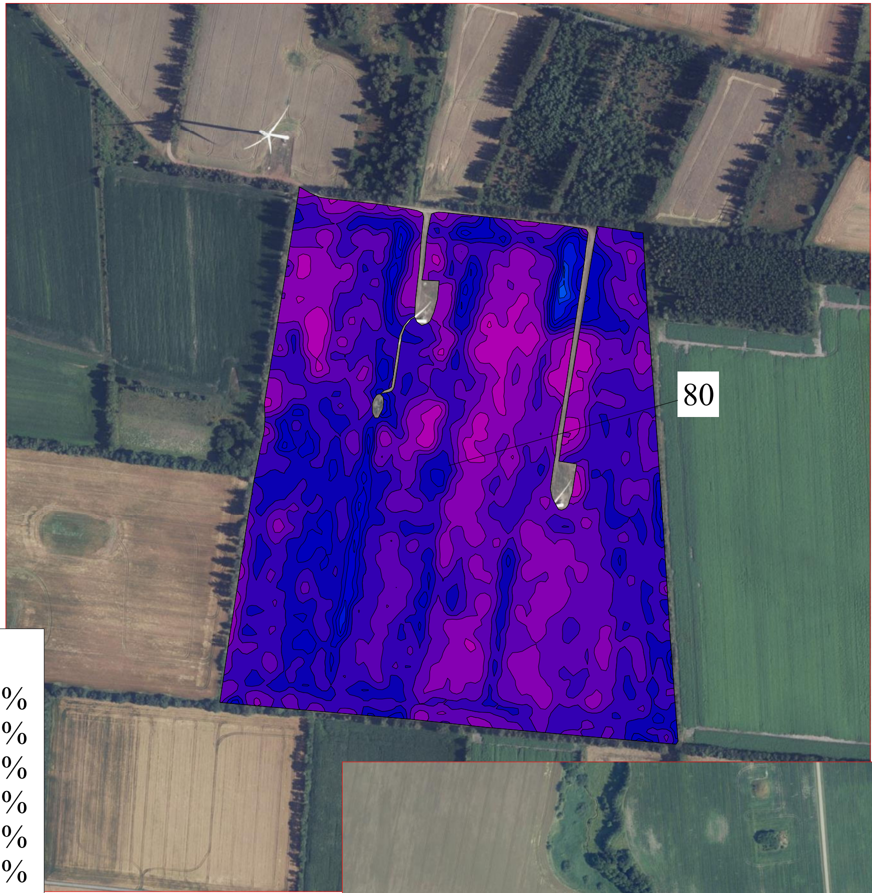
SEGES	**2020**
Monocot weeds	Dato: 21-01-21 Tid: 11-45-21
Processed in Næsgaard Markkort ADVICER	

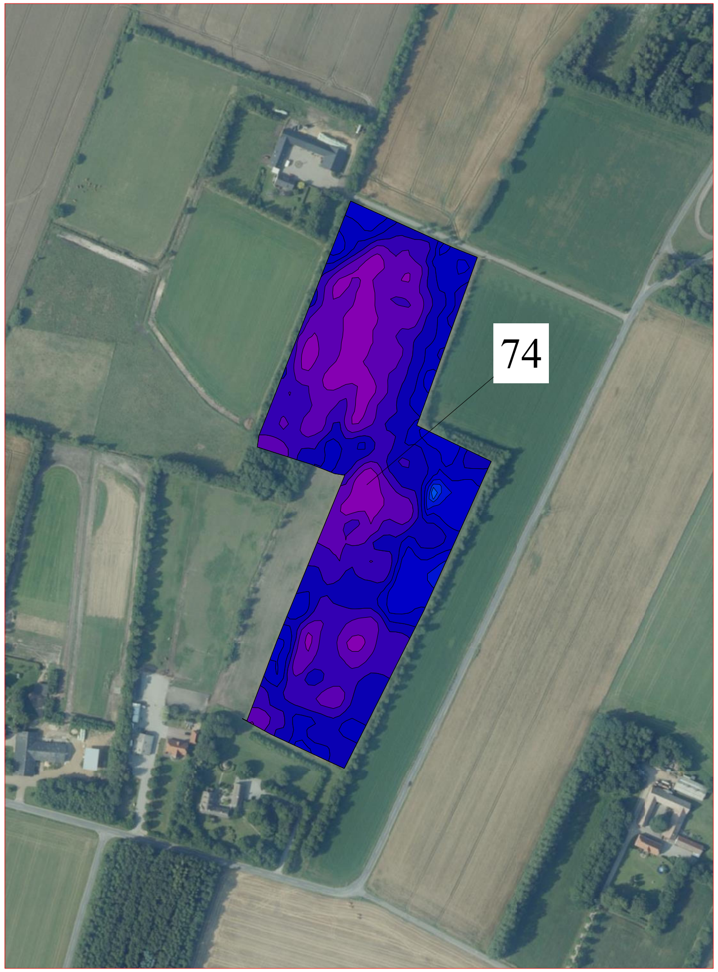


SEGES	2020
Dicot weeds	Dato: 21-01-21 Tid: 11-56-14
Processed in Næsgaard Markkort ADVICER	

1 stk/m2

(green)	0,0-1,0	0,0%
(red)	1,0->>>	100,0%

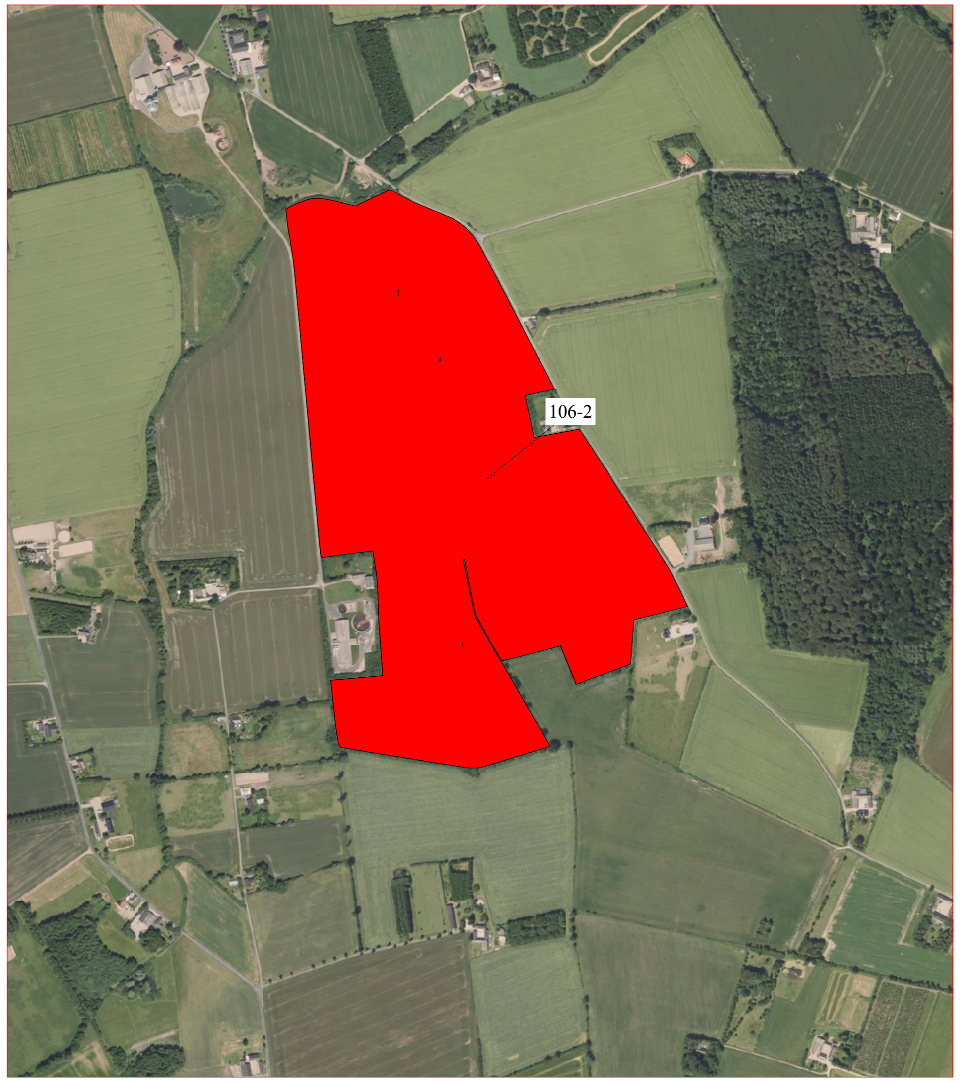


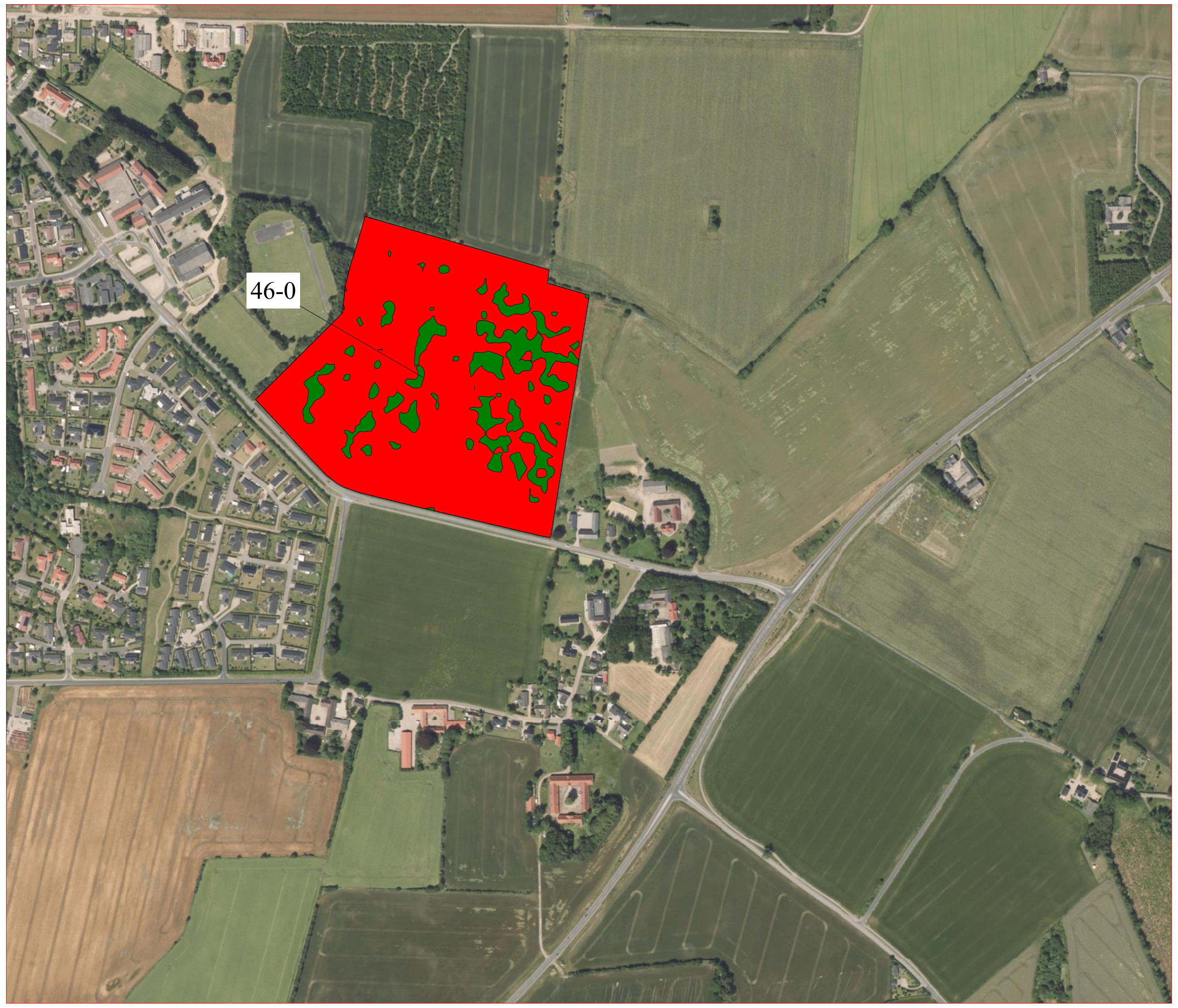


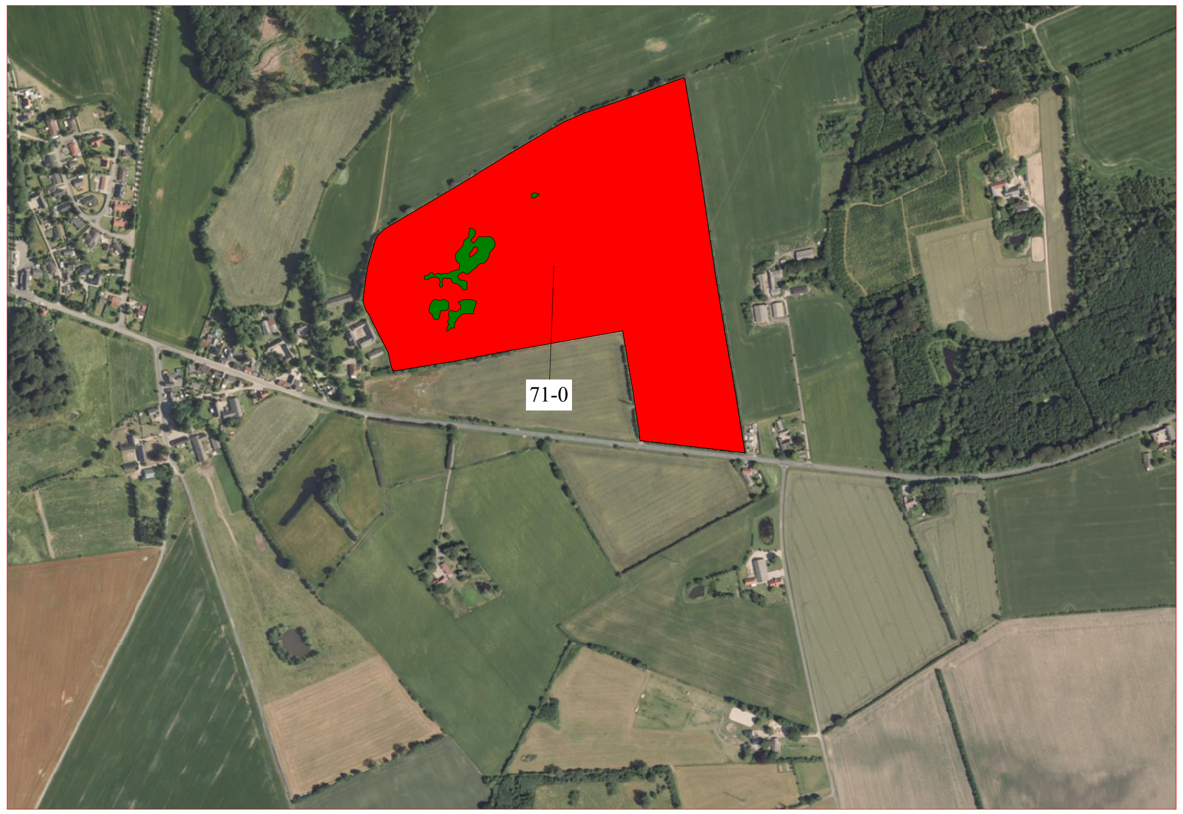
Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,0%
0,8-1,2	0,0%
1,2-1,9	0,0%
1,9-2,8	0,0%
2,8-4,3	0,2%
4,3-6,6	0,4%
6,6-10,0	1,3%
10,0-15,2	4,4%
15,2-23,1	10,2%
23,1-35,1	10,4%
35,1-53,4	6,3%
53,4-81,1	3,3%
81,1-123,3	4,7%
123,3-187,4	10,5%
187,4-284,8	19,6%
284,8-432,9	17,0%
432,9-657,9	9,8%
657,9-1000,0	1,9%
1000,0->>>	0,0%

SEGES	**2020**
Dicot weeds	Dato: 21-01-21 Tid: 11-54-54
Processed in Næsgaard Markkort ADVICER	







1 stk. pr m2

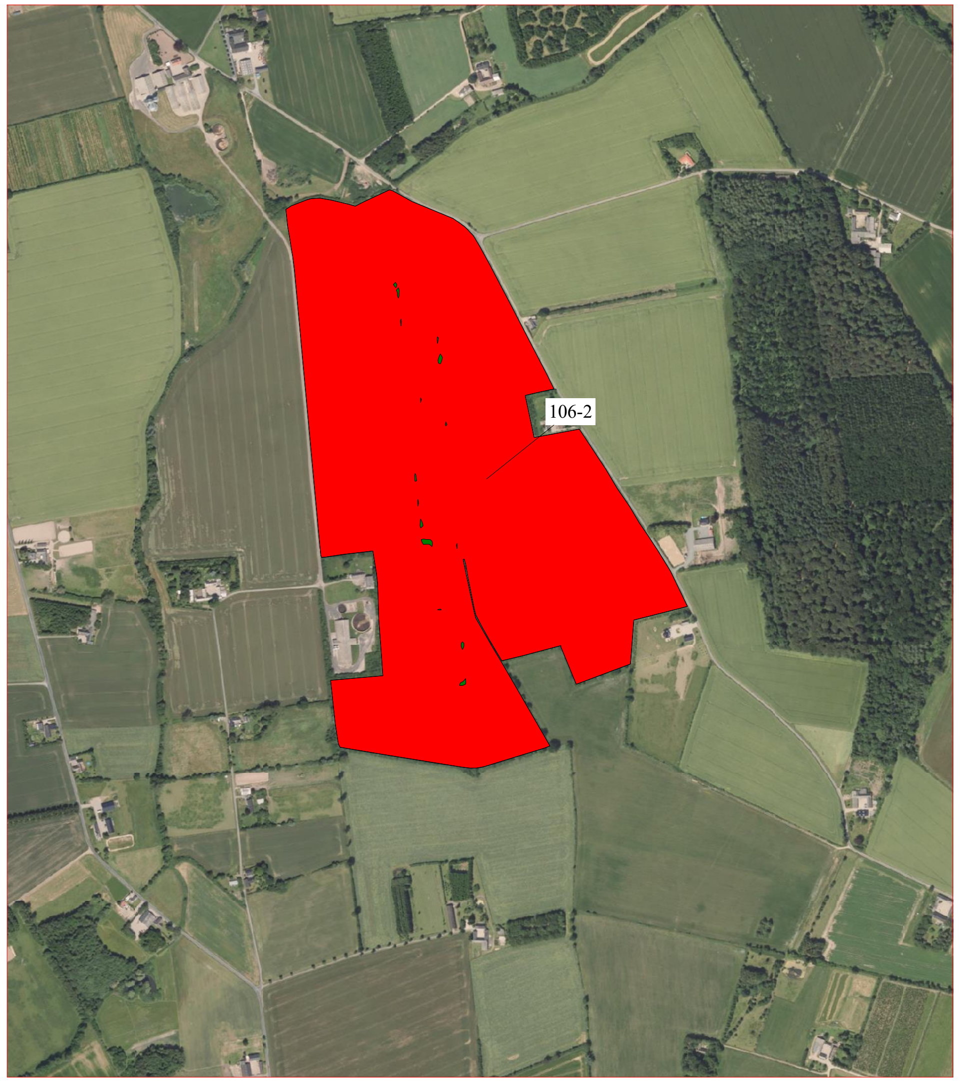
Green	0,0-1,0	3,1%
Red	1,0->>>	96,9%

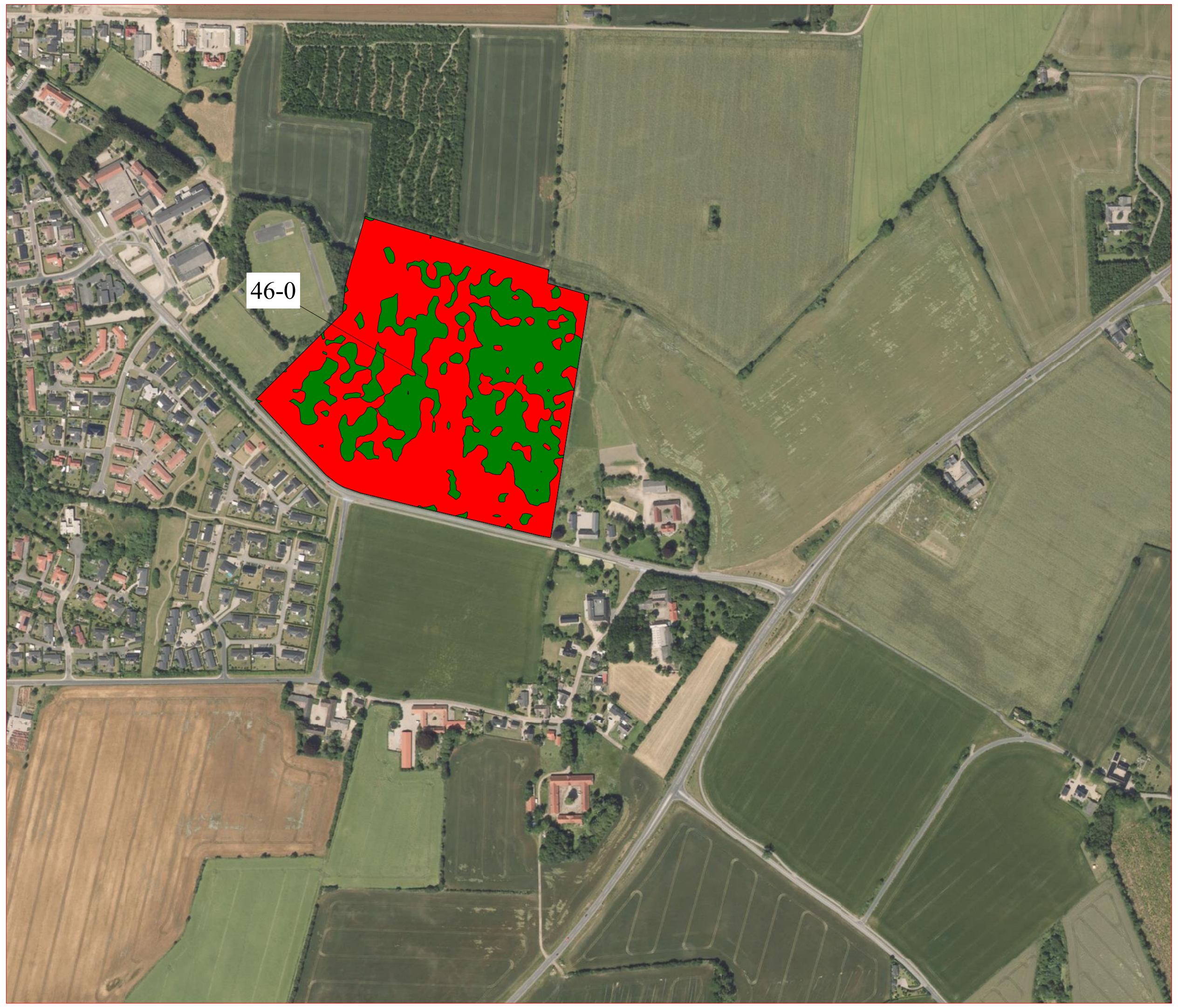
Store Langeskovgaard m.m. **2020**

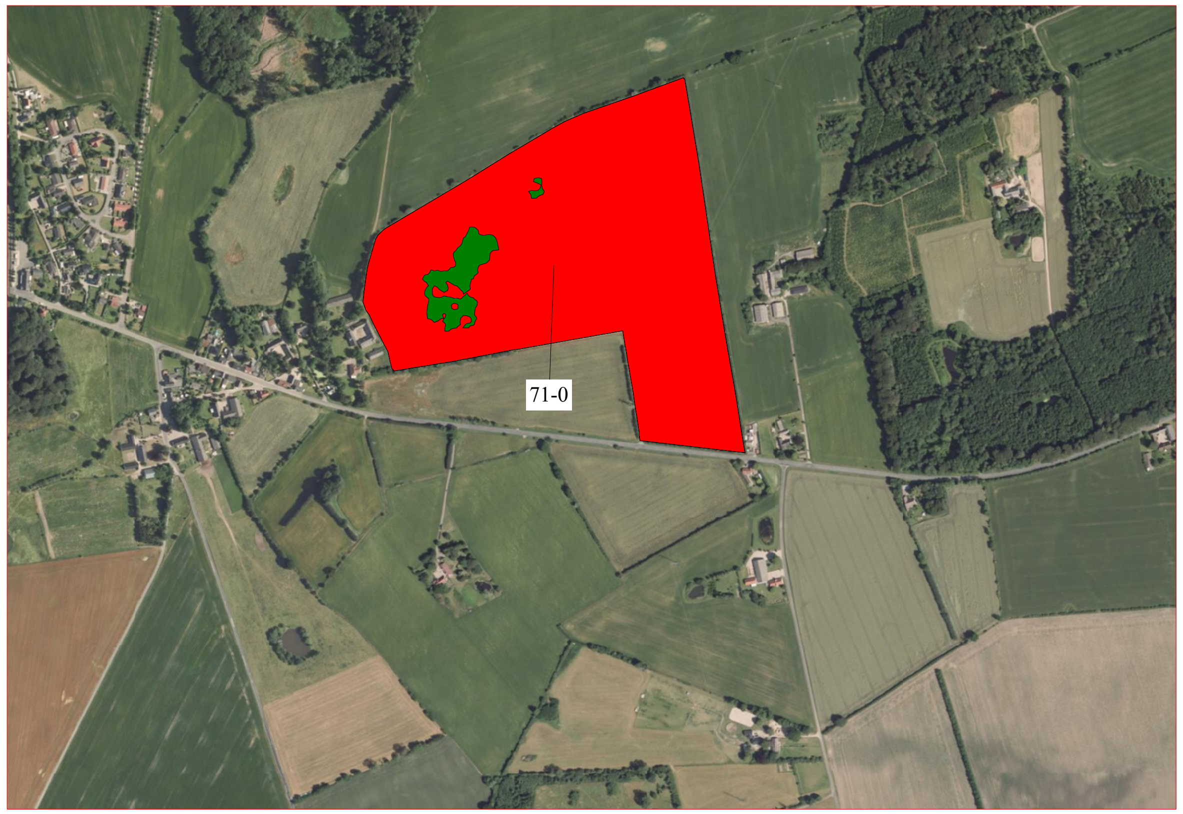
Monocot weeds

Dato: 02-01-21
Tid: 00-48-20

Processed in Næsgaard Markkort ADVICER







Store Langeskovgaard m.m. **2020**

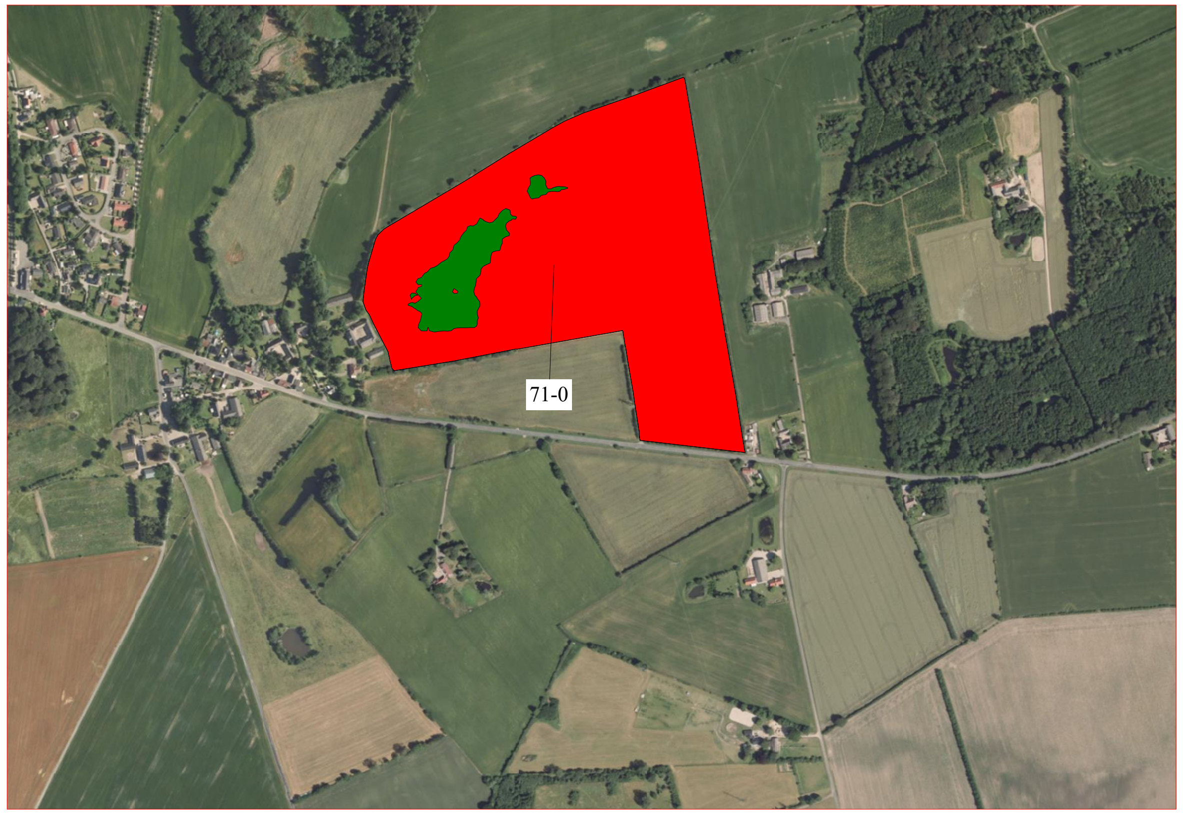
Monocot weeds

Dato: 02-01-21
Tid: 00-52-20

Proscessed in Næsgaard Markkort ADVICER

2 stk. pr m2

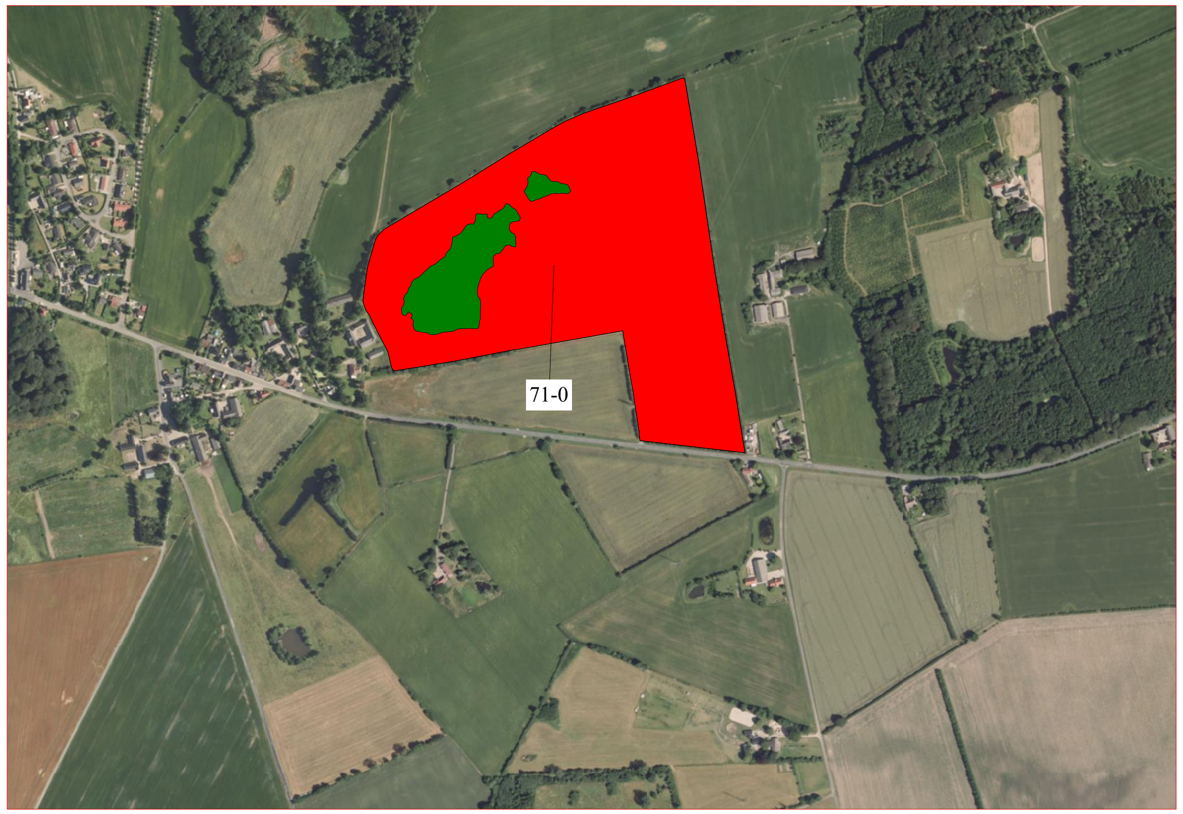
(green)	0,0-2,0	7,6%
(red)	2,0->>>	92,4%



Store Langeskovgaard m.m.	2020
Monocot weeds	Dato: 02-01-21 Tid: 00-57-08
Proscessed in Næsgaard Markkort ADVICER	

5 stk. pr m2

(green)	0,0-5,0	17,8%
(red)	5,0->>>	82,2%



10 stk. pr m2

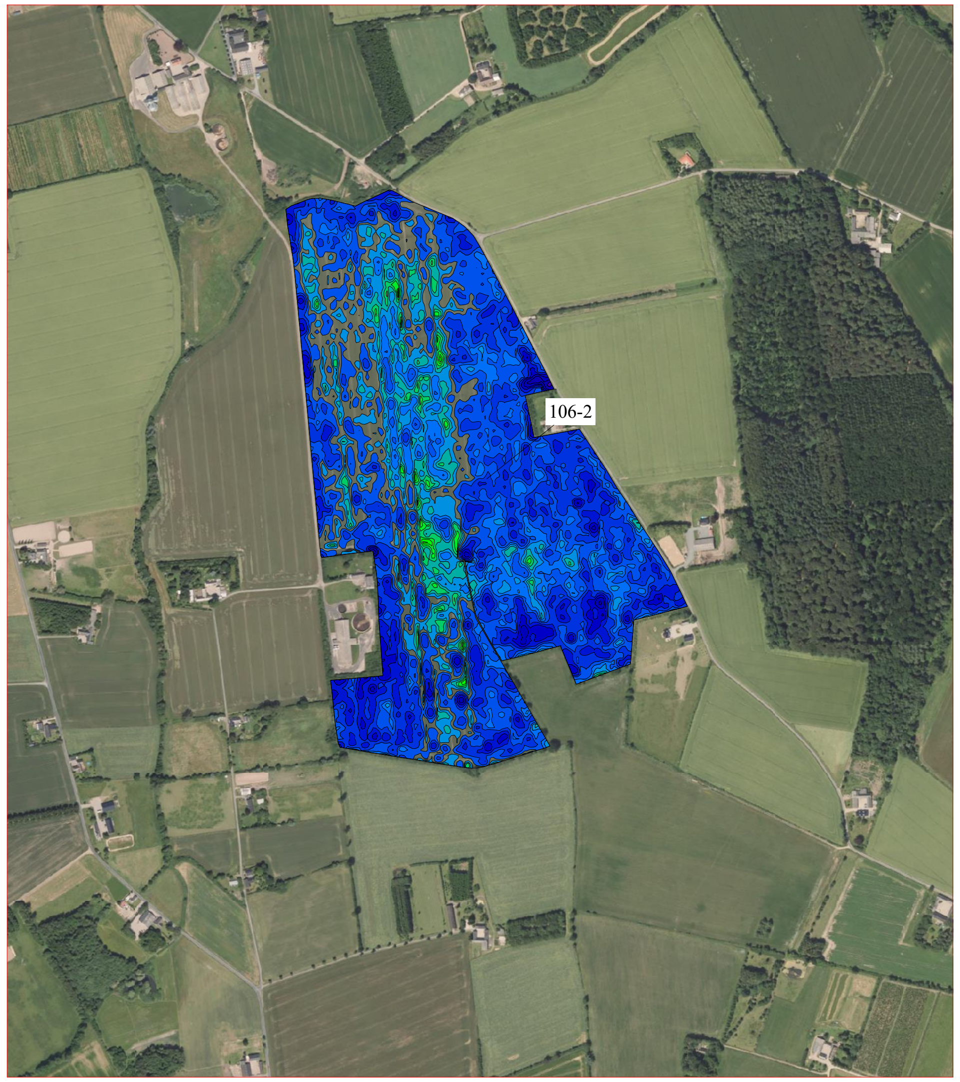
Green	0,0-10,0	36,8%
Red	10,0->>>	63,2%

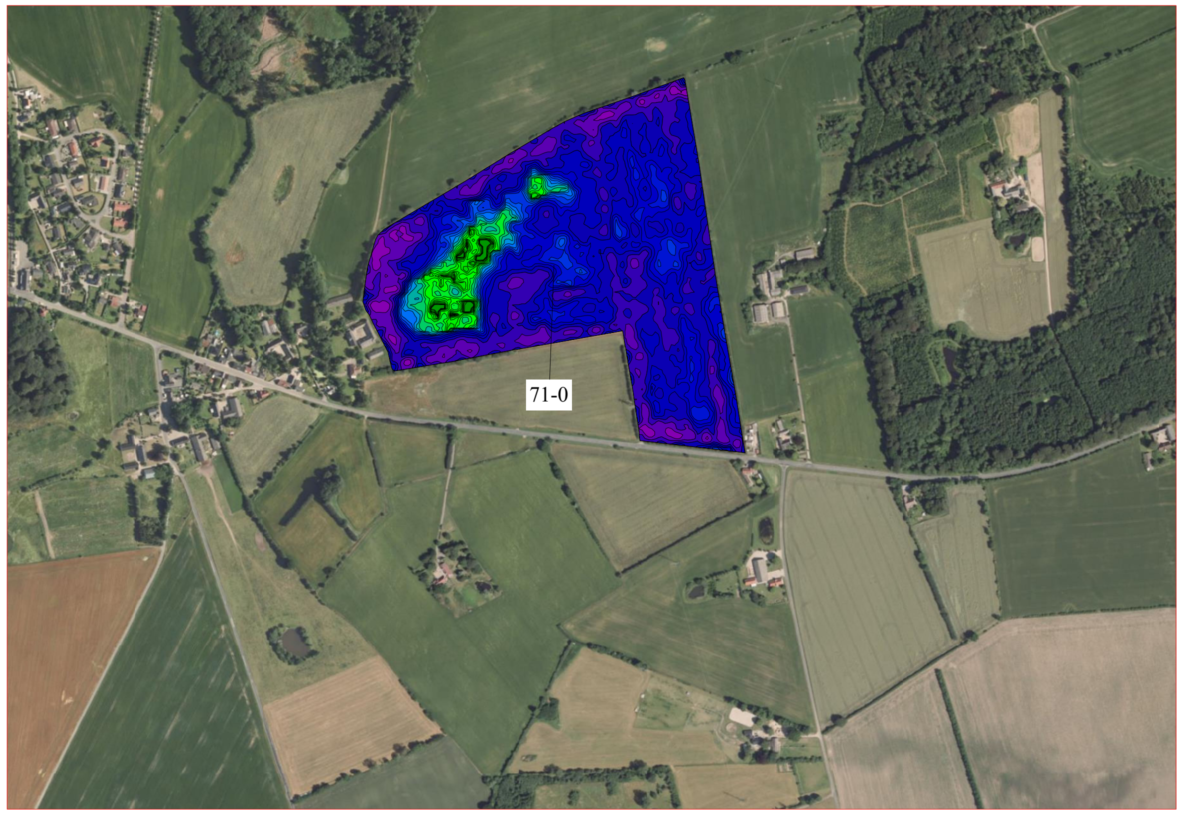
Store Langeskovgaard m.m. 2020

Monocot weeds

Dato: 02-01-21
Tid: 01-41-01

Proscessed in Næsgaard Markkort ADVICER





Distribution

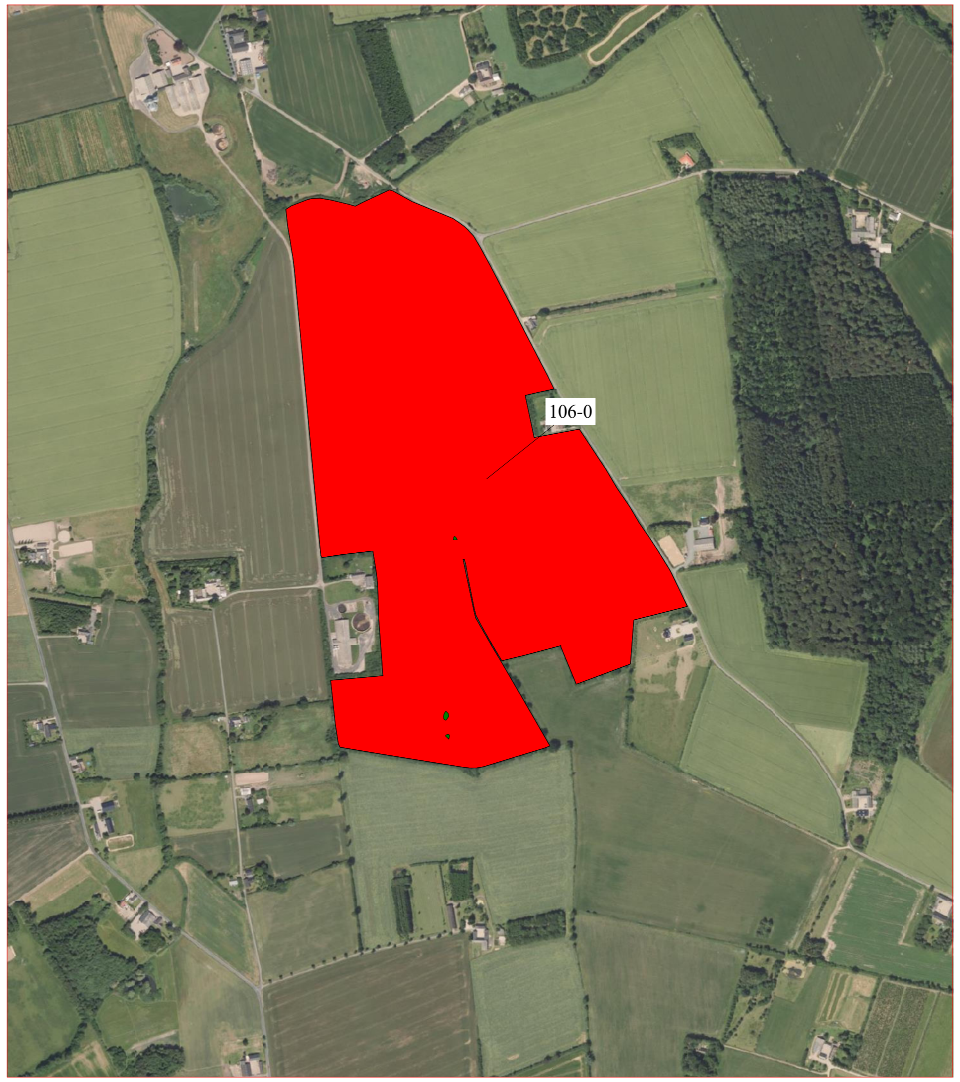
0,0-0,1	0,1%
0,1-0,1	0,0%
0,1-0,2	0,1%
0,2-0,2	0,1%
0,2-0,4	0,2%
0,4-0,5	0,5%
0,5-0,8	1,1%
0,8-1,2	1,9%
1,2-1,9	2,9%
1,9-2,8	4,2%
2,8-4,3	4,8%
4,3-6,6	5,9%
6,6-10,0	8,5%
10,0-15,2	13,0%
15,2-23,1	15,7%
23,1-35,1	12,8%
35,1-53,4	6,3%
53,4-81,1	3,7%
81,1-123,3	4,9%
123,3-187,4	6,0%
187,4-284,8	4,5%
284,8-432,9	2,3%
432,9-657,9	0,4%
657,9-1000,0	0,0%
1000,0->>>	0,0%

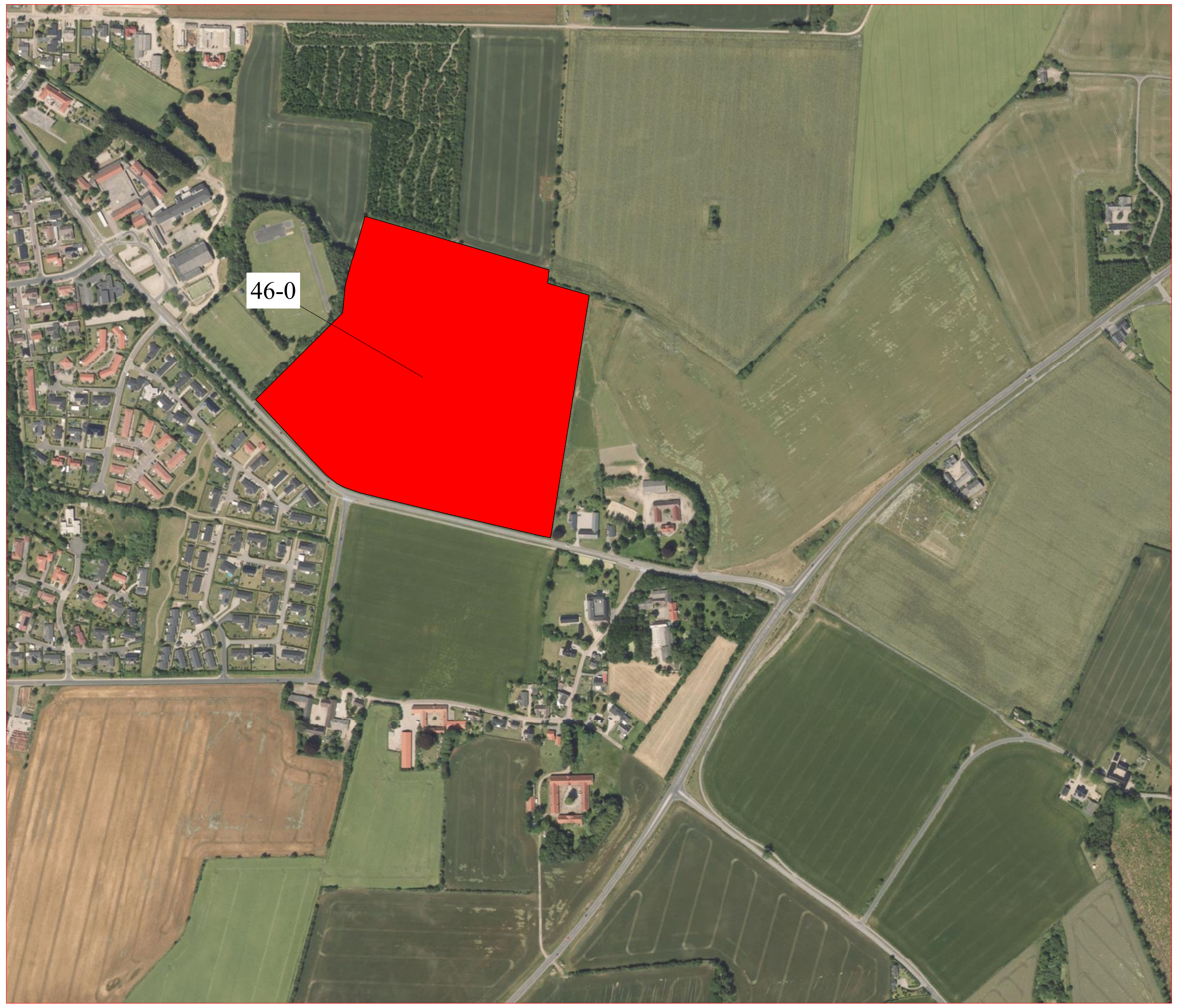
Store Langeskovgaard m.m. 2020

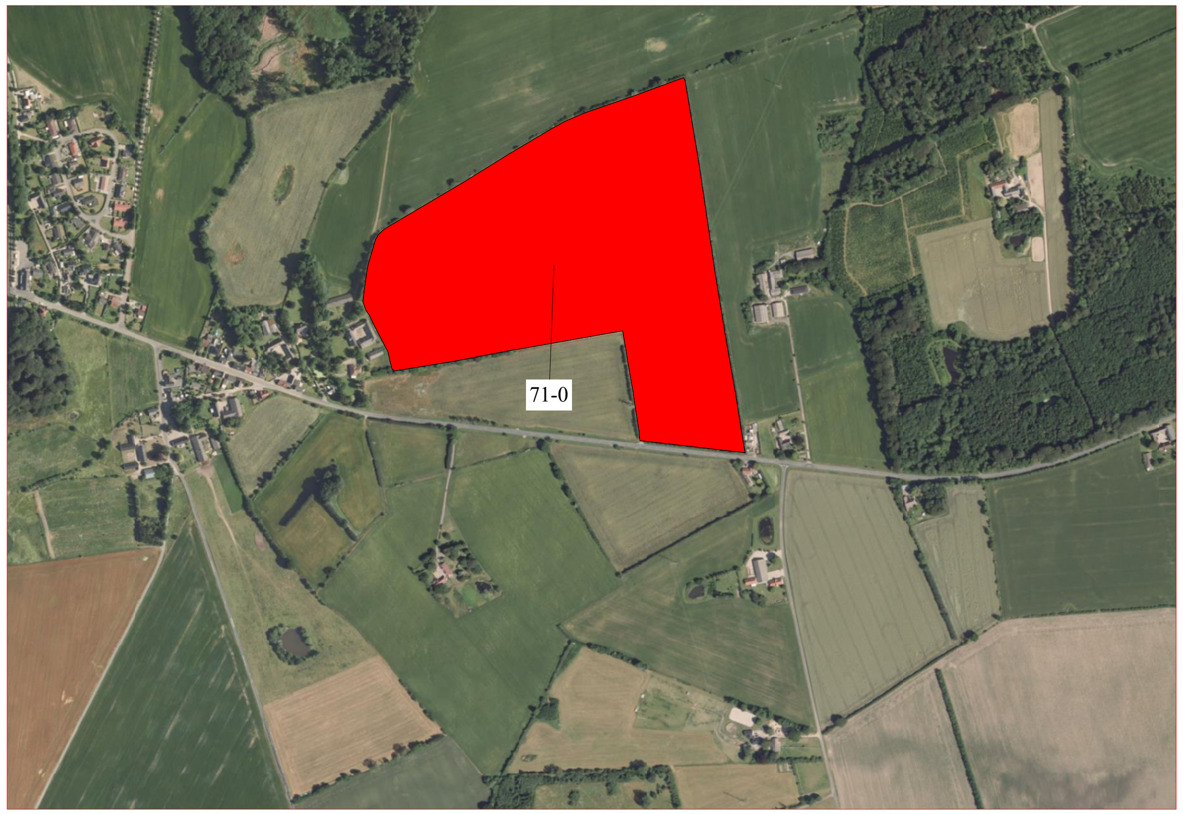
Monocot weeds

Dato: 02-01-21
Tid: 00-44-19

Proscessed in Næsgaard Markkort ADVICER







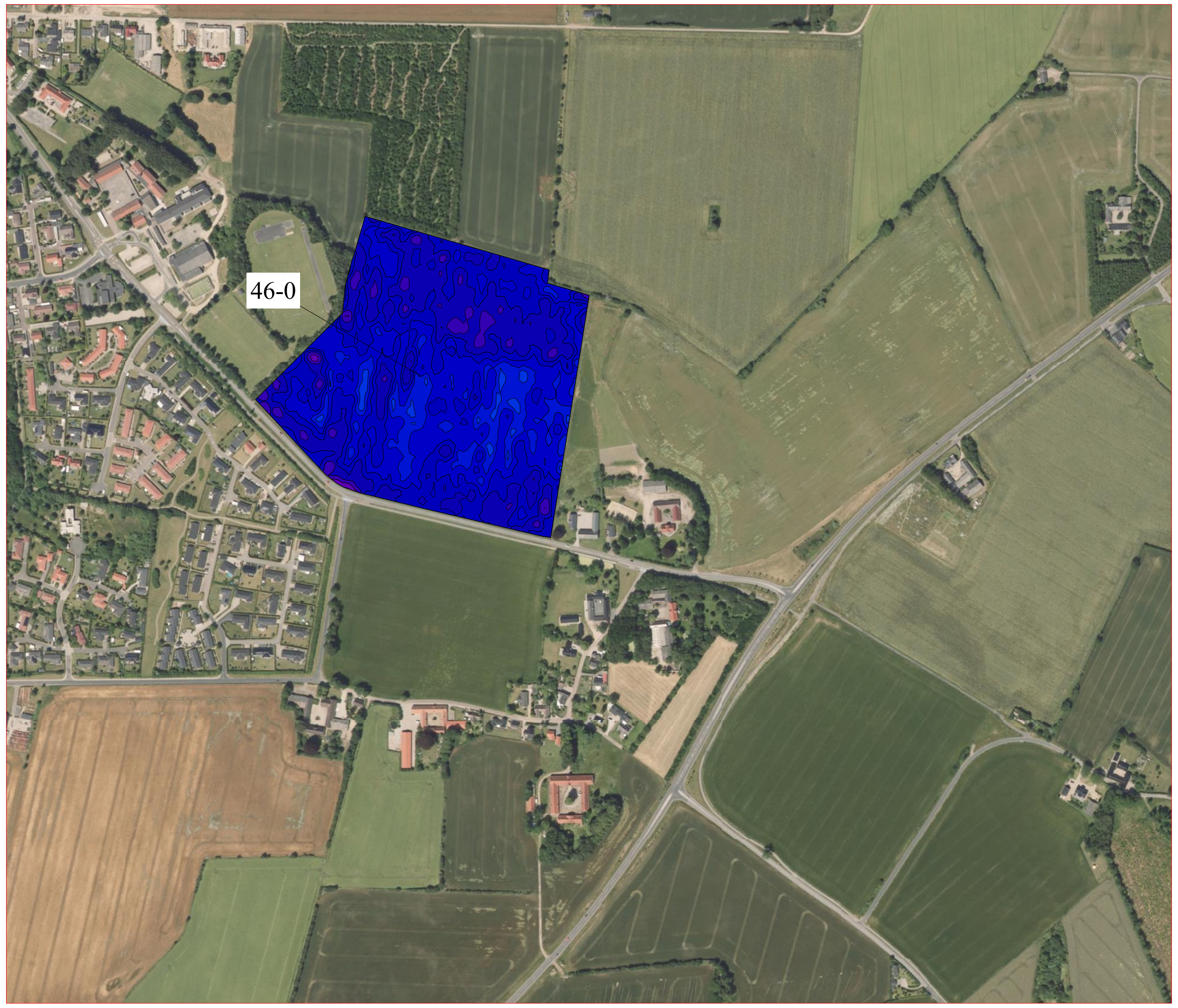
Store Langeskovgaard m.m. 2020

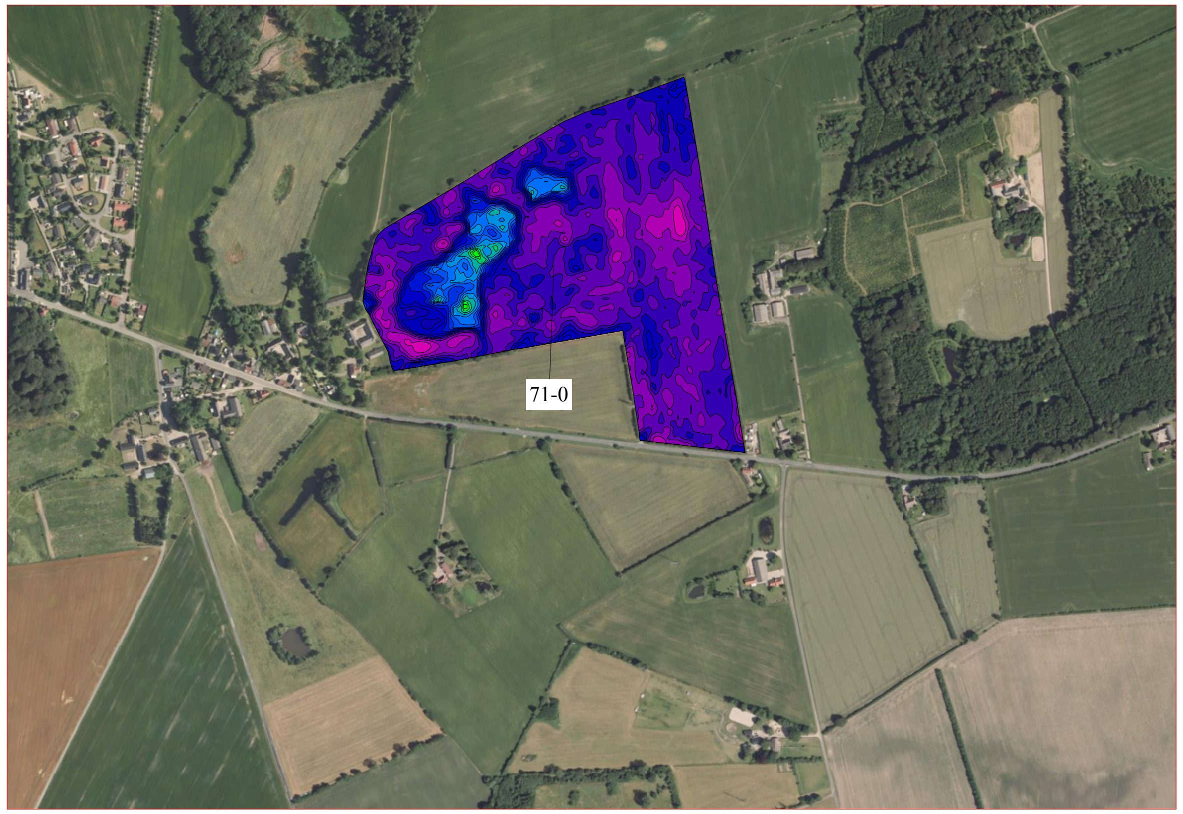
Dicot weeds

Dato: 02-01-21
Tid: 11-45-08

Proscessed in Næsgaard Markkort ADVICER

1 stk. pr m2	
0,0-1,0	0,0%
1,0->>>	100,0%





Distribution

0,0-0,1	0,0%
0,1-0,1	0,0%
0,1-0,2	0,0%
0,2-0,2	0,0%
0,2-0,4	0,0%
0,4-0,5	0,0%
0,5-0,8	0,0%
0,8-1,2	0,0%
1,2-1,9	0,1%
1,9-2,8	0,5%
2,8-4,3	1,6%
4,3-6,6	4,0%
6,6-10,0	7,9%
10,0-15,2	12,5%
15,2-23,1	12,9%
23,1-35,1	9,6%
35,1-53,4	8,1%
53,4-81,1	8,4%
81,1-123,3	7,1%
123,3-187,4	7,2%
187,4-284,8	7,4%
284,8-432,9	8,1%
432,9-657,9	3,7%
657,9-1000,0	0,8%
1000,0->>>	0,2%

Store Langeskovgaard m.m. **2020**

Dicot weeds

Dato: 02-01-21
Tid: 11-49-06

Proscessed in Næsgaard Markkort ADVICER

1 stk. pr m2

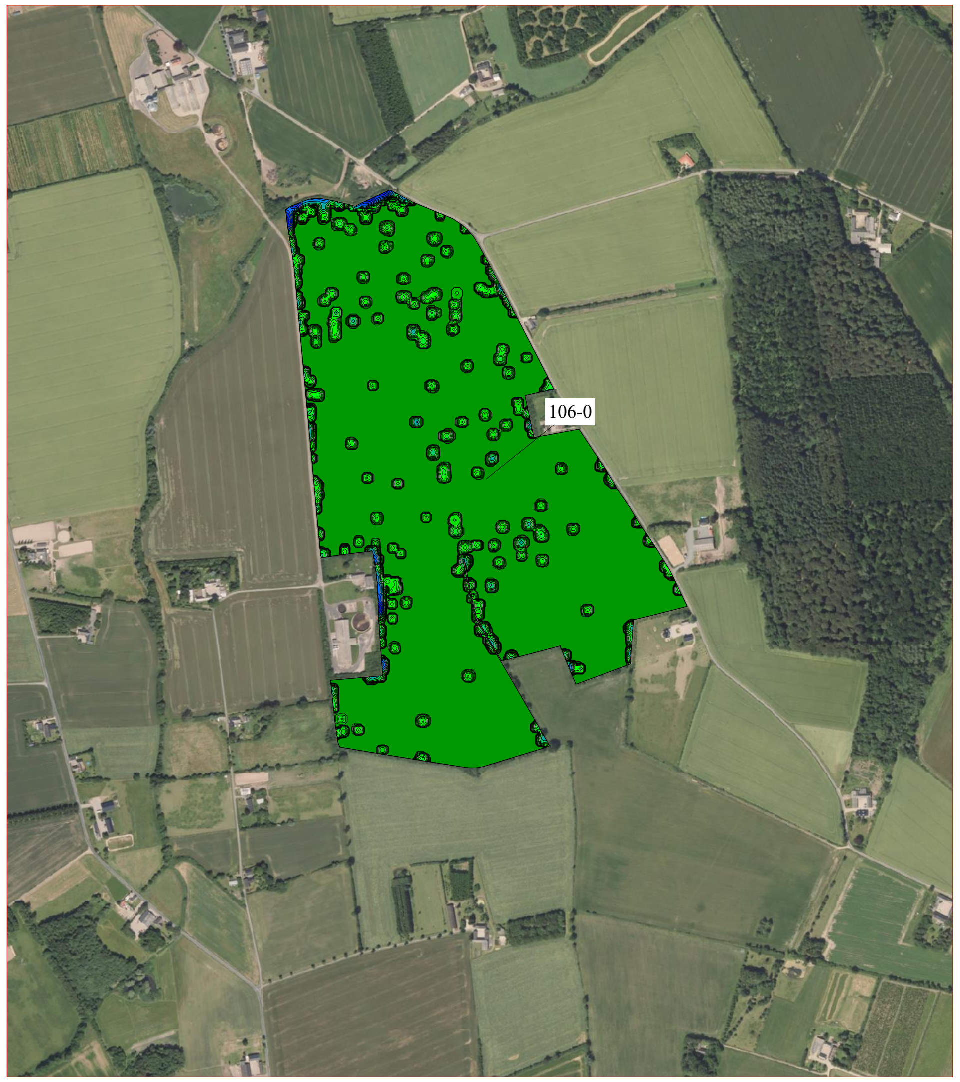
green	0,0-1,0	94,2%
red	1,0->>>	5,8%

Store Langeskovgaard m.m. **2020**

Thistles

Dato: 02-01-21
Tid: 11-59-43

Proscessed in Næsgaard Markkort ADVICER



Distribution	
0,0-0,1	82,4%
0,1-0,1	1,3%
0,1-0,2	1,4%
0,2-0,2	1,6%
0,2-0,4	1,7%
0,4-0,5	2,1%
0,5-0,8	2,5%
0,8-1,2	2,6%
1,2-1,9	1,8%
1,9-2,8	1,1%
2,8-4,3	0,7%
4,3-6,6	0,4%
6,6-10,0	0,2%
10,0-15,2	0,1%
15,2-23,1	0,1%
23,1-35,1	0,1%
35,1-53,4	0,0%
53,4-81,1	0,0%
81,1-123,3	0,0%
123,3-187,4	0,0%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Store Langeskovgaard m.m. **2020**

Thistles

Dato: 02-01-21
Tid: 12-02-27

Proscessed in Næsgaard Markkort ADVICER


108-0
18-0
116-0
129-0
105-0
112-0
Torben Thomsen
2020
Monocot weeds
Dato: 22-12-20
Tid: 14-49-17
Proscessed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 63,5%
1,0->>> 36,5%

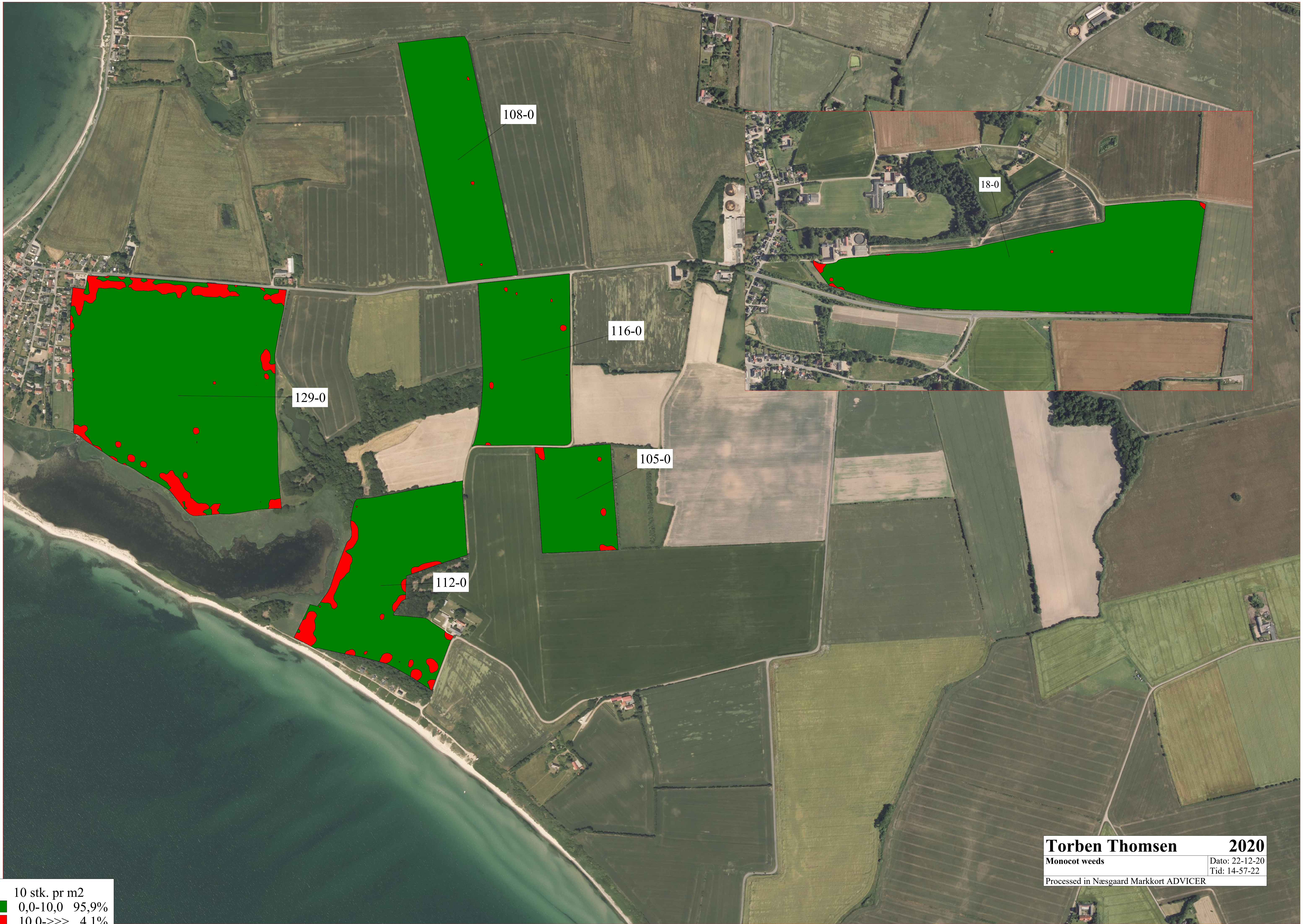

108-0
116-0
129-0
105-0
112-0
18-0
2 stk. pr m2
0,0-2,0 78,2%
2,0->>> 21,8%
Torben Thomsen
2020
Monocot weeds
Dato: 22-12-20
Tid: 14-52-01
Processed in Næsgaard Markkort ADVICER

Torben Thomsen **2020**

Monocot weeds

Dato: 22-12-20
Tid: 14-55-03

Proscessed in Næsgaard Markkort ADVICER

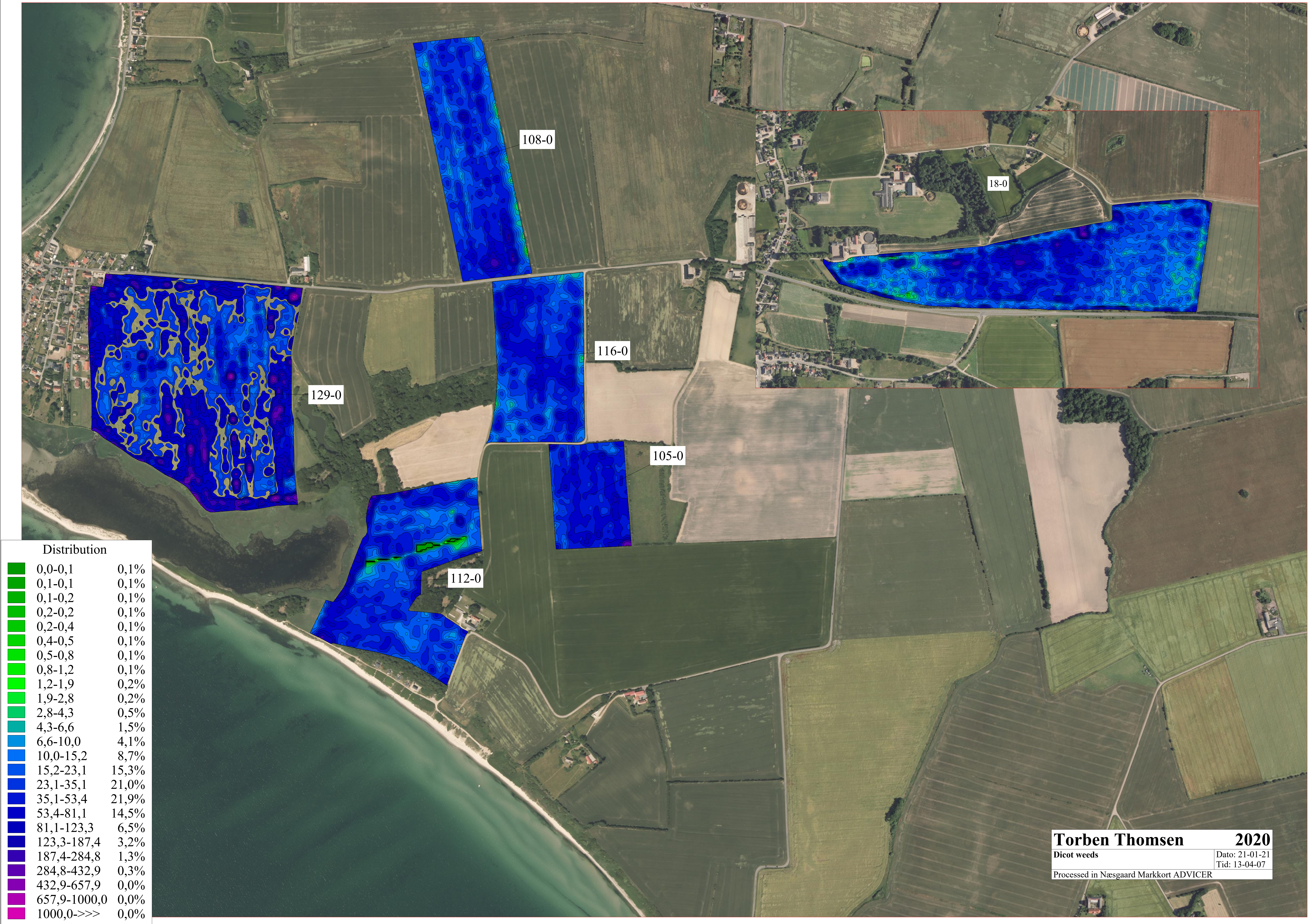


10 stk. pr m2
0,0-10,0 95,9%
10,0->>> 4,1%

Torben Thomsen **2020**
Monocot weeds
Dato: 22-12-20
Tid: 14-57-22
Processed in Næsgaard Markkort ADVICER


108-0
18-0
116-0
129-0
105-0
112-0
Distribution
0,0-0,1 23,5%
0,1-0,1 4,3%
0,1-0,2 4,7%
0,2-0,2 5,8%
0,2-0,4 5,4%
0,4-0,5 7,5%
0,5-0,8 8,8%
0,8-1,2 8,7%
1,2-1,9 8,9%
1,9-2,8 7,5%
2,8-4,3 5,5%
4,3-6,6 3,6%
6,6-10,0 2,1%
10,0-15,2 1,2%
15,2-23,1 0,9%
23,1-35,1 0,6%
35,1-53,4 0,4%
53,4-81,1 0,2%
81,1-123,3 0,1%
123,3-187,4 0,1%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Torben Thomsen 2020
Monocot weeds
Dato: 22-12-20
Tid: 15-03-59
Processed in Næsgaard Markkort ADVICER

108-0
116-0
129-0
105-0
112-0
18-0
1 stk/m2
0,0-1,0 0,1%
1,0->>> 99,9%
Torben Thomsen
2020
Dicot weeds
Dato: 21-01-21
Tid: 13-07-40
Processed in Næsgaard Markkort ADVICER


108-0
18-0
116-0
129-0
105-0
112-0
Distribution
0,0-0,1 0,1%
0,1-0,1 0,1%
0,1-0,2 0,1%
0,2-0,2 0,1%
0,2-0,4 0,1%
0,4-0,5 0,1%
0,5-0,8 0,1%
0,8-1,2 0,1%
1,2-1,9 0,2%
1,9-2,8 0,2%
2,8-4,3 0,5%
4,3-6,6 1,5%
6,6-10,0 4,1%
10,0-15,2 8,7%
15,2-23,1 15,3%
23,1-35,1 21,0%
35,1-53,4 21,9%
53,4-81,1 14,5%
81,1-123,3 6,5%
123,3-187,4 3,2%
187,4-284,8 1,3%
284,8-432,9 0,3%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Torben Thomsen 2020
Dicot weeds
Dato: 21-01-21
Tid: 13-04-07
Processed in Næsgaard Markkort ADVICER

Torben Thomsen **2020**

Thistles

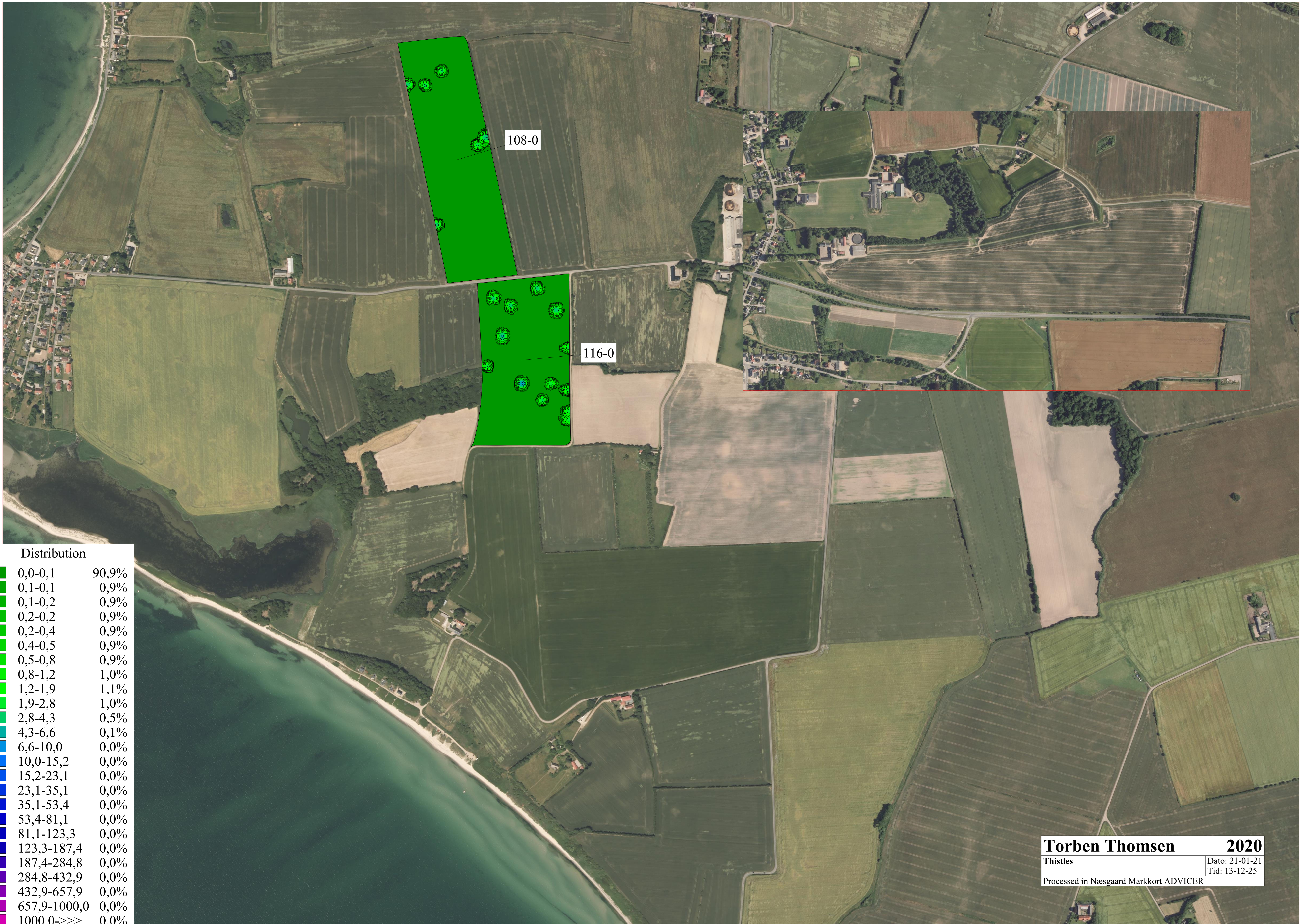
Dato: 01-01-21
Tid: 22-02-37

Processed in Næsgaard Markkort ADVICER

1 stk. pr m2

0,0-1,0 96,8%

1,0->>> 3,2%



Distribution

0,0-0,1	90,9%
0,1-0,1	0,9%
0,1-0,2	0,9%
0,2-0,2	0,9%
0,2-0,4	0,9%
0,4-0,5	0,9%
0,5-0,8	0,9%
0,8-1,2	1,0%
1,2-1,9	1,1%
1,9-2,8	1,0%
2,8-4,3	0,5%
4,3-6,6	0,1%
6,6-10,0	0,0%
10,0-15,2	0,0%
15,2-23,1	0,0%
23,1-35,1	0,0%
35,1-53,4	0,0%
53,4-81,1	0,0%
81,1-123,3	0,0%
123,3-187,4	0,0%
187,4-284,8	0,0%
284,8-432,9	0,0%
432,9-657,9	0,0%
657,9-1000,0	0,0%
1000,0->>>	0,0%

Torben Thomsen **2020**

Thistles

Dato: 21-01-21
Tid: 13-12-25

Processed in Næsgaard Markkort ADVICER

Ahle/Ørskov	**2020**
Monocot weeds	Dato: 21-01-21 Tid: 08-15-14
Processed in Næsgaard Markkort ADVICER	

1 stk/m2		
Green	0,0-1,0	6,4%
Red	1,0->>>	93,6%

Ahle/Ørskov	**2020**
Monocot weeds	Dato: 21-01-21 Tid: 08-18-33
Processed in Næsgaard Markkort ADVICER	

2 stk/m2		
(green)	0,0-2,0	13,1%
(red)	2,0->>>	86,9%

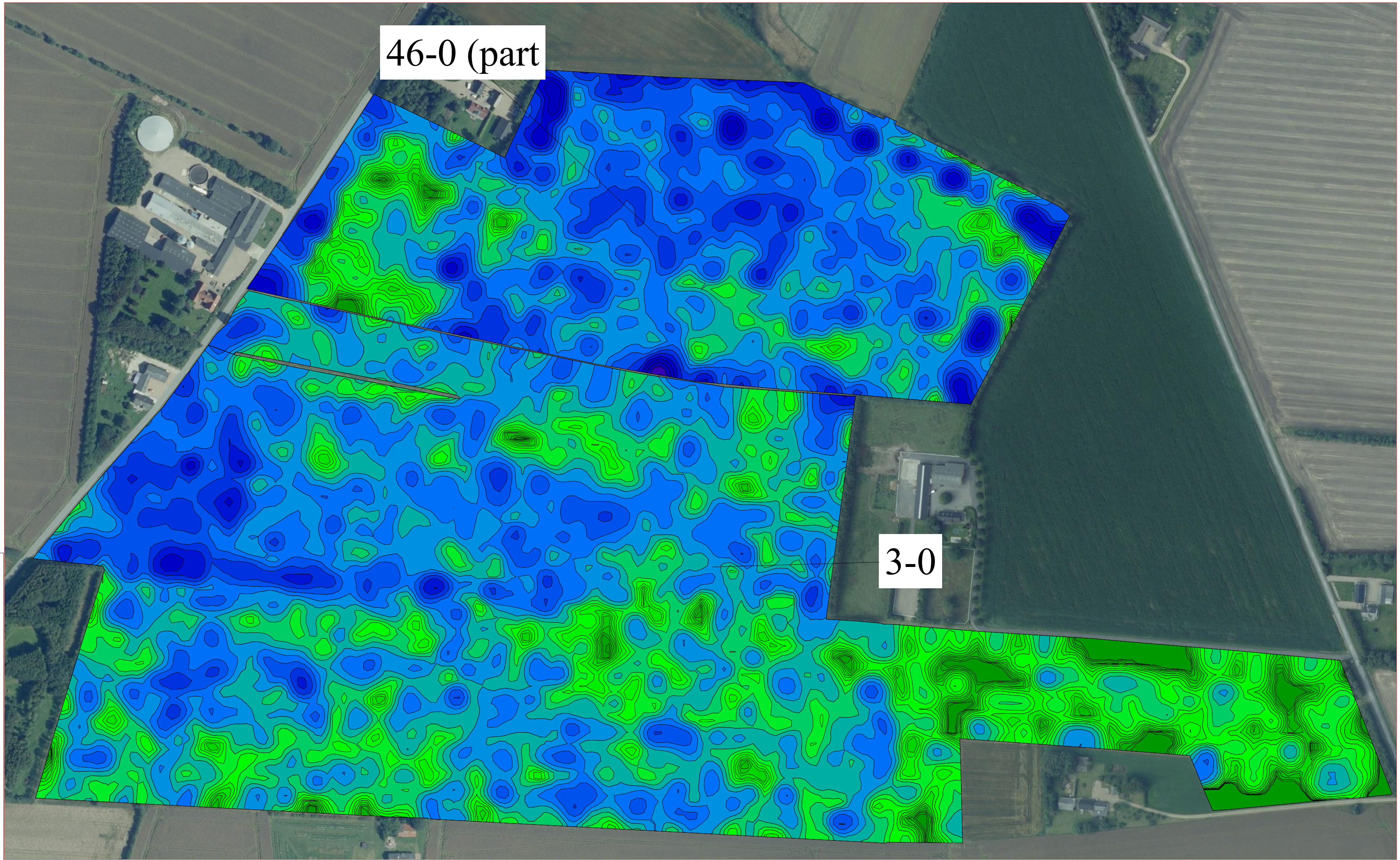
Ahle/Ørskov	**2020**
Monocot weeds	Dato: 21-01-21 Tid: 08-19-37
Processed in Næsgaard Markkort ADVICER	

5 stk/m2		
(green)	0,0-5,0	35,9%
(red)	5,0->>>	64,1%

Ahle/Ørskov	2020
Monocot weeds	Dato: 21-01-21 Tid: 08-21-05
Processed in Næsgaard Markkort ADVICER	

10 stk/m2

	0,0-10,0	66,1%
	10,0->>>	33,9%



Distribution

	0,0-0,1	1,2%
	0,1-0,1	0,2%
	0,1-0,2	0,3%
	0,2-0,2	0,5%
	0,2-0,4	0,6%
	0,4-0,5	1,0%
	0,5-0,8	1,5%
	0,8-1,2	2,6%
	1,2-1,9	4,3%
	1,9-2,8	7,5%
	2,8-4,3	11,3%
	4,3-6,6	15,9%
	6,6-10,0	19,2%
	10,0-15,2	15,9%
	15,2-23,1	10,5%
	23,1-35,1	5,0%
	35,1-53,4	1,6%
	53,4-81,1	0,7%
	81,1-123,3	0,2%
	123,3-187,4	0,0%
	187,4-284,8	0,0%
	284,8-432,9	0,0%
	432,9-657,9	0,0%
	657,9-1000,0	0,0%
	1000,0->>>	0,0%

Ahle/Ørskov	2020
Monocot weeds	Dato: 21-01-21 Tid: 08-13-32
Processed in Næsgaard Markkort ADVICER	

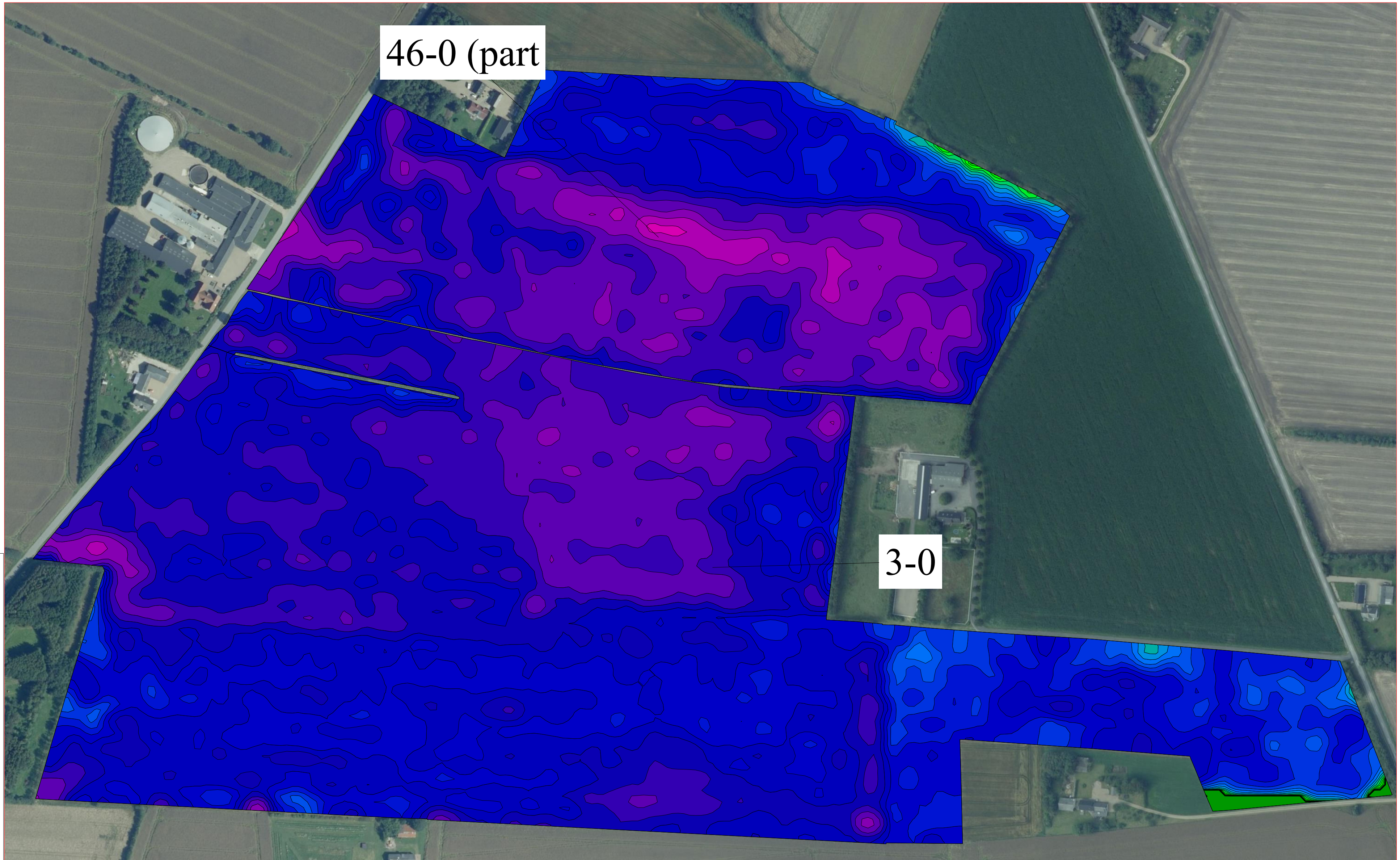
Ahle/Ørskov **2020**

Dicot weeds

Dato: 21-01-21
Tid: 08-24-19

Processed in Næsgaard Markkort ADVICER

1 stk/m2	
0,0-1,0	0,2%
1,0->>>	99,8%



Distribution

	0,0-0,1	0,2%
	0,1-0,1	0,0%
	0,1-0,2	0,0%
	0,2-0,2	0,0%
	0,2-0,4	0,0%
	0,4-0,5	0,0%
	0,5-0,8	0,0%
	0,8-1,2	0,0%
	1,2-1,9	0,0%
	1,9-2,8	0,1%
	2,8-4,3	0,1%
	4,3-6,6	0,1%
	6,6-10,0	0,2%
	10,0-15,2	0,3%
	15,2-23,1	1,0%
	23,1-35,1	3,0%
	35,1-53,4	5,7%
	53,4-81,1	14,3%
	81,1-123,3	18,9%
	123,3-187,4	18,3%
	187,4-284,8	15,6%
	284,8-432,9	16,9%
	432,9-657,9	4,5%
	657,9-1000,0	0,7%
	1000,0->>>	0,0%

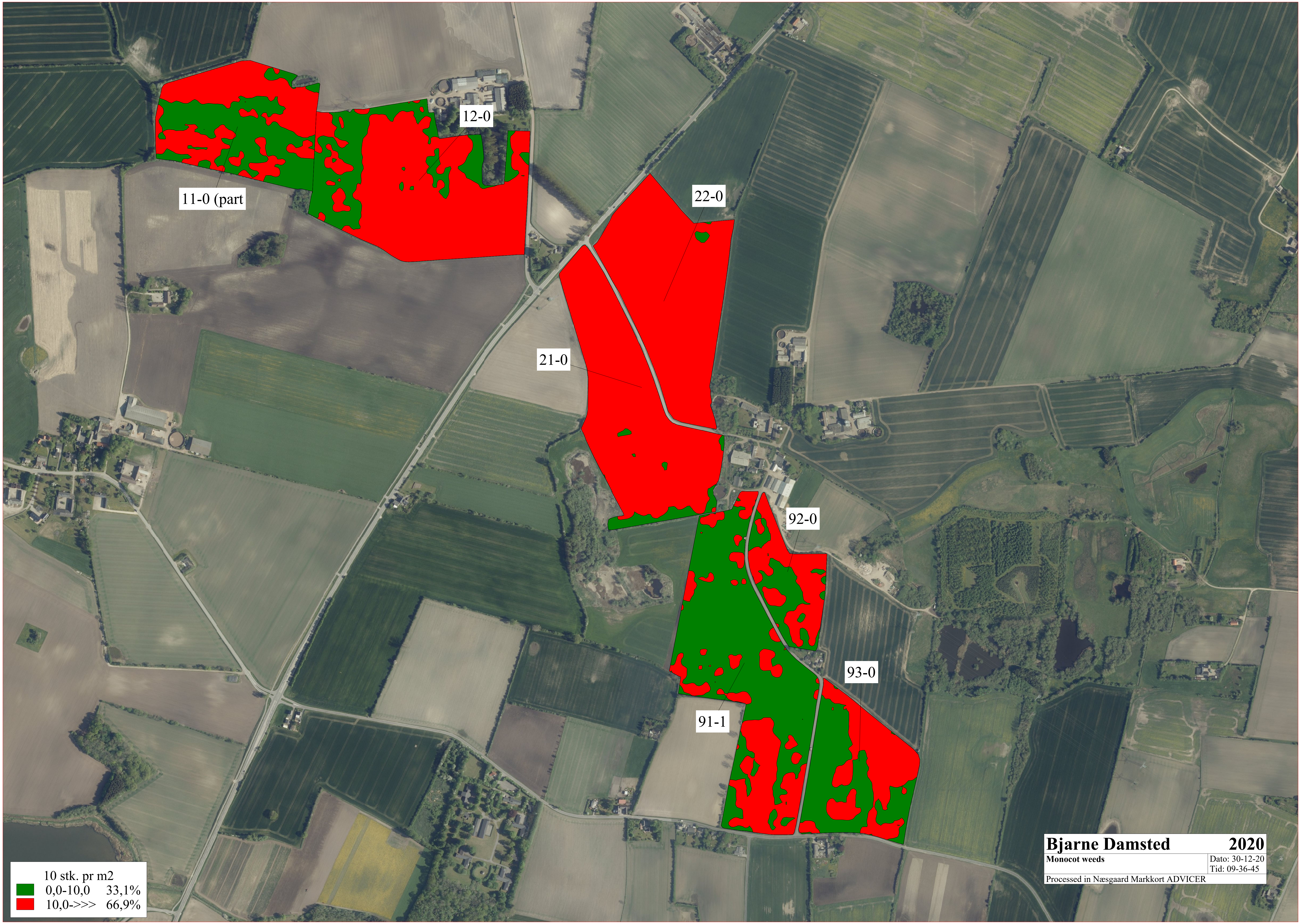
Ahle/Ørskov	2020
Dicot weeds	Dato: 21-01-21 Tid: 08-22-59
Processed in Næsgaard Markkort ADVICER	

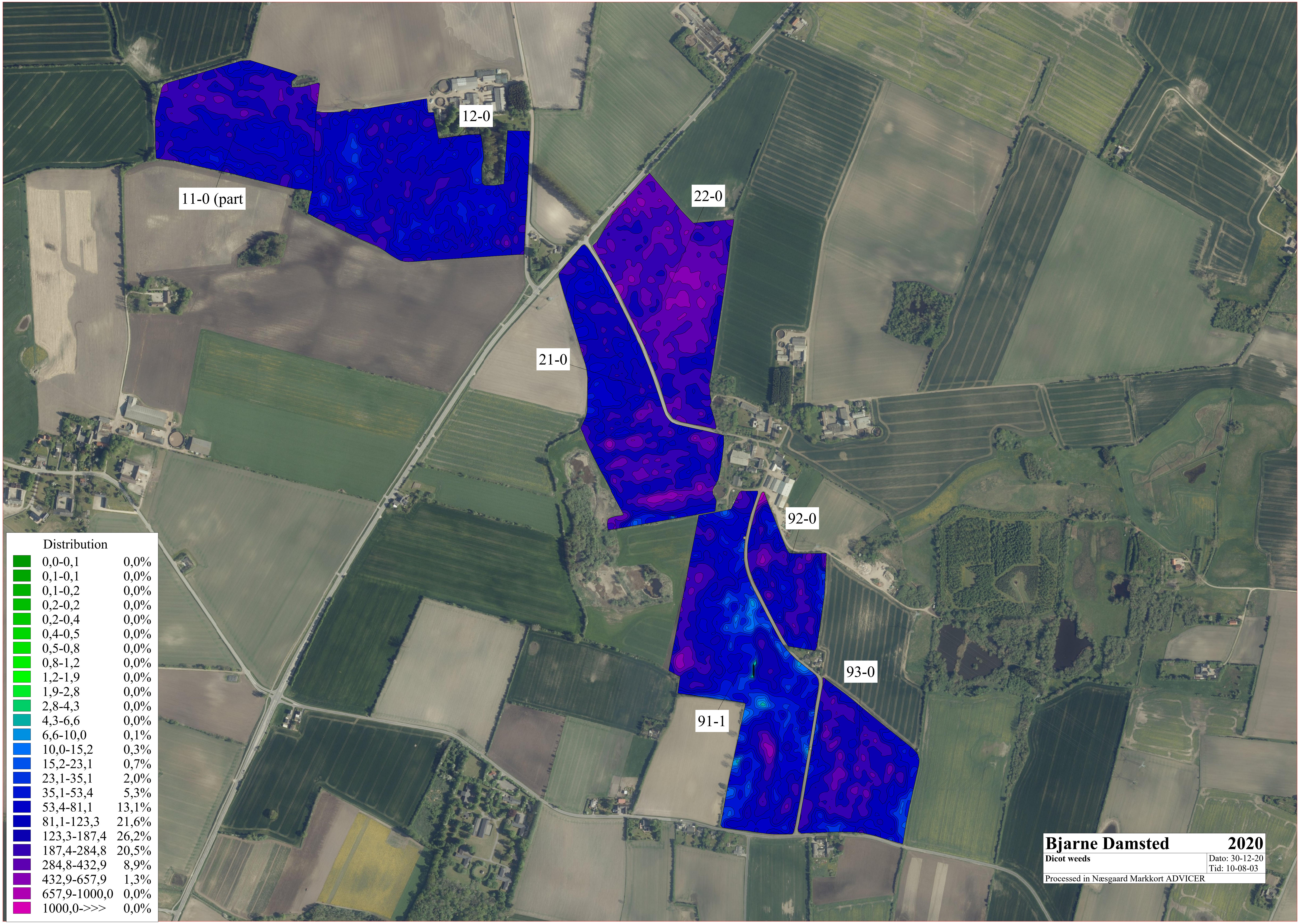

12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
Distribution
0,0-0,1 0,5%
0,1-0,1 0,1%
0,1-0,2 0,2%
0,2-0,2 0,3%
0,2-0,4 0,4%
0,4-0,5 0,6%
0,5-0,8 1,1%
0,8-1,2 1,8%
1,2-1,9 2,9%
1,9-2,8 4,1%
2,8-4,3 5,1%
4,3-6,6 7,0%
6,6-10,0 8,5%
10,0-15,2 8,5%
15,2-23,1 7,8%
23,1-35,1 7,5%
35,1-53,4 8,9%
53,4-81,1 8,3%
81,1-123,3 8,5%
123,3-187,4 8,0%
187,4-284,8 6,0%
284,8-432,9 3,1%
432,9-657,9 0,8%
657,9-1000,0 0,1%
1000,0->>> 0,0%
Bjarne Damsted 2020
Monocot weeds
Dato: 30-12-20
Tid: 09-22-59
Processed in Næsgaard Markkort ADVICER

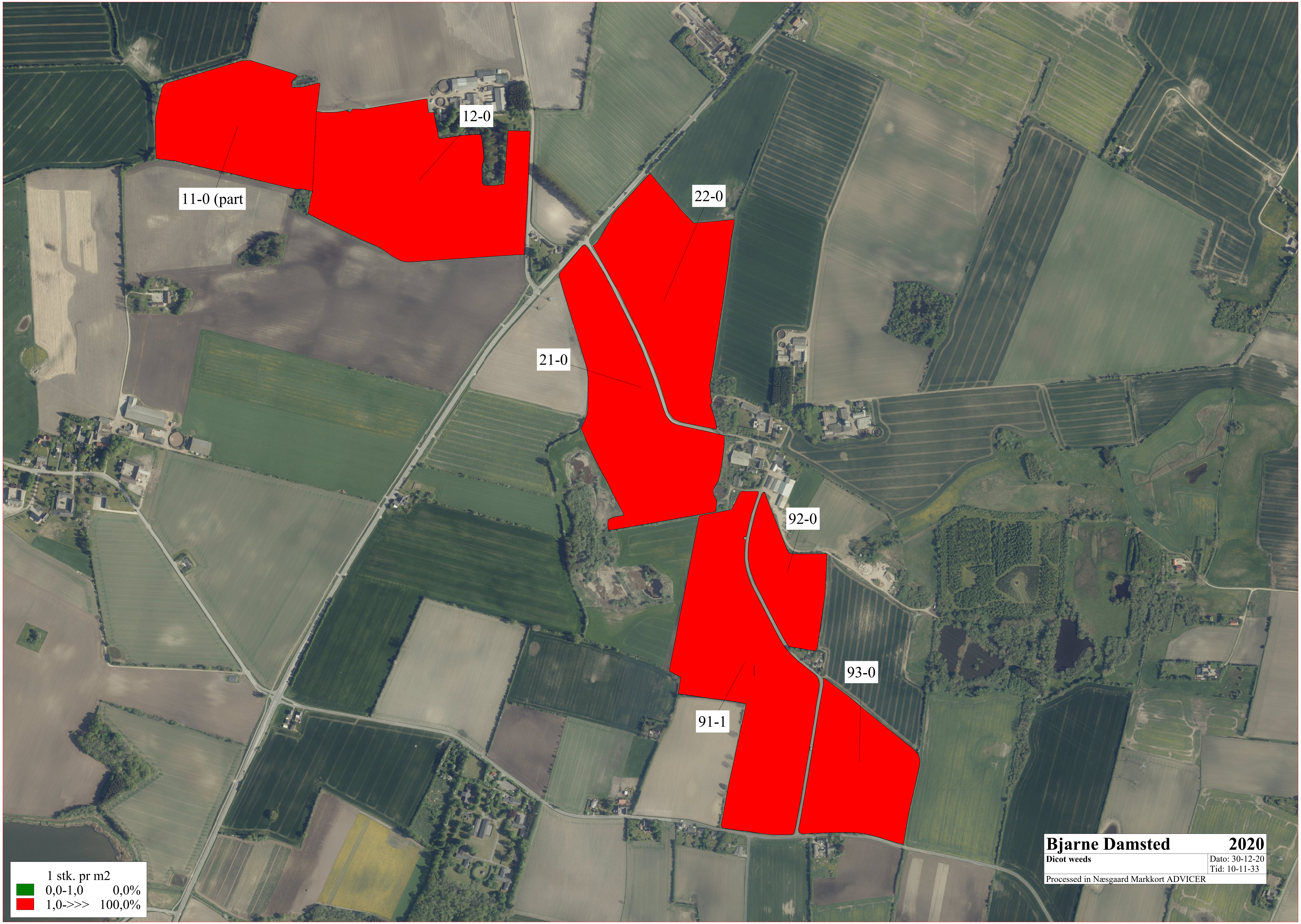
12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
Bjarne Damsted
2020
Monocot weeds
Dato: 30-12-20
Tid: 09-26-45
Processed in Næsgaard Markkort ADVICER
1 stk. pr m2
0,0-1,0 4,2%
1,0->>> 95,8%

12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
2 stk. pr m2
0,0-2,0 8,6%
2,0->>> 91,4%
Bjarne Damsted 2020
Monocot weeds
Dato: 30-12-20
Tid: 09-30-15
Processed in Næsgaard Markkort ADVICER

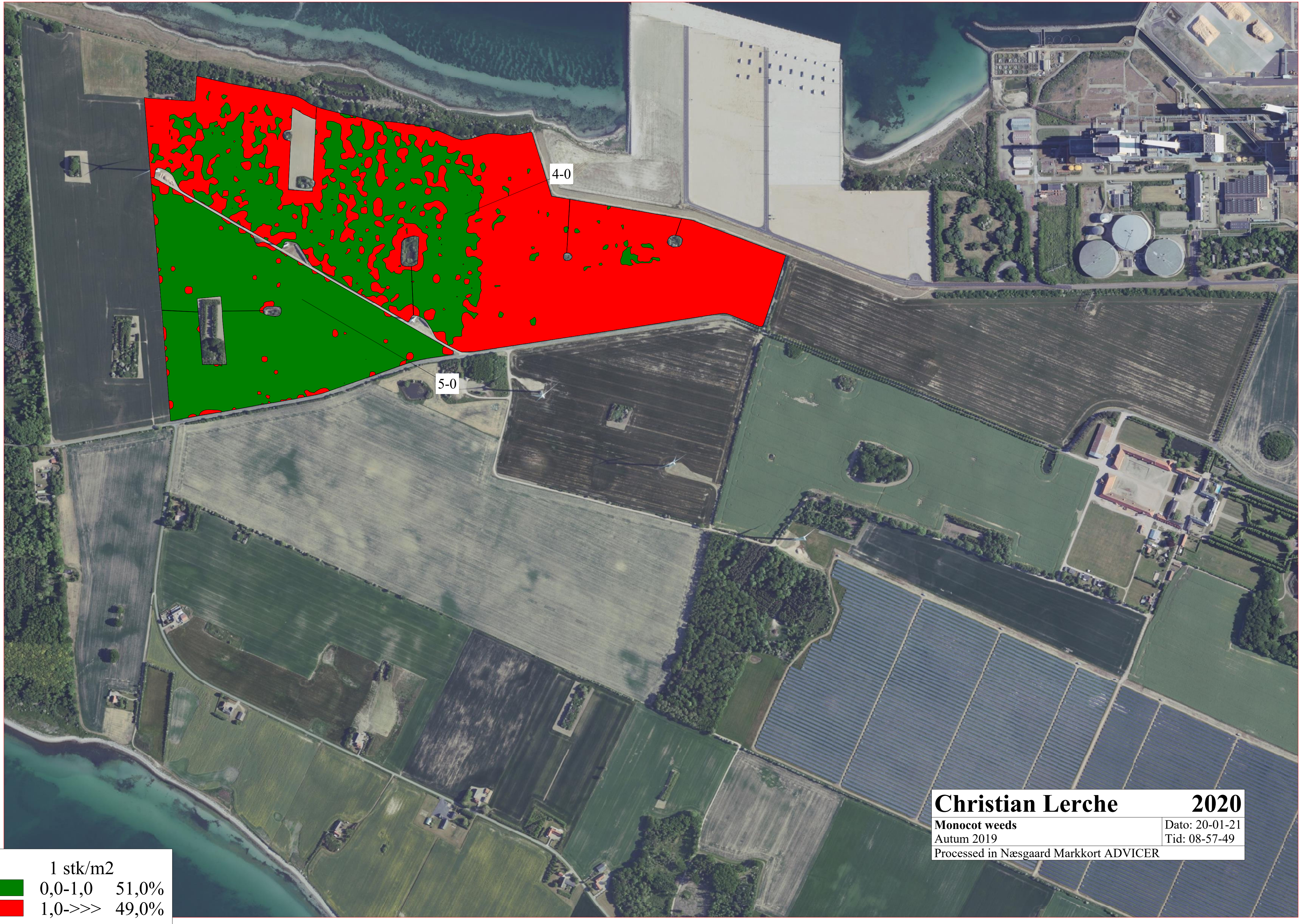
12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
5 stk. pr m2
0,0-5,0 19,5%
5,0->>> 80,5%
Bjarne Damsted 2020
Monocot weeds
Dato: 30-12-20
Tid: 09-33-32
Processed in Næsgaard Markkort ADVICER


12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
10 stk. pr m2
0,0-10,0 33,1%
10,0->>> 66,9%
Bjarne Damsted 2020
Monocot weeds
Dato: 30-12-20
Tid: 09-36-45
Processed in Næsgaard Markkort ADVICER

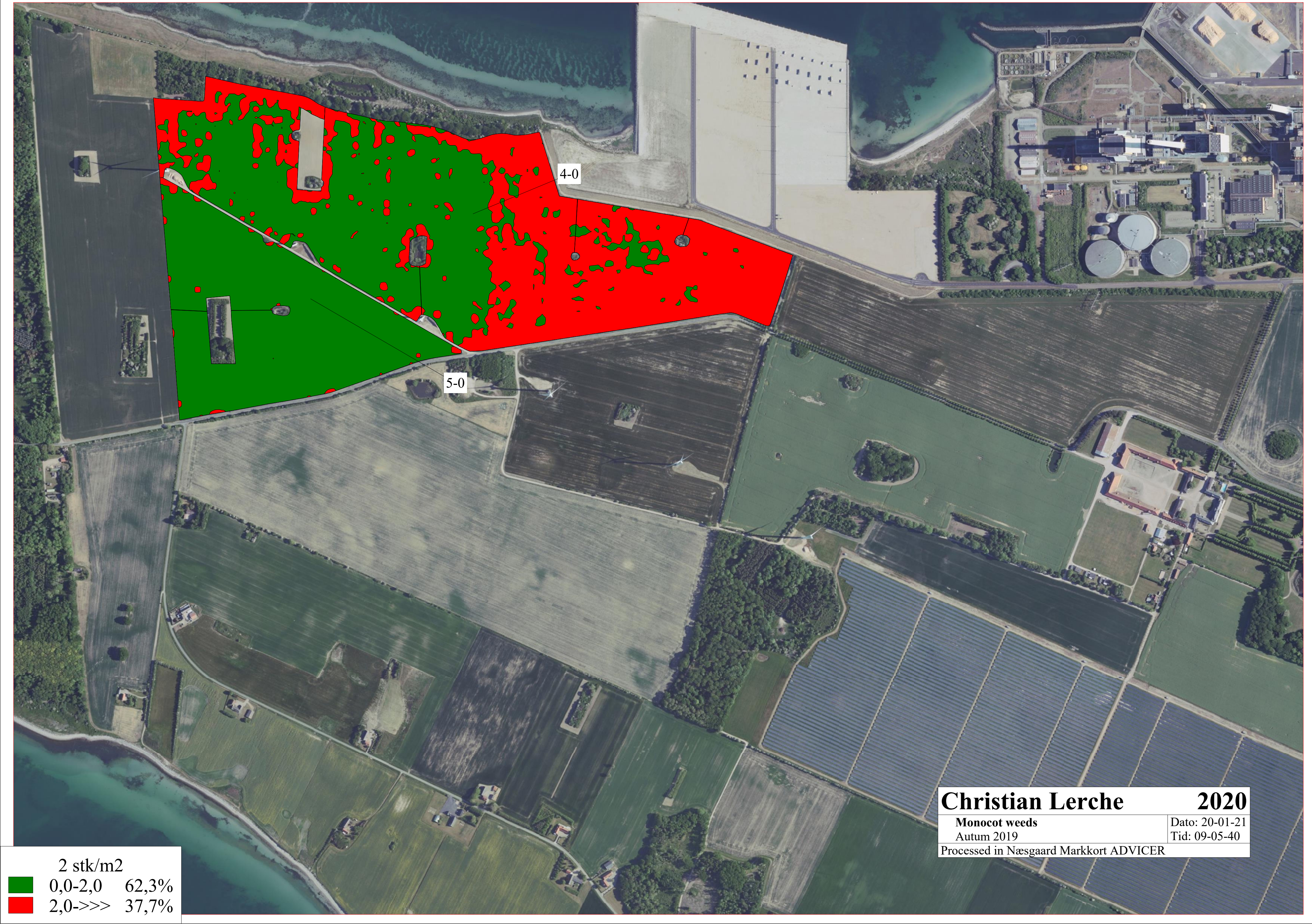

12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
Distribution
0,0-0,1 0,0%
0,1-0,1 0,0%
0,1-0,2 0,0%
0,2-0,2 0,0%
0,2-0,4 0,0%
0,4-0,5 0,0%
0,5-0,8 0,0%
0,8-1,2 0,0%
1,2-1,9 0,0%
1,9-2,8 0,0%
2,8-4,3 0,0%
4,3-6,6 0,0%
6,6-10,0 0,1%
10,0-15,2 0,3%
15,2-23,1 0,7%
23,1-35,1 2,0%
35,1-53,4 5,3%
53,4-81,1 13,1%
81,1-123,3 21,6%
123,3-187,4 26,2%
187,4-284,8 20,5%
284,8-432,9 8,9%
432,9-657,9 1,3%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Bjarne Damsted 2020
Dicot weeds
Dato: 30-12-20
Tid: 10-08-03
Processed in Næsgaard Markkort ADVICER



12-0
11-0 (part
22-0
21-0
92-0
93-0
91-1
1 stk. pr m2
0,0-1,0 0,0%
1,0->>> 100,0%
Bjarne Damsted
2020
Dicot weeds
Dato: 30-12-20
Tid: 10-11-33
Processed in Næsgaard Markkort ADVICER


4-0
5-0
Christian Lerche
2020
Monocot weeds
Autum 2019
Dato: 20-01-21
Tid: 08-57-49
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 51,0%
1,0->>> 49,0%


5-0
6-0
2-0
8-0
7-0
Christian Lerche
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-39-55
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 79,5%
1,0->>> 20,5%



4-0
5-0
Christian Lerche 2020
Monocot weeds
Autum 2019
Dato: 20-01-21
Tid: 09-05-40
Processed in Næsgaard Markkort ADVICER
2 stk/m2
0,0-2,0 62,3%
2,0->>> 37,7%

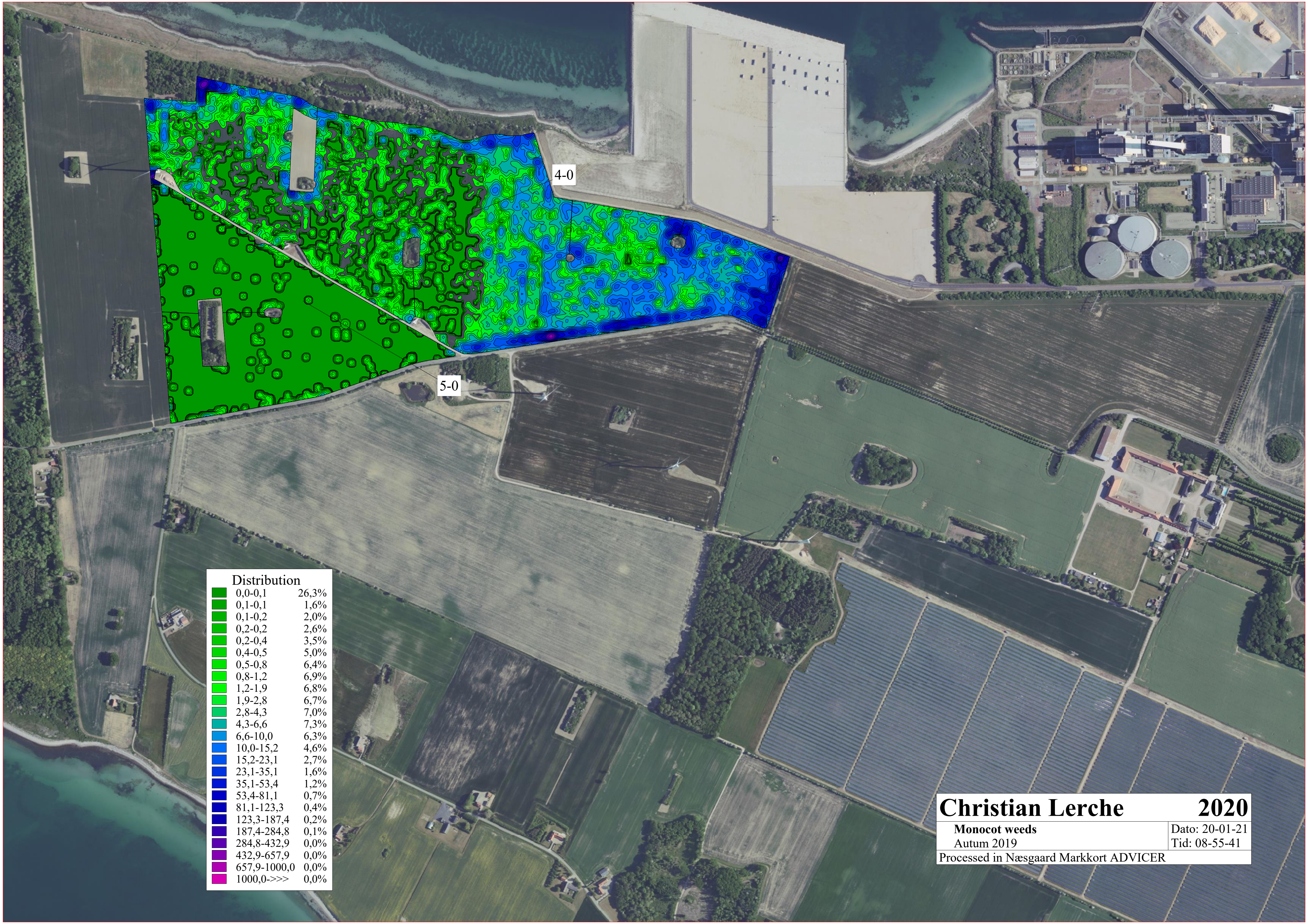

5-0
6-0
2-0
8-0
7-0
Christian Lerche
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-41-36
Processed in Næsgaard Markkort ADVICER
2 stk/m2
0,0-2,0 86,6%
2,0->>> 13,4%


4-0
5-0
Christian Lerche 2020
Monocot weeds
Autum 2019
Dato: 20-01-21
Tid: 09-03-35
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 77,6%
5,0->>> 22,4%

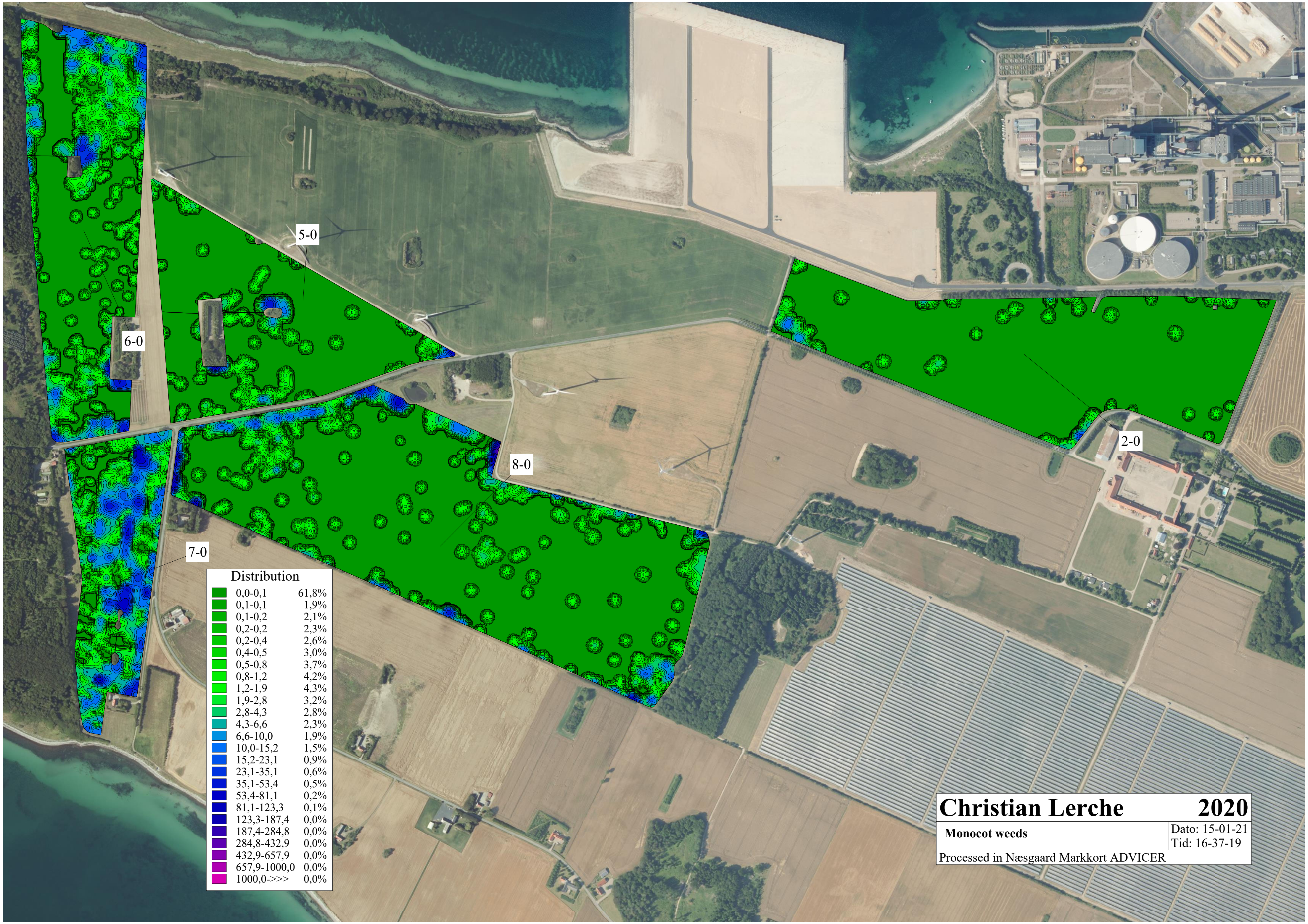

5-0
6-0
7-0
8-0
2-0
Christian Lerche
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-43-01
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 92,8%
5,0->>> 7,2%

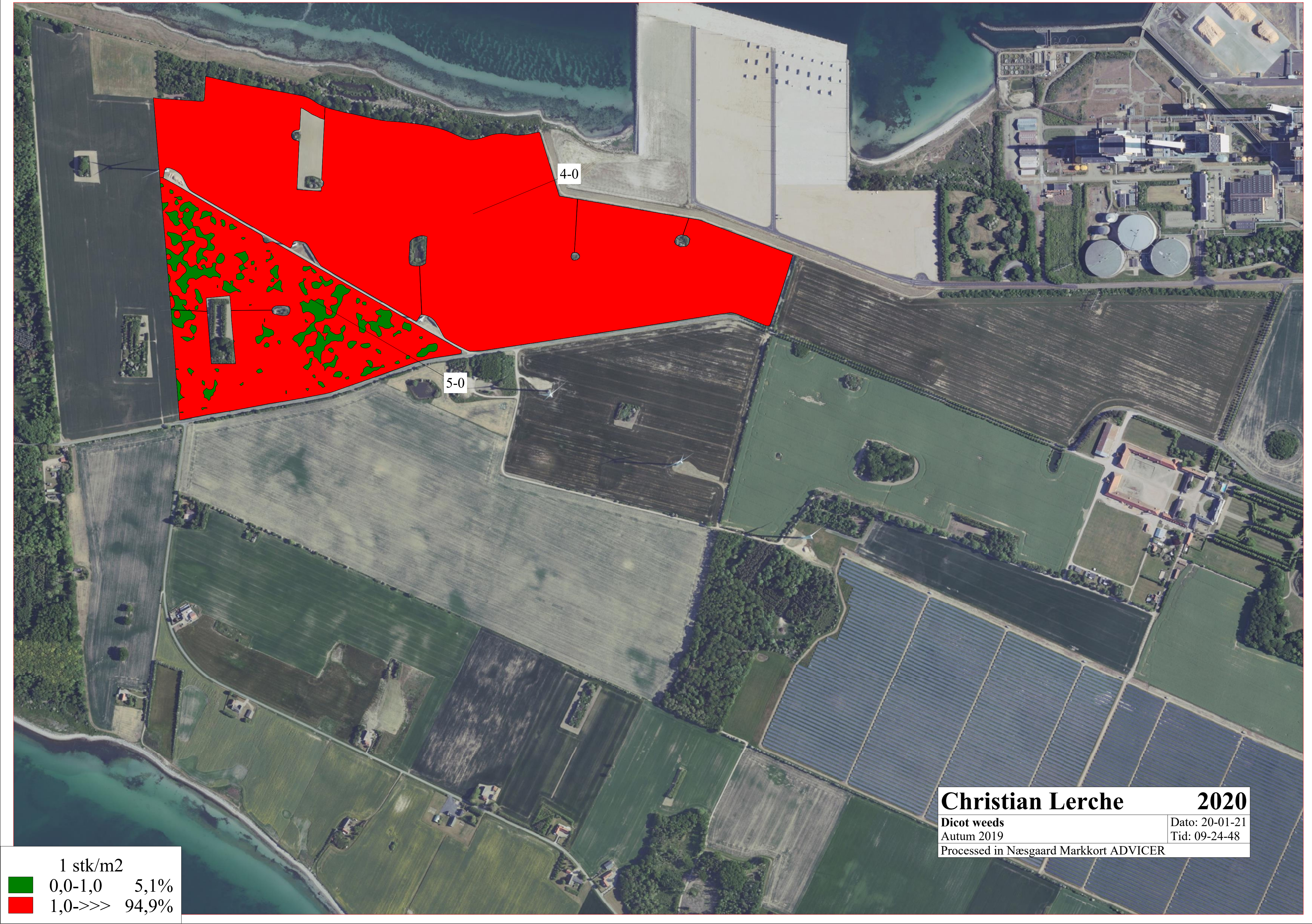

4-0
5-0
Christian Lerche
2020
Monocot weeds
Autum 2019
Dato: 20-01-21
Tid: 09-16-26
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 88,5%
10,0->>> 11,5%

5-0
6-0
7-0
8-0
2-0
Christian Lerche
2020
Monocot weeds
Dato: 15-01-21
Tid: 16-48-03
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 96,3%
10,0->>> 3,7%

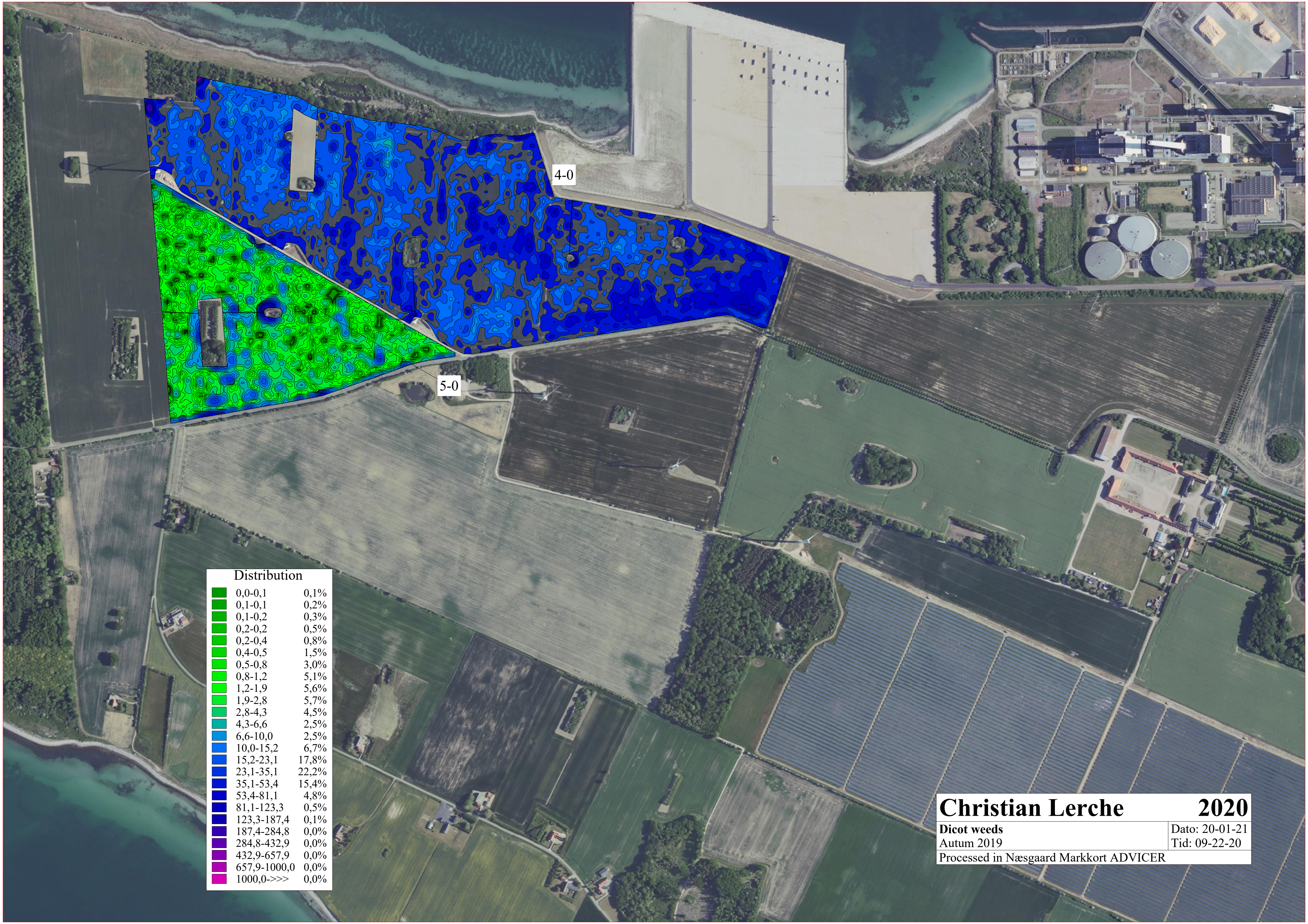


4-0
5-0
Distribution
0,0-0,1 26,3%
0,1-0,1 1,6%
0,1-0,2 2,0%
0,2-0,2 2,6%
0,2-0,4 3,5%
0,4-0,5 5,0%
0,5-0,8 6,4%
0,8-1,2 6,9%
1,2-1,9 6,8%
1,9-2,8 6,7%
2,8-4,3 7,0%
4,3-6,6 7,3%
6,6-10,0 6,3%
10,0-15,2 4,6%
15,2-23,1 2,7%
23,1-35,1 1,6%
35,1-53,4 1,2%
53,4-81,1 0,7%
81,1-123,3 0,4%
123,3-187,4 0,2%
187,4-284,8 0,1%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Christian Lerche 2020
Monocot weeds
Autum 2019
Dato: 20-01-21
Tid: 08-55-41
Processed in Næsgaard Markkort ADVICER

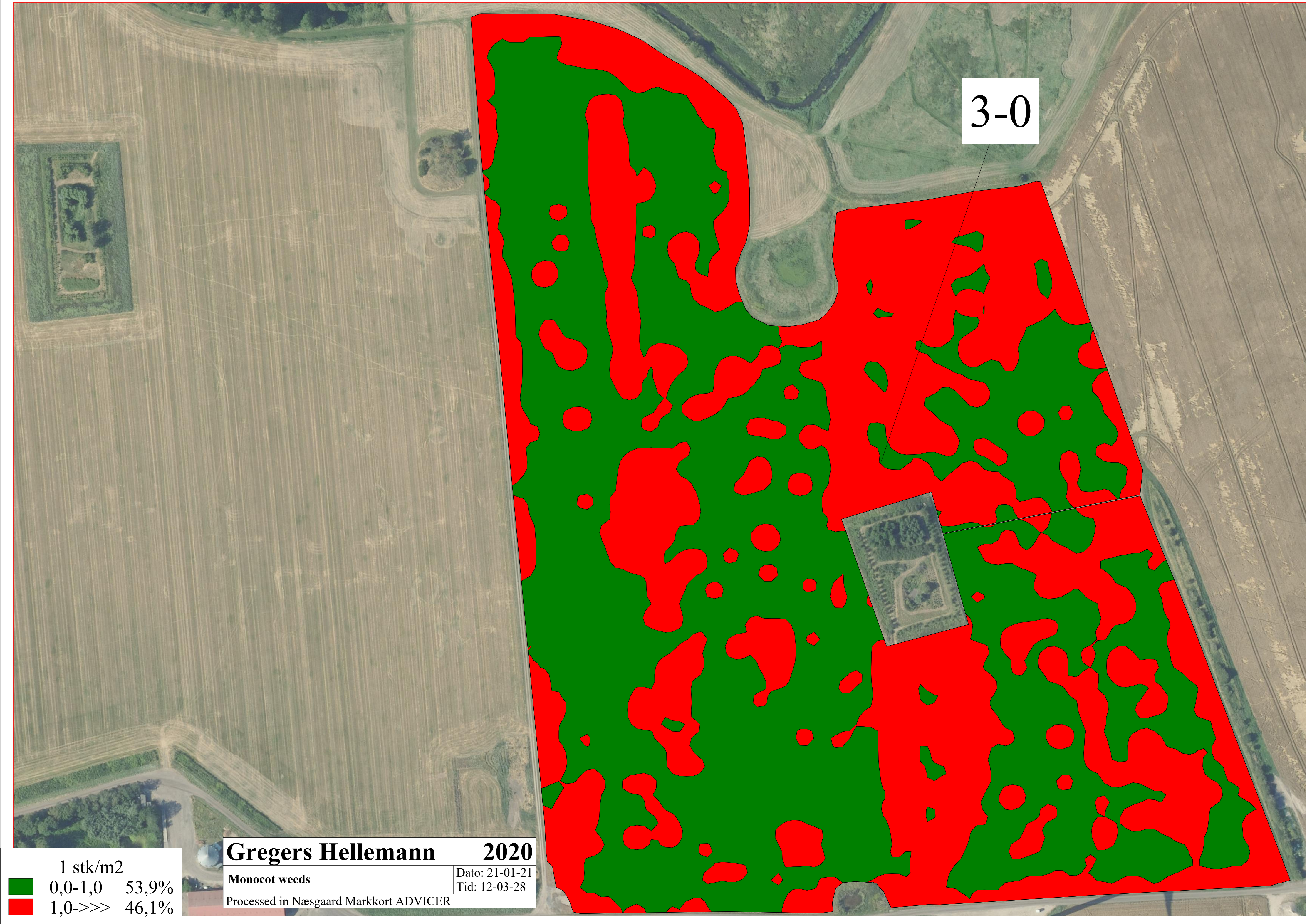

5-0
6-0
2-0
8-0
7-0
Distribution
0,0-0,1 61,8%
0,1-0,1 1,9%
0,1-0,2 2,1%
0,2-0,2 2,3%
0,2-0,4 2,6%
0,4-0,5 3,0%
0,5-0,8 3,7%
0,8-1,2 4,2%
1,2-1,9 4,3%
1,9-2,8 3,2%
2,8-4,3 2,8%
4,3-6,6 2,3%
6,6-10,0 1,9%
10,0-15,2 1,5%
15,2-23,1 0,9%
23,1-35,1 0,6%
35,1-53,4 0,5%
53,4-81,1 0,2%
81,1-123,3 0,1%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Christian Lerche 2020
Monocot weeds
Dato: 15-01-21
Tid: 16-37-19
Processed in Næsgaard Markkort ADVICER


4-0
5-0
Christian Lerche
2020
Dicot weeds
Autum 2019
Dato: 20-01-21
Tid: 09-24-48
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 5,1%
1,0->>> 94,9%

5-0
6-0
8-0
7-0
2-0
Christian Lerche
2020
Dicot weeds
Dato: 15-01-21
Tid: 16-50-36
Processed in Næsgaard Markkort ADVICER
1 stk/m2
0,0-1,0 71,9%
1,0->>> 28,1%


4-0
5-0
Distribution
0,0-0,1 0,1%
0,1-0,1 0,2%
0,1-0,2 0,3%
0,2-0,2 0,5%
0,2-0,4 0,8%
0,4-0,5 1,5%
0,5-0,8 3,0%
0,8-1,2 5,1%
1,2-1,9 5,6%
1,9-2,8 5,7%
2,8-4,3 4,5%
4,3-6,6 2,5%
6,6-10,0 2,5%
10,0-15,2 6,7%
15,2-23,1 17,8%
23,1-35,1 22,2%
35,1-53,4 15,4%
53,4-81,1 4,8%
81,1-123,3 0,5%
123,3-187,4 0,1%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Christian Lerche 2020
Dicot weeds
Dato: 20-01-21
Autum 2019
Tid: 09-22-20
Processed in Næsgaard Markkort ADVICER

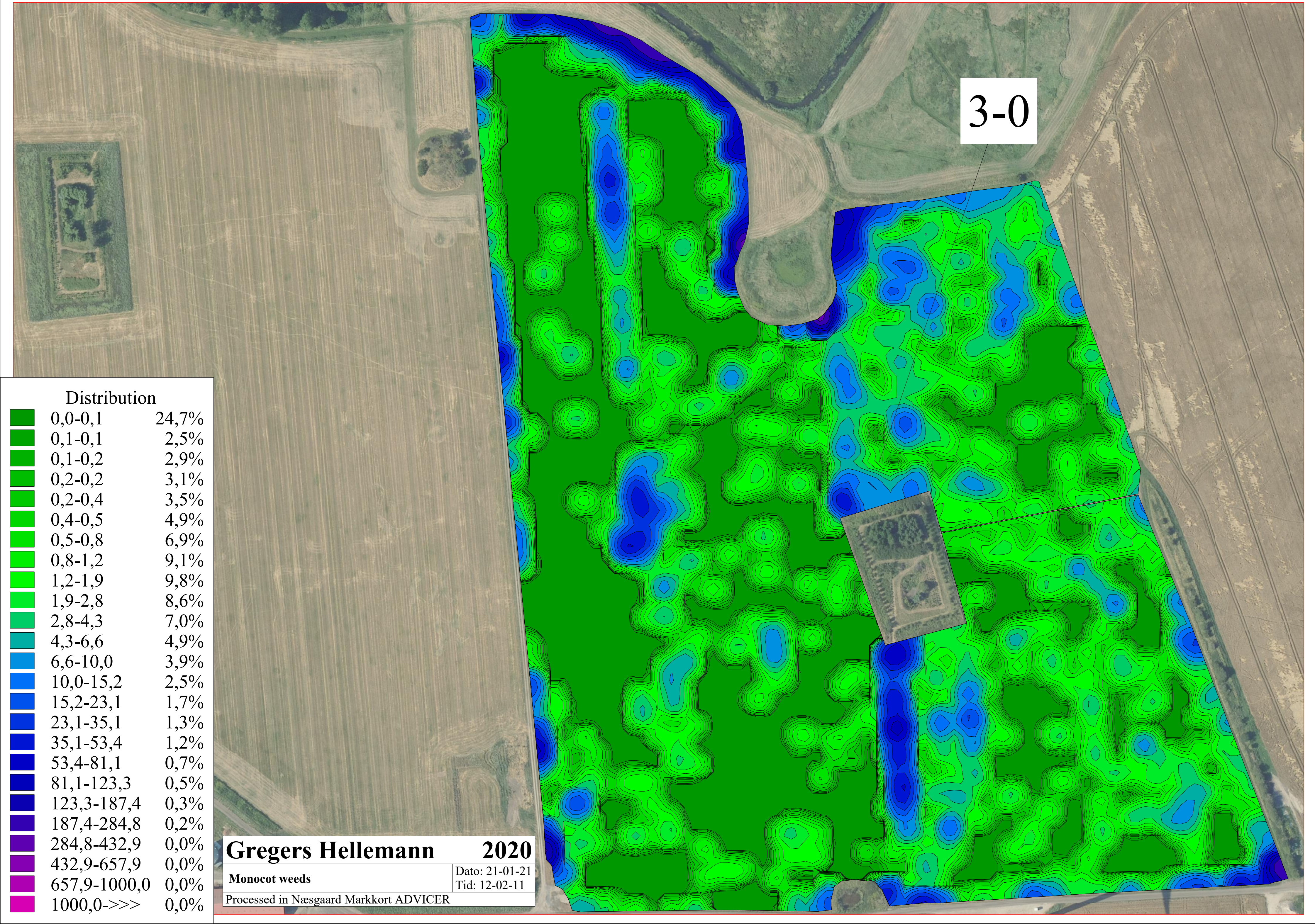

5-0
6-0
2-0
8-0
7-0
Distribution
0,0-0,1 43,5%
0,1-0,1 2,8%
0,1-0,2 3,1%
0,2-0,2 3,6%
0,2-0,4 4,2%
0,4-0,5 5,0%
0,5-0,8 6,1%
0,8-1,2 7,4%
1,2-1,9 8,1%
1,9-2,8 5,8%
2,8-4,3 4,1%
4,3-6,6 2,5%
6,6-10,0 1,5%
10,0-15,2 0,9%
15,2-23,1 0,5%
23,1-35,1 0,4%
35,1-53,4 0,2%
53,4-81,1 0,1%
81,1-123,3 0,0%
123,3-187,4 0,0%
187,4-284,8 0,0%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Christian Lerche
2020
Dicot weeds
Dato: 15-01-21
Tid: 16-45-14
Processed in Næsgaard Markkort ADVICER


3-0
1 stk/m2
0,0-1,0 53,9%
1,0->>> 46,1%
Gregers Hellemann 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-03-28
Processed in Næsgaard Markkort ADVICER

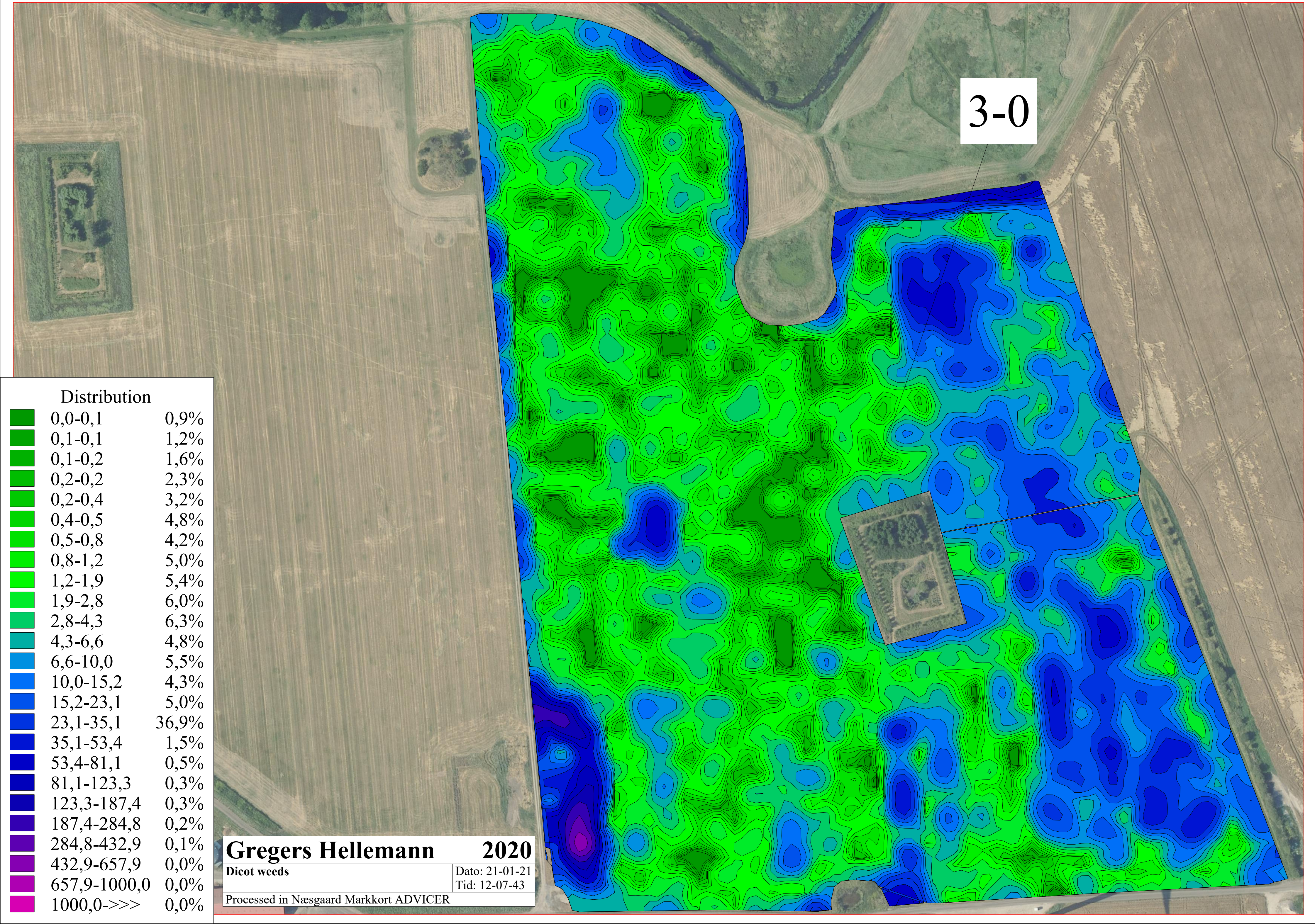

3-0
Gregers Hellemann 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-04-38
Processed in Næsgaard Markkort ADVICER
2 stk/m2
0,0-2,0 69,5%
2,0->>> 30,5%


3-0
Gregers Hellemann 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-05-44
Processed in Næsgaard Markkort ADVICER
5 stk/m2
0,0-5,0 85,0%
5,0->>> 15,0%


3-0
Gregers Hellemann 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-06-40
Processed in Næsgaard Markkort ADVICER
10 stk/m2
0,0-10,0 91,8%
10,0->>> 8,2%


3-0
Distribution
0,0-0,1 24,7%
0,1-0,1 2,5%
0,1-0,2 2,9%
0,2-0,2 3,1%
0,2-0,4 3,5%
0,4-0,5 4,9%
0,5-0,8 6,9%
0,8-1,2 9,1%
1,2-1,9 9,8%
1,9-2,8 8,6%
2,8-4,3 7,0%
4,3-6,6 4,9%
6,6-10,0 3,9%
10,0-15,2 2,5%
15,2-23,1 1,7%
23,1-35,1 1,3%
35,1-53,4 1,2%
53,4-81,1 0,7%
81,1-123,3 0,5%
123,3-187,4 0,3%
187,4-284,8 0,2%
284,8-432,9 0,0%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Gregers Hellemann 2020
Monocot weeds
Dato: 21-01-21
Tid: 12-02-11
Processed in Næsgaard Markkort ADVICER


3-0
1 stk/m2
0,0-1,0 21,7%
1,0->>> 78,3%
Gregers Hellemann 2020
Dicot weeds
Dato: 21-01-21
Tid: 12-09-44
Processed in Næsgaard Markkort ADVICER


3-0
Distribution
0,0-0,1 0,9%
0,1-0,1 1,2%
0,1-0,2 1,6%
0,2-0,2 2,3%
0,2-0,4 3,2%
0,4-0,5 4,8%
0,5-0,8 4,2%
0,8-1,2 5,0%
1,2-1,9 5,4%
1,9-2,8 6,0%
2,8-4,3 6,3%
4,3-6,6 4,8%
6,6-10,0 5,5%
10,0-15,2 4,3%
15,2-23,1 5,0%
23,1-35,1 36,9%
35,1-53,4 1,5%
53,4-81,1 0,5%
81,1-123,3 0,3%
123,3-187,4 0,3%
187,4-284,8 0,2%
284,8-432,9 0,1%
432,9-657,9 0,0%
657,9-1000,0 0,0%
1000,0->>> 0,0%
Gregers Hellemann
2020
Dicot weeds
Dato: 21-01-21
Tid: 12-07-43
Processed in Næsgaard Markkort ADVICER

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B						Products, dose rates, unit price and sums of cost								Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
1	1	JN	Winter wheat	Spring	Express Gold 33 S	13,5	g				2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,698	0,716		6,200	0,081		300,50	1,47	0,22	249,81	0,77	0,21	83%	52%	95%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,667	0,750		3,700	0,135										
								50,69	0,7	0,01			Agropol	0,10	l	25,00	2,50	300,50			1,466			0,216									
1	2	JN	Winter wheat	Spring	Mustang forte	0,11	l				2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,698	0,716		6,200	0,081		300,50	1,47	0,22	282,35	1,33	0,19	94%	90%	86%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,667	0,750		3,700	0,135										
								18,15	0,14	0,03			Agropol	0,10	l	25,00	2,50	300,50			1,466			0,216									
1	3	JN	Winter wheat	Spring	Express Gold 33 SX						2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,70	0,72		6,20	0,08		300,50	1,47	0,22	296,09	1,41	0,22	99%	96%	100%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,67	0,75		3,70	0,14										
								4,41	0,06	0			Agropol	0,10	l	25,00	2,50	300,50			1,47			0,22									
1	4	JN	Winter wheat	Spring	Ally SX	2	g				2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,70	0,72		6,20	0,08		192,50	0,72	0,08	187,99	0,65	0,08	98%	90%	100%
								4,51	0,07	0			Renol	0,50	l	40,00	20,00	192,50			0,72			0,08									
1	5	JN	Winter barley	Spring	Ally SX	2	g	4,51	0,07	0	2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		189,25	1,03	0,16	184,74	0,96	0,16	98%	93%	100%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,67	0,75		3,70	0,14										
								4,51	0,07	0			Agropol	0,10	l	25,00	2,50	189,25			1,03			0,16									
1	6	JN	Winter barley	Spring	DFF	0,24	l				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		186,75	1,03	0,16	-7,08	-0,61	-0,24	-4%	-59%	-145%
					Hussar OD	0,025	l						Renol	0,50	l	40,00	20,00																
					Starane XL	0,16	l	193,83	1,64	0,4			Zypar	0,50	l	211,00	105,50	186,75	0,67	0,75	1,03	3,70	0,14	0,16									
1	7	JN	Winter barley	Spring	Ally SX	3,1	g				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		81,25	0,28	0,03	74,02	0,18	0,03	91%	65%	100%
								7,23	0,1	0			Renol	0,50	l	40,00	20,00	81,25			0,28			0,03									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
1	8	JN	Winter barley	Spring	Ally SX	2	g				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		147,25	0,81	0,14	142,74	0,74	0,14	97%	91%	100%
													Renol	0,50	l	40,00	20,00																
								4,51	0,07	0			Mustang Forte	0,40	l	165,00	66,00	147,25	0,76	0,53	0,81	3,45	0,12	0,14									
1	9	JN	Winter barley	Spring	Ally SX	4.2	g				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		147,25	0,81	0,14	137,67	0,67	0,14	93%	83%	100%
													Renol	0,50	l	40,00	20,00																
								9,58	0,14	0			Mustang Forte	0,40	l	165,00	66,00	147,25	0,76	0,53	0,81	3,45	0,12	0,14									
1	10	JN	Winter barley	Spring	Ally SX	10	g				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		186,75	1,03	0,16	116,86	0,31	0,09	63%	30%	57%
					Harmony Plus 50	7,4	g						Renol	0,50	l	40,00	20,00																
					DLG Contact	0,15	l	69,89	0,72	0,07			Zypar	0,50	l	211,00	105,50	186,75	0,67	0,75	1,03	3,70	0,14	0,16									
1	11	JN	Winter barley	Spring	Ally SX	4,2	g				2017	S, 2017	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		186,75	1,03	0,16	177,17	0,89	0,16	95%	86%	100%
													Renol	0,50	l	40,00	20,00																
								9,58	0,14	0			Zypar	0,50	l	211,00	105,50	186,75	0,67	0,75	1,03	3,70	0,14	0,16									
1	12	JN	Winter wheat	Spring	Hussar Plus OD	0,101	l				2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,70	0,72		6,20	0,08		300,50	1,47	0,22	172,23	0,46	0,18	57%	31%	81%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,67	0,75		3,70	0,14										
								128,27	1,01	0,04			Agropol	0,10	l	25,00	2,50	300,50			1,47			0,22									
1	13	JN	Winter wheat	Spring	Hussar Plus OD	0,201	l				2017	S, 2017	Cossack OD	0,50	l	345,00	172,50		0,70	0,72		6,20	0,08		300,50	1,47	0,22	172,23	0,46	0,18	57%	31%	81%
													Renol	0,50	l	40,00	20,00																
												S, 2017 T	Zypar	0,50	l	211,00	105,50		0,67	0,75		3,70	0,14										
								128,27	1,01	0,04			Agropol	0,10	l	25,00	2,50	300,50			1,47			0,22									
2	14	JN	Winter wheat	Spring	Starane XL	0,25	l				2019	S, 2019	Cossack OD	0,94	l	345,00	322,58		0,70	1,34		6,20	0,15		383,83	1,62	0,18	333,03	1,32	0,05	87%	82%	27%
								50,80	0,3	0,13			Hussar Plus OD	0,05	l	1225,0(	61,25	383,83	0,18	0,28	1,62	1,76	0,03	0,18									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B						Products, dose rates, unit price and sums of cost								Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuva	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
2	**15**	JN	Winter wheat	Spring	Express ST	2	tab				2020	01-04-202	Cossack OD	0,94	l	345,00	322,58		0,70	1,34		6,20	0,15		383,83	1,62	0,18	223,28	0,17	0,13	58%	11%	72%
					Primus 250 WG	9	g						Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03										
					DLG Contact	0,15	l	160,55	1,45	0,05								383,83			1,62			0,18									
2	**16**	JN	*Winter rye*	Spring	Cossack	0,27	l				2019	25-03-201	Cossack OD	0,25	l	345,00	86,25		0,70	0,36		6,20	0,04		86,25	0,36	0,04	-38,63	-0,03	0,00	-45%	-9%	1%
					Renol	0,5	l	124,88	0,39	0,04								86,25			0,36			0,04									
2	**17**	JN	Winter rye	Spring	Harmony Plus 50	22,5	g				2019	25-03-201	Cossack OD	0,25	l	345,00	86,25		0,70	0,36		6,20	0,04		86,25	0,36	0,04	-84,44	-1,36	-0,18	-98%	-280%	-346%
					Primus 250 WG	3,8	g																										
					DLG Contact	0,15	l	170,69	1,36	0,18								86,25			0,36			0,04									
2	**18**	JN	Winter rye	Spring	Ally SX	0,9	g	2,06	0,03	0	2019	25-03-201	Cossack OD	0,25	l	345,00	86,25	86,25	0,70	0,36	0,36	6,20	0,04	0,04	86,25	0,36	0,04	84,19	0,33	0,04	98%	92%	100%
2	**19**	JN	Winter rye	Spring	Ally SX	2,3	g	5,25	0,08	0	2019	25-03-201	Cossack OD	0,25	l	345,00	86,25	86,25	0,70	0,36	0,36	6,20	0,04	0,04	86,25	0,36	0,04	81,00	0,28	0,04	94%	78%	100%
2	**20**	JN	Winter rye	Spring	Ally SX	2	g	4,51	0,07	0	2019	25-03-201	Cossack OD	0,25	l	345,00	86,25	86,25	0,70	0,36	0,36	6,20	0,04	0,04	86,25	0,36	0,04	81,74	0,29	0,04	95%	80%	100%

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv.	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
0																																	
2	21	JN	Winter rye	Spring	Ally SX	2	g	4,51	0,07	0	2019	25-03-201	Cossack OD	0,25	l	345,00	86,25	86,25	0,70	0,36	0,36	6,20	0,04	0,04	86,25	0,36	0,04	81,74	0,29	0,04	95%	80%	100%
3	22	JN	Winter wheat	Spring	DFF	0,08	l				2019	20-04-201	Broadway	135,00	g	1,13	152,55		122,00	1,11		2641,0(	0,05		264,55	1,50	0,10	158,29	0,81	-0,01	60%	54%	-7%
					Hussar OD	0,03	l	106,26	0,69	0,11			Atlantis OD	0,35	l	320,00	112,00	264,55	0,90	0,39	1,50	6,72	0,05	0,10									
4	23	S	Winter wheat	Autumn	Mateno DUO 600	0,07	l				2015	10-10-201	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	143,67	0,40	1,05	48%	43%	81%
					Atlantis OD	0,33	l						DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13										
					Buctril EC 225	0,05	l	153,53	0,53	0,24								297,20			0,93			1,29									
4	24	S	Winter barley	Autumn	Boxer	3,6	l				2015	05-10-201	Boxer	0,50	l	172,00	86,00		3,50	0,14		1,29	0,39		86,00	0,14	0,39	-609,69	-1,16	-1,95	-709%	-810%	-504%
					Nuance WG	2,8	g																										
					DLG Contact	0,15	l	695,69	1,3	2,34								86,00			0,14			0,39									
4	25	S	Winter wheat	Autumn	Otello	0,4	l				2015	10-10-201	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	174,75	0,36	1,16	59%	39%	90%
								122,45	0,57	0,13			DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									
4	26	S	Winter wheat	Autumn	Atlantis OD	0,46	l				2015	10-10-201	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	174,75	0,36	1,16	48%	45%	95%
								155,38	0,51	0,07			DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									
4	27	S	Winter wheat	Autumn	Atlantis OD	0,33	l				2015	10-10-201	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	138,89	0,01	1,09	47%	1%	85%
					DFF	0,11	l	158,31	0,92	0,2			DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
6	**28**	S	Winter wheat	Autumn	Helmstar 75 WG	0,4	g				2017	20-04-201	DFF	0,05	l	392,00	19,60		0,20	0,25		0,77	0,06		190,35	0,71	0,65	172,52	0,48	0,60	91%	68%	92%
					DFF	0,04	l						Lexus 50 WG	5,00	g	7,60	38,00		20,00	0,25		1462,0	0,00										
													Boxer	0,75	l	172,00	129,00		3,50	0,21		1,29	0,58										
								17,83	0,23	0,05			Sprede/klæbe	0,15	l	25,00	3,75	190,35			0,71			0,65									
6	**29**	S	Winter wheat	Autumn	Atlantis OD	0,38	l				2016	05-10-201	DFF	0,05	l	392,00	19,60		0,20	0,25		0,77	0,06		190,35	0,71	0,65	30,06	-0,07	0,50	16%	-9%	77%
					DFF	0,07	l						Lexus 50 WG	5,00	g	7,60	38,00		20,00	0,25		1462,0	0,00										
													Boxer	0,75	l	172,00	129,00		3,50	0,21		1,29	0,58										
								160,29	0,78	0,15			Sprede/klæbe	0,15	l	25,00	3,75	190,35			0,71			0,65									
6	**30**	S	Winter wheat	Autumn	Atlantis OD	0,38	l				2016	05-10-201	DFF	0,05	l	392,00	19,60		0,20	0,25		0,77	0,06		190,35	0,71	0,65	4,96	0,10	0,34	3%	15%	52%
					Buctril EC 225	0,14	l						Lexus 50 WG	5,00	g	7,60	38,00		20,00	0,25		1462,0	0,00										
					Mateno DUO SC	0,05	l						Boxer	0,75	l	172,00	129,00		3,50	0,21		1,29	0,58										
								185,39	0,61	0,31			Sprede/klæbe	0,15	l	25,00	3,75	190,35			0,71			0,65									
6	**31**	S	Winter wheat	Autumn	Nuance WG	5	g				2016	05-10-201	DFF	0,05	l	392,00	19,60		0,20	0,25		0,77	0,06		190,35	0,71	0,65	13,04	-0,26	0,55	7%	-36%	85%
					Atlantis OD	0,38	l						Lexus 50 WG	5,00	g	7,60	38,00		20,00	0,25		1462,0	0,00										
					Pico 750 WG	7	g						Boxer	0,75	l	172,00	129,00		3,50	0,21		1,29	0,58										
					DLG Contact	0,15	l	177,31	0,97	0,1			Sprede/klæbe	0,15	l	25,00	3,75	190,35			0,71			0,65									
6	**32**	S	Winter wheat	Spring	Husar OD	0,027	l				2020	26-03-202	Cossack OD	0,75	l	345,00	258,75		0,70	1,07		6,20	0,12		382,35	2,17	0,36	292,20	1,90	0,35	76%	88%	97%
					Renol	0,5	l						DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13										
								90,15	0,27	0,01		20-05-202	Zypar	0,40	l	211,00	84,40	382,35	0,67	0,60	2,17	3,70	0,11	0,36									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
6	**33**	S	Winter wheat	Spring	Ally SX	2,3	g				2020	26-03-202	Cossack OD	0,90	l	345,00	310,50		0,70	1,29		6,20	0,15		349,70	1,79	0,28	180,65	1,30	-0,57	52%	73%	-209%
					Metaxon	0,82	l	169,05	0,49	0,85			DFF	0,10	l	392,00	39,20	349,70	0,20	0,50	1,79	0,77	0,13	0,28									
7	34	S	Winter wheat	Autumn	Othello	0,52	l				2019	25-09-201	Boxer	1,60	l	172,00	275,20		3,50	0,46		1,29	1,24		628,44	2,10	1,89	468,79	1,36	1,72	75%	65%	91%
													DFF	0,12	l	392,00	46,65		0,20	0,60		0,77	0,15										
													Stomp	0,11	l	303,00	33,63		0,43	0,26		1,60	0,07										
													Stomp Pentagon	0,21	l	303,00	62,72		3,52	0,06		0,64	0,32										
								159,65	0,74	0,17		06-11-201	Atlantis OD	0,66	l	320,00	210,24	628,44	0,90	0,73	2,10	6,72	0,10	1,89									
7	35	S	Winter wheat	Autumn	Othello	0,56	l				2019	07-10-201	Boxer	1,55	l	172,00	267,29		3,50	0,44		1,29	1,20		331,61	1,95	1,50	158,94	1,15	1,32	48%	59%	88%
								172,67	0,8	0,18			Sempra 500 SC	0,16	l	415,00	64,33	331,61	0,20	0,78	1,95	0,77	0,20	1,50									
7	36	S	Winter wheat	Spring	Mustang forte	0,22	l				2017	27-03-201	Broadway	146,00	g	1,13	164,98		122,00	1,20		2641,0	0,06		429,93	2,87	0,18	393,80	2,58	0,12	92%	90%	67%
													PG26N	0,05	l	51,00	2,65																
												06-05-201	Atlantis OD	0,17	l	320,00	53,44		0,90	0,19		6,72	0,02										
													Broadway	154,00	g	1,13	174,02		122,00	1,26		2641,0	0,06										
													PG26N	0,05	l	51,00	2,55																
								36,13	0,29	0,06	2017	26-05-201	Zypar	0,15	l	211,00	32,28	429,93	0,67	0,23	2,87	3,70	0,04	0,18									
7	37	S	Winter wheat	Spring	Lancellot	6,8	g				2017	06-05-201	Broadway	138,00	g	1,13	155,94		122,00	1,13		2641,0	0,05		190,77	1,36	0,09	139,02	1,12	0,07	73%	82%	79%
					DLG Contact	0,15	l						PG26N	0,05	l	51,00	2,55																
								51,75	0,24	0,02		26-05-201	Zypar	0,15	l	211,00	32,28	190,77	0,67	0,23	1,36	3,70	0,04	0,09									
8	38	JM	Winter barley	Autumn	Boxer	3,6	l				2015	Autumn	Boxer	1,00	l	172,00	172,00		3,50	0,29		1,29	0,78		191,60	0,57	0,80	-502,15	-0,69	-1,54	-262%	-121%	-191%

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ID	ID	gion		/spring	Products and sums of cost, TFI and B						Products, dose rates, unit price and sums of cost								Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
					Nuance WG	2,4	g						Legacy 500 SC	0,05	l	392,00	19,60		0,18	0,28		1,76	0,03										
					DLG Contact	0,15	l	693,75	1,26	2,34								191,60			0,57			0,80									
9	39	JM	Winter wheat	Autumn	Othelllo	0,4	l				2015	10-10-201	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	174,75	0,36	1,16	59%	39%	90%
								122,45	0,57	0,13			DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									
10	40	F	Winter rye	Spring	Ally SX	3,1	g				2019	04-04-201	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		114,00	0,28	0,03	106,76	0,18	0,03	94%	65%	100%
								7,24	0,1	0			Zypar	0,25	l	211,00	52,75	114,00	0,67	0,37	0,28	3,70	0,07	0,03									
10	41	F	Winter rye	Spring	Ally SX	6,8	g				2019	04-04-201	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		114,00	0,66	0,10	98,33	0,43	0,10	86%	65%	100%
								15,67	0,23	0			Zypar	0,25	l	211,00	52,75	114,00	0,67	0,37	0,66	3,70	0,07	0,10									
10	42	F	Winter wheat	Spring	Mustang forte	0,62	l				2019	06-04-201	Broadway	145,00	g	1,13	163,85		122,00	1,19		2641,0(	0,05		189,35	1,19	0,05	87,21	0,37	-0,13	46%	31%	-228%
								102,14	0,82	0,18			PG26N	0,50	l	51,00	25,50	189,35			1,19			0,05									
11	43	F	Winter wheat	Spring	Ally SX	3,2	g				2020	10-05-202	Fighter 480	1,25	l	170,00	212,50		20,80	0,06		654,00	0,00					568,50	0,49	1,61	99%	82%	100%

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B						Products, dose rates, unit price and sums of cost								Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuvant	Dose	U	Unit pr	Cost	Cost sum	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
													Stomp CS	1,00	l	303,00	303,00		3,52	0,28		0,64	1,56										
													Renol	0,50	l	40,00	20,00																
												30-05-202	Harmony 50 SX	3,82	g	6,65	25,40		15,00	0,25		94,50	0,04										
								7,40	0,11	0			Contact	0,50	l	30,00	15,00	575,90			0,60			1,61									
11	**44**	F	Winter wheat	Spring	Hussar OD	0,027	l				2020	14-05-202	Hussar Plus OD	0,07	l	1225,0(	85,75		0,18	0,40		1,76	0,04		105,93	0,60	0,09	15,78	0,33	0,08	15%	55%	89%
					Renol	0,5	l						Contact	0,15	l	30,00	4,50																
								90,15	0,27	0,01			DFF	0,04	l	392,00	15,68	105,93	0,20	0,20	0,60	0,77	0,05	0,09									
12	**45**	JM	Spring barley	Spring	Primus 250 WG	10,6	g				2018	08-05-201	Starane 333 HL	0,10	l	265,00	26,50		0,43	0,23		1,60	0,06		334,45	1,32	1,42	209,27	0,65	1,37	63%	49%	96%
					Pixxaro EC	0,04	l						Pixxaro EC	0,15	l	413,00	61,95		0,31	0,48		1,76	0,09										
								125,18	0,67	0,05		31-05-201	M-750	1,20	l	205,00	246,00	334,45	2,00	0,60	1,32	0,95	1,27	1,42									
12	**46**	JM	Spring barley	Spring	Express Gold SX	13,6	g				2018	01-05-201	Hussar Plus OD	0,06	l	1225,0(	73,50		0,18	0,34		1,76	0,03		352,06	1,62	1,35	251,94	0,38	1,25	72%	24%	93%
					Mustang forte	0,32	l						DFF	0,03	l	392,00	11,76		0,20	0,15		0,77	0,04										
													Express 50 SX	8,00	g	2,60	20,80		15,00	0,53		660,00	0,01										
								100,12	1,24	0,1		31-05-201	M-750	1,20	l	205,00	246,00	352,06	2,00	0,60	1,62	0,95	1,27	1,35									
13	**47**	F	Winter wheat	Spring	Ally SX	1,2	g				2018	26-04-201	Broadway	125,00	g	1,13	141,25		122,00	1,02		2641,0(	0,05		294,75	1,47	0,11	256,89	1,28	0,10	87%	87%	91%
					Lancelot	4,4	g						PG26N	0,50	l	51,00	25,50																
					DLG Contact	0,15	l	37,86	0,19	0,01			Atlantis OD	0,40	l	320,00	128,00	294,75	0,90	0,44	1,47	6,72	0,06	0,11									
13	**48**	F	Winter rye	Spring	Mustang forte	0,22	l				2018	27-04-201	Broadway	80,00	g	1,13	90,40		122,00	0,66		2641,0(	0,03		115,90	0,66	0,03	79,77	0,37	-0,03	69%	56%	-98%
								36,13	0,29	0,06			PG26N	0,50	l	51,00	25,50	115,90			0,66			0,03									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuva	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
13	49	F	Winter rye	Spring	Mustang forte	0,29	l				2018	27-04-201	Broadway	80,00	g	1,13	90,40		122,00	0,66		2641,0(	0,03		115,90	0,66	0,03	68,71	0,28	-0,05	59%	42%	-164%
								47,19	0,38	0,08			PG26N	0,50	l	51,00	25,50	115,90			0,66			0,03									
13	50	F	Winter wheat	Spring	Lancelot	8,8	g				2018	26-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	83,77	0,59	0,01	56%	66%	28%
					DLG Contact	0,15	l	66,03	0,31	0,03			PG26N	0,50	l	51,00	25,50	149,80			0,90			0,04									
13	51	F	Winter wheat	Spring	Tombo	19	g				2018	27-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	104,30	0,65	0,03	70%	72%	76%
								45,50	0,25	0,01			PG26N	0,50	l	51,00	25,50	149,80			0,90			0,04									
13	52	F	Winter wheat	Spring	Lancelot	8,3	g				2018	27-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	87,30	0,61	0,01	58%	68%	28%
					DLG Contact	0,15	l	62,50	0,29	0,03			PG26N	0,50	l	51,00	25,50	149,80			0,90			0,04									
14	53	F	Winter wheat	Autumn	Atlantis OD	0,38	l				2020	21-09-202	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		400,10	1,13	1,87	235,67	0,62	1,66	59%	55%	89%
					Buctril EC 225	0,15	l	164,43	0,51	0,21			Mateno Duo 600 :	0,35	l	406,00	142,10	400,10	0,50	0,70	1,13	0,50	0,70	1,87									
15	54	F	Winter wheat	Autumn	Mustang forte	0,28	l				2020	20-09-202	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		450,00	0,45	1,16	266,94	-0,38	1,06	59%	-85%	91%
					Hussar OD	0,046	l					15-10-202	Atlantis	0,60	l	320,00	192,00		30,00	0,02		626,00	0,00										
					Renol	0,5	l	183,06	0,83	0,1								450,00			0,45			1,16									
16	55	F	xWinter barley	Autumn	N/A						2020	20-09-202	Boxer	1,25	l	172,00	215,00		3,50	0,36		1,29	0,97		455,00	1,19	1,08	N/A	N/A	N/A			
												15-10-202	Atlantis OD	0,75	l	320,00	240,00		0,90	0,83		6,72	0,11										
																		455,00			1,19			1,08									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
17	56	JS	Winter wheat	Autumn	Othello	0,5	l				2020	10-10-202	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	142,82	0,22	1,13	48%	24%	88%
								154,38	0,71	0,16			DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									
17	57	JS	Winter wheat	Autumn	Othello	0,53	l	164,92	0,76	0,17	2020	10-10-202	Boxer	1,50	l	172,00	258,00		3,50	0,43		1,29	1,16		297,20	0,93	1,29	297,20	0,93	1,29	100%	100%	100%
													DFF	0,10	l	392,00	39,20	297,20	0,20	0,50	0,93	0,77	0,13	1,29									
13	58	F	Spring barley	Spring	Catch	0,09	l				2018	15-05-201	Nuance WG	8,00	g	4,45	35,60		10,00	0,80		460,00	0,02		281,90	1,62	1,13	239,17	1,05	1,09	85%	65%	96%
					Ally SX	8,4	g						Pixxaro EC	0,10	l	413,00	41,30		0,31	0,32		1,76	0,06										
								42,73	0,57	0,04		28-05-201	M-750	1,00	l	205,00	205,00	281,90	2,00	0,50	1,62	0,95	1,06	1,13									
7	59	S	Spring barley	Spring	Tomahawk 200 E(	0,38	l				2019	16-04-201	Sempra 500 SC	0,12	l	415,00	48,56		0,20	0,59		0,77	0,15		335,90	1,52	1,06	266,34	0,92	0,74	79%	61%	70%
												20-05-201	Hussar Plus OD	0,05	l	1225,0(	62,48		0,18	0,29		1,76	0,03										
													Zypar	0,10	l	211,00	21,10		0,67	0,15		3,70	0,03										
								69,56	0,6	0,32		07-06-201	U46 M	0,99	l	205,00	203,77	335,90	2,00	0,50	1,52	1,17	0,85	1,06									
7	60	S	Spring barley	Spring	Mustang forte	0,27	l				2019	20-05-201	Sempra 500 SC	0,03	l	415,00	10,38		0,20	0,13		0,77	0,03					117,64	0,45	0,27	73%	53%	77%
													Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03										
													Zypar	0,11	l	211,00	23,63		0,67	0,17		3,70	0,03										
												06-06-201	Zypar	0,10	l	211,00	20,68		0,67	0,15		3,70	0,03										
								44,22	0,39	0,08		07-06-201	U46M	0,22	l	205,00	45,92	161,86	2,00	0,11	0,84	0,95	0,24	0,35									
7	61	S	Spring barley	Spring	Mustang forte	0,27	l				2019	19-05-201	Sempra 500 SC	0,03	l	415,00	11,21		0,20	0,14		0,77	0,04		118,88	0,73	0,12	74,66	0,34	0,04	63%	47%	32%
													Hussar Plus OD	0,06	l	1225,0(	67,38		0,18	0,31		1,76	0,03										
													Zypar	0,10	l	211,00	21,10		0,67	0,15		3,70	0,03										
								44,22	0,39	0,08		05-06-201	Zypar	0,09	l	211,00	19,20	118,88	0,67	0,14	0,73	3,70	0,02	0,12									
3	62	S	Winter wheat	Spring	Broadway, 2-split	0,43	trt				2018	15-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	26,26	0,13	0,01	18%	15%	28%
								123,54	0,77	0,03			PG26N	0,50	l	51,00	25,50	149,80	0,00	0,00	0,90	0,00	0,00	0,04									
3	63	S	Winter wheat	Spring	Primus	0,007	l				2018	15-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	32,38	0,45	0,00	22%	50%	4%

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization						Reference treatments.								Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B						Products, dose rates, unit price and sums of cost								Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
					Cossack OD	0,27	l						PG26N	0,50	l	51,00	25,50																
					DLG Contact	0,15	l	117,42	0,45	0,04								149,80			0,90			0,04									
13	64	F	Spring barley	Spring	Mustang forte	0,22	l				2018	19-04-201	DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13		369,70	2,31	1,34	288,04	1,25	1,27	78%	54%	95%
					Express Gold SX	13,1	g					16-05-201	Nuance WG	5,00	g	4,45	22,25		10,00	0,50		460,00	0,01										
													Pixxaro EC	0,25	l	413,00	103,25		0,31	0,81		1,76	0,14										
								81,66	1,06	0,07		29-05-201	M-750	1,00	l	205,00	205,00	369,70	2,00	0,50	2,31	0,95	1,06	1,34									
13	65	F	Spring barley	Spring	Ally SX	14,9	g				2018	19-04-201	DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13		369,70	2,31	1,34	162,93	0,71	1,28	44%	31%	96%
					Primus 250 WG	17,3	g					16-05-201	Nuance WG	5,00	g	4,45	22,25		10,00	0,50		460,00	0,01										
													Pixxaro EC	0,25	l	413,00	103,25		0,31	0,81		1,76	0,14										
								206,77	1,6	0,06		29-05-201	M-750	1,00	l	205,00	205,00	369,70	2,00	0,50	2,31	0,95	1,06	1,34									
13	66	F	Spring barley	Spring	Mustang forte	0,75	l				2018	19-04-201	DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13		369,70	2,31	1,34	186,94	0,25	1,10	51%	11%	82%
					Express Gold 33 S	16,9	g					16-05-201	Nuance WG	5,00	g	4,45	22,25		10,00	0,50		460,00	0,01										
													Pixxaro EC	0,25	l	413,00	103,25		0,31	0,81		1,76	0,14										
								182,76	2,06	0,24		29-05-201	M-750	1,00	l	205,00	205,00	369,70	2,00	0,50	2,31	0,95	1,06	1,34									
13	67	F	Spring barley	Spring	Catch	0,22	l				2018	19-04-201	DFF	0,10	l	392,00	39,20		0,20	0,50		0,77	0,13		369,70	2,31	1,34	281,74	1,22	1,27	76%	53%	95%
					Ally SX	14,8	g					16-05-201	Nuance WG	5,00	g	4,45	22,25		10,00	0,50		460,00	0,01										
													Pixxaro EC	0,25	l	413,00	103,25		0,31	0,81		1,76	0,14										

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuva	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
								87,96	1,09	0,07		29-05-201	M-750	1,00	l	205,00	205,00	369,70	2,00	0,50	2,31	0,95	1,06	1,34									
13	68	F	Spring barley	Spring	Express Gold SX	4,2	g				2018	16-05-201	Hussar Plus OD	0,07	l	1225,0(	85,75		0,18	0,40		1,76	0,04		302,51	1,05	1,14	181,58	0,28	1,13	60%	27%	100%
					Primus 250 WG	10,6	g						DFF	0,03	l	392,00	11,76		0,20	0,15		0,77	0,04										
								120,93	0,77	00,03		29-05-201	M-750	1,00	l	205,00	205,00	302,51	2,00	0,50	1,05	0,95	1,06	1,14									
24	69	F	Winter wheat	Autumn	Atlantis OD	0,33	l				2020	24-10-202	Boxer	1,00		172,00	172,00		3,50	0,29		1,29	0,78		314,10	0,99	1,48	152,83	0,03	1,28	49%	3%	86%
					DFF	0,12	l	161,27	0,96	0,2			Mateno Duo 600 :	0,35		406,00	142,10	314,10	0,50	0,70	0,99	0,50	0,70	1,48									
24	70	F	Winter wheat	Autumn	Othello	0,37	l				2020	24-10-202	Boxer	1,00		172,00	172,00		3,50	0,29		1,29	0,78		314,10	0,99	1,48	198,47	0,46	1,36	63%	46%	92%
								115,63	0,53	0,12			Mateno Duo 600 :	0,35		406,00	142,10	314,10	0,50	0,70	0,99	0,50	0,70	1,48									
24	71	F	Winter wheat	Autumn	Boxer	0,4	l				2020	05-10-202	Boxer	1,00		172,00	172,00		3,50	0,29		1,29	0,78		314,10	0,29	0,78	47,86	-0,69	0,30	15%	-243%	38%
					Othello	0,6	l	266,24	0,98	0,48			Mateno Duo 600 :	0,35		406,00	142,10	314,10	0,50	0,70	0,29	0,50	0,70	0,78									
18	72	JN	Spring barley	Spring	Ally SX	7,4	g				2020	15-04-202	DFF	0,15	l	392,00	58,80		0,20	0,75		0,77	0,19		115,04	1,34	0,24	98,02	0,97	0,24	85%	72%	100%
												28-05-202	Express 50 SX	5,20	g	2,60	13,52		15,00	0,35		660,00	0,01										
								17,02	0,37	0			Primus XL	0,24	l	178,00	42,72	115,04	1,00	0,24	1,34	5,87	0,04	0,24									
19	73	JN	Spring barley	Spring	Ally SX	10	g				2018	01-05-201	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		297,15	1,06	1,14	257,82	0,44	1,11	87%	41%	97%
					Zypar	0,08	l						DFF	0,03	l	392,00	9,80		0,20	0,13		0,77	0,03										
													Zypar	0,10	l	211,00	21,10		0,67	0,15		3,70	0,03										
								39,33	0,62	0,03		31-05-201	M-750	1,00	l	205,00	205,00	297,15	2,00	0,50	1,06	0,95	1,06	1,14									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuv	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
20	74	JS	Spring barley	Spring	Catch	0,1	l				2018	01-05-201	Hussar Plus OD	0,05	l	1225,0(	61,25		0,18	0,28		1,76	0,03		297,15	1,06	1,14	246,31	0,32	1,10	83%	30%	97%
					Ally SX	11,6	g						DFF	0,03	l	392,00	9,80		0,20	0,13		0,77	0,03										
													Zypar	0,10	l	211,00	21,10		0,67	0,15		3,70	0,03										
								50,84	0,74	0,04		31-05-201	M-750	1,00	l	205,00	205,00	297,15	2,00	0,50	1,06	0,95	1,06	1,14									
21	75	JN	xMaize, silage	Spring	N/A						2020	26-05-202	Harmony 50 SX	5,60	l	6,65	37,24		15,00	0,37		94,50	0,06		462,99	2,39	1,43	N/A	N/A	N/A	N/A	N/A	N/A
													Maisoil	0,50	l	0,00	0,00		2,00	0,25		0,95	0,53										
													MaisTer	25,00	l	2,52	63,00		150,00	0,17		1595,0(	0,02										
													Tocalis	0,10	kg	985,00	98,50		0,30	0,33		1,17	0,09										
												11-06-202	MaisOil	0,50	l	0,00	0,00		2,00	0,25		0,95	0,53										
													MaisTer	50,00	l	2,52	126,00		150,00	0,33		1595,0(	0,03										
													Starane 333 HL	0,15	l	265,00	39,75		0,43	0,35		1,60	0,09										
													Tocalis	0,10	kg	985,00	98,50	462,99	0,30	0,33	2,39	1,17	0,09	1,43									
21	76	JN	Winter wheat	Spring	Mustang forte	0,35	l				2019	15-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	92,22	0,44	-0,06	62%	49%	-140%
								57,58	0,46	0,1			PG26N	0,50	l	51,00	25,50	149,80	0,00	0,00	0,90	0,00	0,00	0,04									
3	77	S	Winter wheat	Autumn	Othello	0,37	l				2018'	15-04-201	Broadway	110,00	g	1,13	124,30		122,00	0,90		2641,0(	0,04		149,80	0,90	0,04	34,17	0,37	-0,08	23%	41%	-188%
								115,63	0,53	0,12			PG26N	0,50	l	51,00	25,50	149,80	0,00	0,00	0,90	0,00	0,00	0,04									
23	78	F	Maize, silage	Spring	Tocalis	0,26	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-251,68	-0,33	0,00	-71%	-26%	-1%
					Harmony SX	3,5	g						Maisoil	1,00	l																		
					MaisTer	83	g						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0(	0,05										
					MaisOil	2	l	605,97	1,64	0,22			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									
23	79	F	Maize, silage	Spring	Harmony 50 SX	10,9	g				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-413,71	-1,09	-0,11	-117%	-84%	-52%
					MaisTer	102	g						Maisoil	1,00	l																		
					Tocalis	0,3	l						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0(	0,05										
					MaisOil	2	l	768,00	2,4	0,33			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuva	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
23	80	F	Maize, silage	Spring	Tokalis	0,21	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-193,51	-0,49	-0,03	-55%	-38%	-15%
					Harmony 50 SX	9,6	g						Maisoil	1,00	l																		
					MaisTer	69	g						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0	0,05										
					MaisOil	2	l	547,80	1,8	0,25			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									
23	81	F	Maize, silage	Spring	Xinca	0,95	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-498,77	-1,17	-0,83	-141%	-90%	-383%
					MaisTer	118	g						Maisoil	1,00	l	0,00	0,00																
					Callisto	1,11	l						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0	0,05										
					MaisOil	2	l	853,06	2,48	1,05			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									
23	82	F	Maize, silage	Spring	Xinca	0,05	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	246,64	0,51	0,06	70%	39%	26%
					Harmony 50 SX	11,2	g						Maisoil	1,00	l	0,00	0,00																
					DLG Contact	0,15	l						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0	0,05										
								107,65	0,8	0,16			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									
23	83	F	Maize, silage	Spring	Starane 333 HL	0,15	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-309,45	-0,39	-0,07	-87%	-30%	-33%
					Tocalis	0,29	l						Maisoil	1,00	l	0,00	0,00																
					MaisTer	83	g						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0	0,05										
					MaisOil	2	l	663,74	1,7	0,29			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									
23	84	F	Maize, silage	Spring	Tocalis	0,12	l				2020	02-06-202	Harmony 50 SX	5,60	g	6,65	37,24		15,00	0,37		94,50	0,06		354,29	1,31	0,22	-47,27	0,02	0,05	-13%	1%	22%
					Harmony 50 SX	6,3	g						Maisoil	1,00	l	0,00	0,00																
					MaisTer	70	g						MaisTer	75,00	g	2,52	189,00		150,00	0,50		1595,0	0,05										
					MaisOil	2	l	401,56	1,29	0,17			Tocalis	0,13	kg	985,00	128,05	354,29	0,30	0,43	1,31	1,17	0,11	0,22									

Farm	Field	Re-	Crop	Autumn	RWM, ver. Jan. 2021, cost minimization							Reference treatments.							Ref doses=1 unit from SEGES MDB						Reference treat.			Saved, field spec.			Saved, field sp. %		
ID	ID	gion		/spring	Products and sums of cost, TFI and B							Products, dose rates, unit price and sums of cost							Treatm. Freq. Index (TFI)			Env. Load Index (ELI)						RWM minus spray journal					
				season	Herbicide/Adjuvant	Dose	Unit	Cost	TFI	ELI	Year	Time	Herbicide/Adjuva	Dose	U	Unit pr	Cost	Cost su	D=1 TFI	TFI	TFI sum	D=1 ELI	ELI	ELI sum	Cost	TFI	ELI	Cost	TFI	ELI	Cost	TFI	ELI
Sum/c	84	84							Spr journal mangle			0													82,00								