

Methodology for the Production and Updating of Agricultural Land Use/Cover Data Set

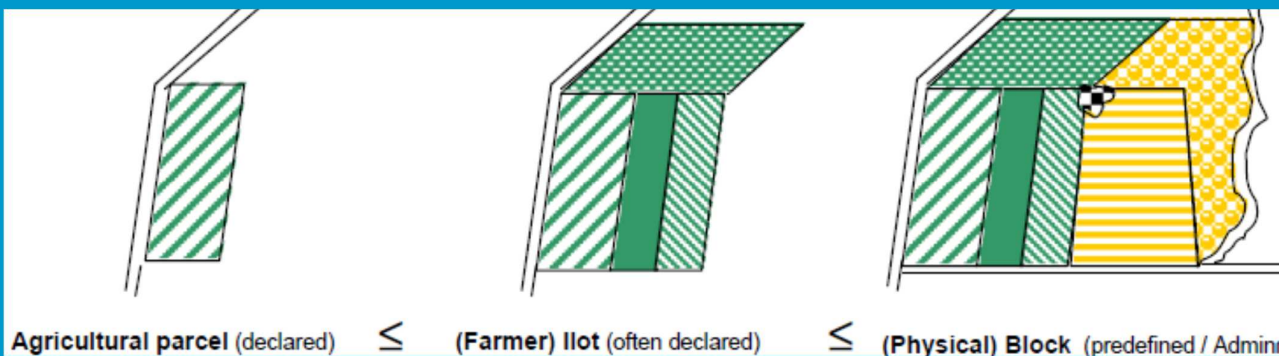
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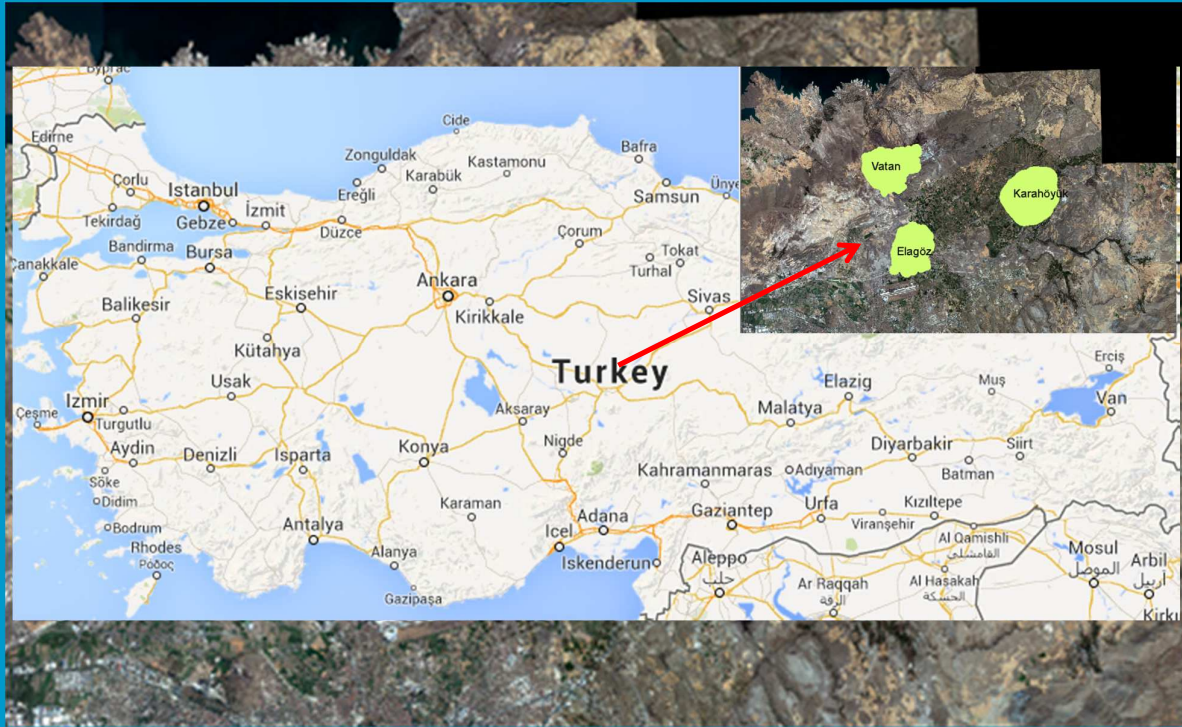


Agricultural Land Use/Cover Classification European Common Agricultural Policy (CAP)

- Integrated Administration and Control System (IACS)
 - Land Parcel Identification System (LPIS)
 - Different Spatial References (Land Parcels)
 - Different National Needs
 - Possibility of Data Share
 - Different Land Use/Cover Classes



Study Area (approx. 4000 ha total area) Three Rural Districts in Kayseri Province



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Boundary Delineation / Adjudication Fixed Boundaries Approach



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Land Use / Cover Classes

Specified Classes

Common Classification

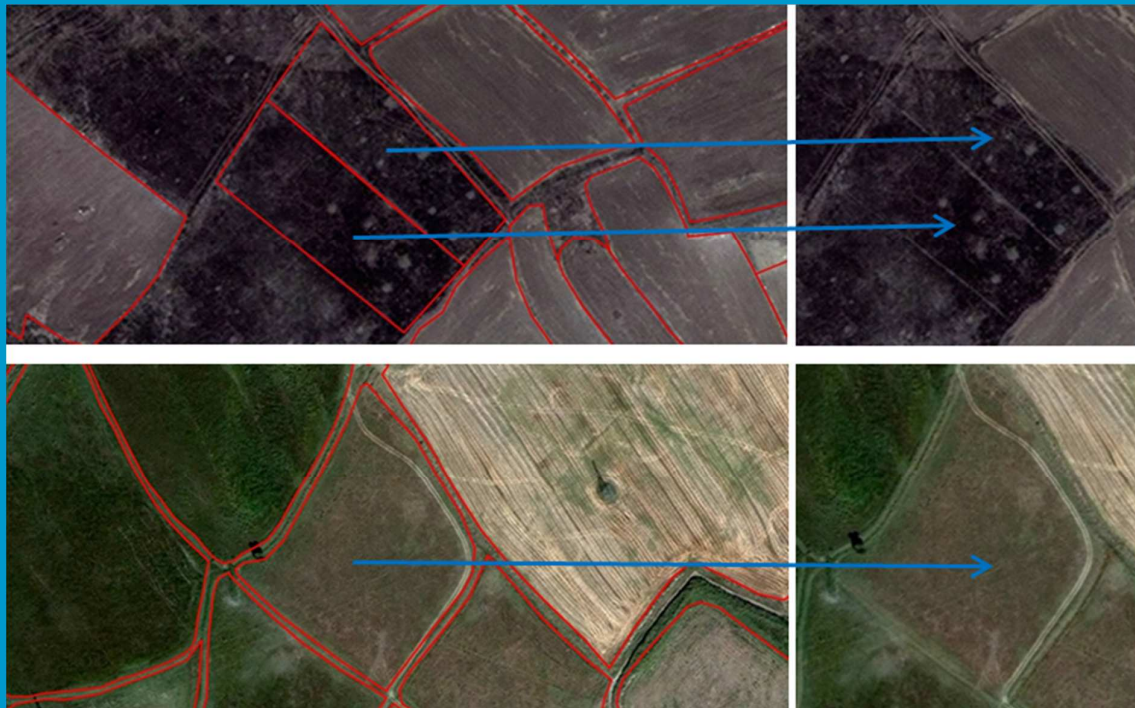
- Planted (Agricultural) – fruit orchards, olive groves, grapes etc.
- Protected (Agricultural) – green house or other protecting cover
- Meadow (Agricultural) – private land for animal grazing

Special Classifications

- Fertile (Agricultural) – only the ones in good condition
- Abandoned (Agricultural) – fertile but not in good condition
- Non-Agricultural (Agricultural)
- Infertile
- Built-up

Land Use / Cover Classes

Classification example – Abandoned land



Land Use / Cover Classes

Relation with CORINE Classes

Land Use/Cover Class	CORINE Equivalent (Level 2)
Fertile	2.1. Arable land
Planted	2.2. Permanent crops
Protected	---
Meadow	2.3. Pastures
Abandoned	---
NoneAgricultural	---
Infertile	3.3. Open spaces with little or no vegetation
Built-Up	1.1. Urban fabric 1.2. Industrial, commercial and transport units 1.3. Mine, dump and construction sites 1.4. Artificial non-agricultural vegetated areas

Land Use / Cover Classes

Production

- Ortho Image Interpretation based on Fixed Boundaries Approach
- Scale of Interpretation 1/1000
- Preserving original geometry of fixed boundary larger than 2 m
- Use of Two Different Data Sets (2010 – 2013)
- Two Different Boundary Delineation / Adjudication Methods
 - Without Cadastral Parcel Boundaries (Physical Blocks)
 - With Cadastral Parcel Boundaries (Sub-Parcels)

Production (Samples from Karahoyuk)

Physical Blocks (only Agricultural ones)



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Production (Samples from Karahoyuk)

Sub-Parcels (for all Cadastral Parcels)



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Interpretation problem of Abandoned Land (in the case of Physical Blocks)



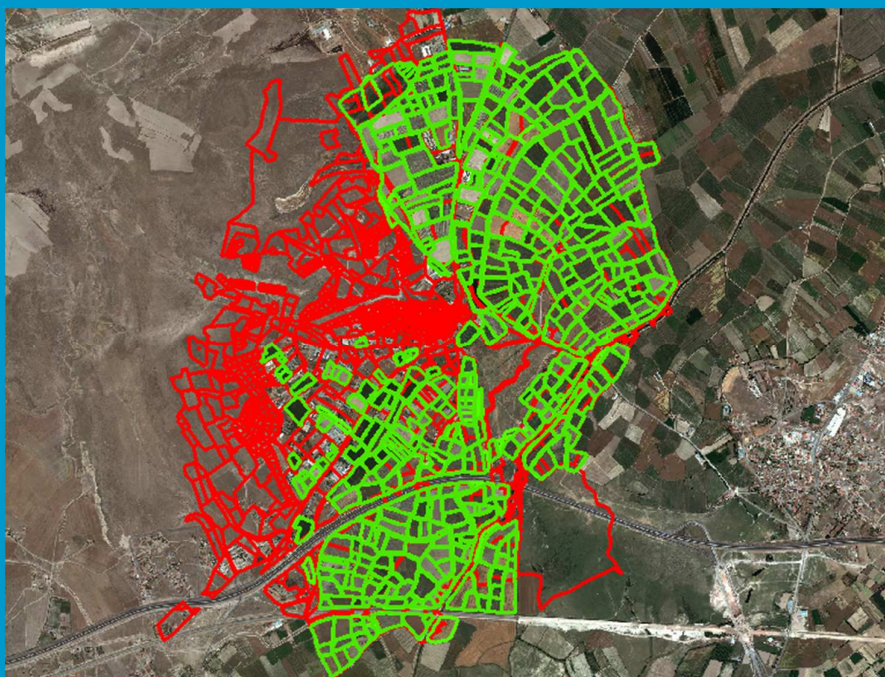
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Production (in Elagoz) Physical Blocks (only Agricultural ones)



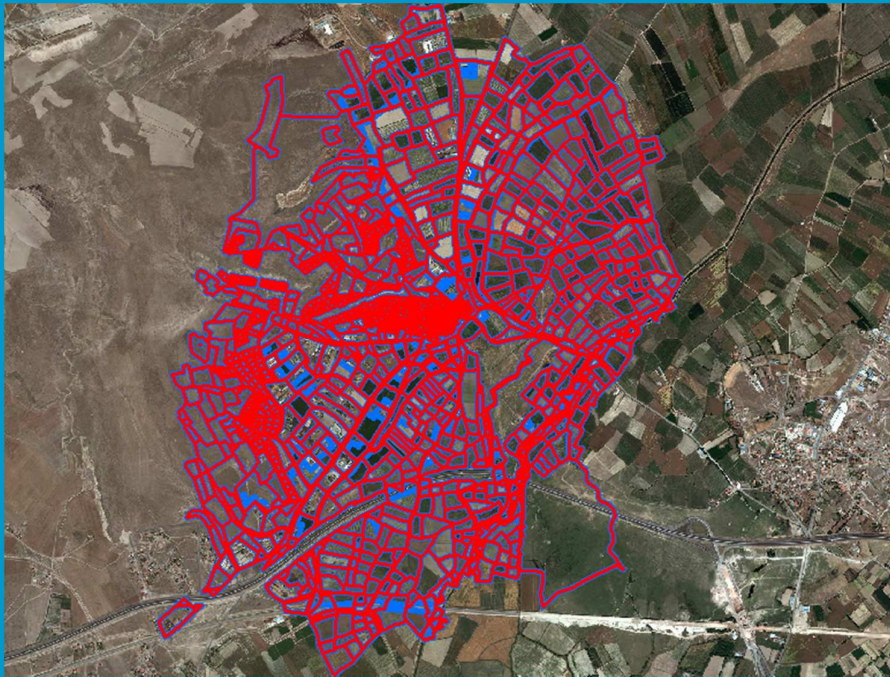
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Production (in Elagoz) Sub-Parcels (within all Cadastral Parcels)



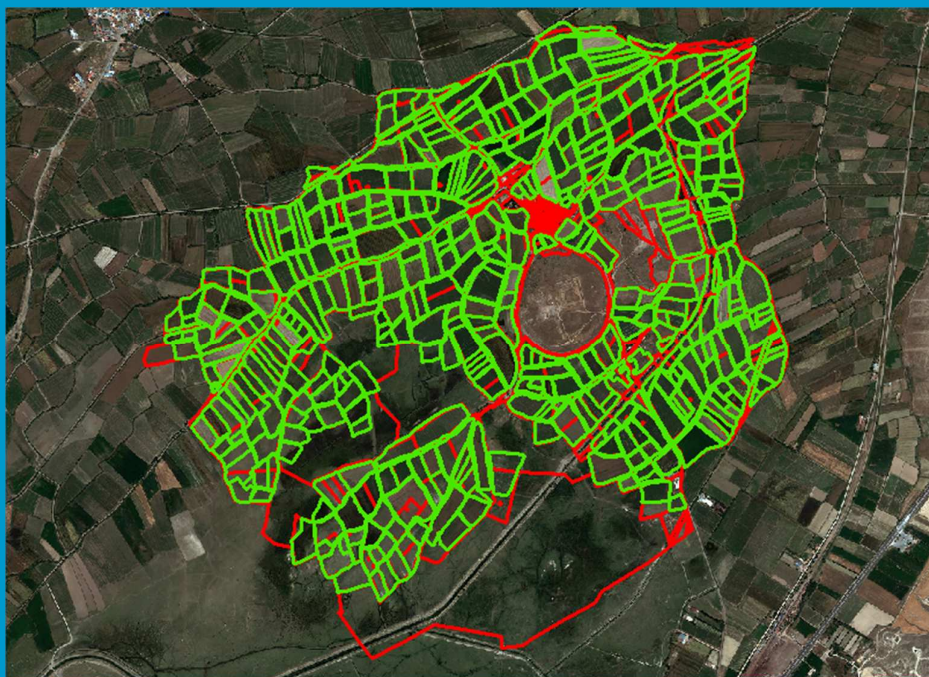
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Production (in Karahoyuk) Physical Blocks (only Agricultural ones)



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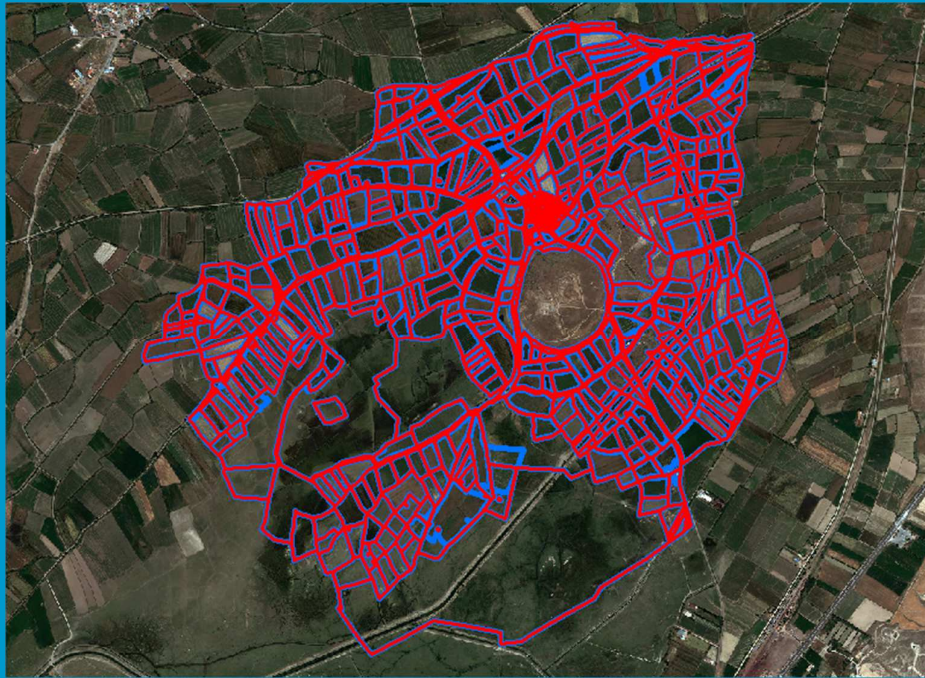
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Production (in Karahoyuk)

Sub-Parcels (within all Cadastral Parcels)



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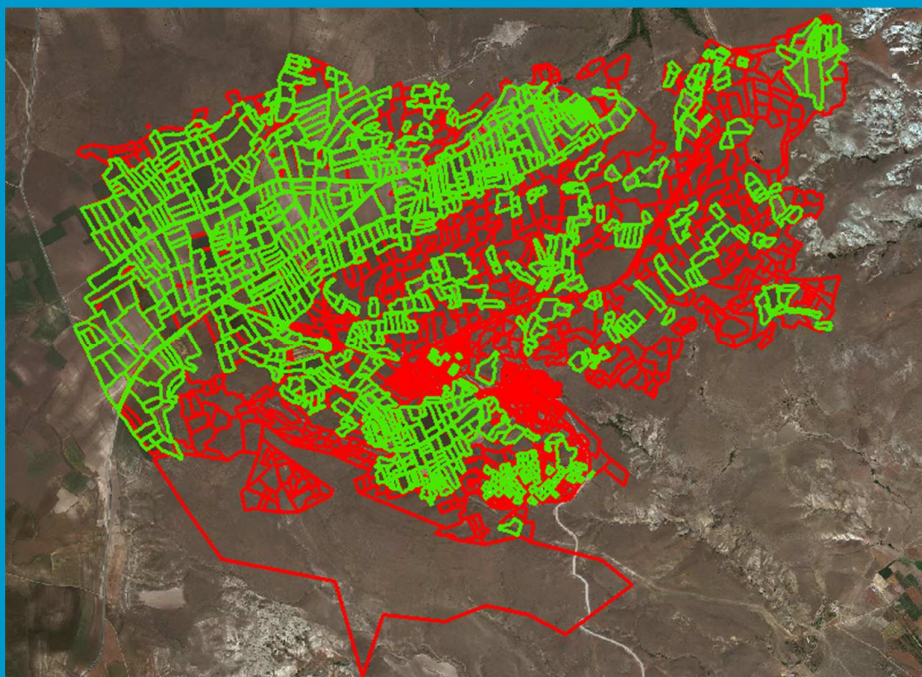
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Production (in Vatan)

Physical Blocks (only Agricultural ones)



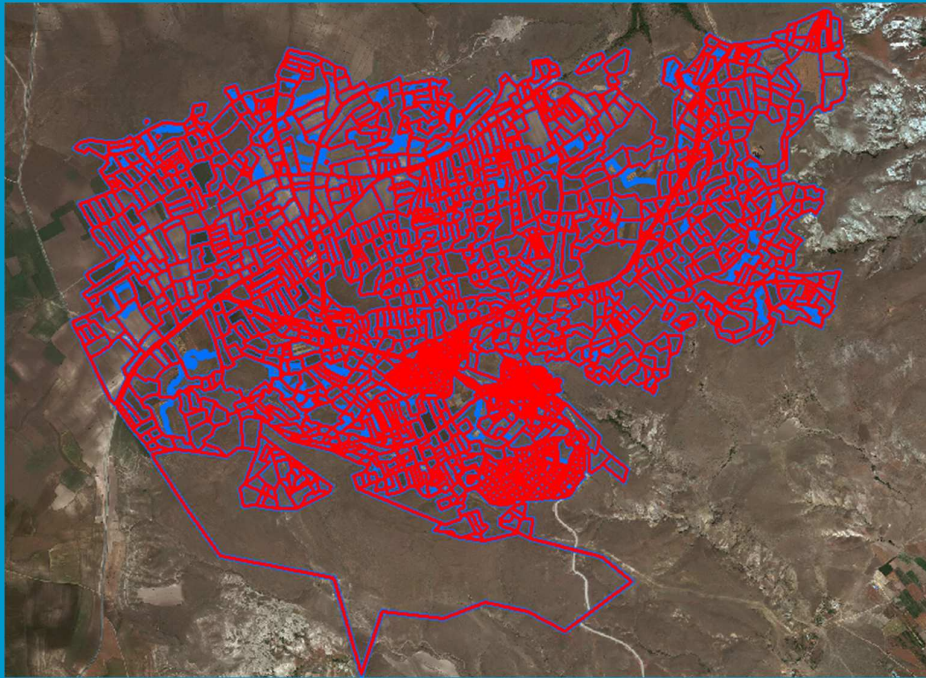
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Production (in Vatan) Sub-Parcels (within all Cadastral Parcels)



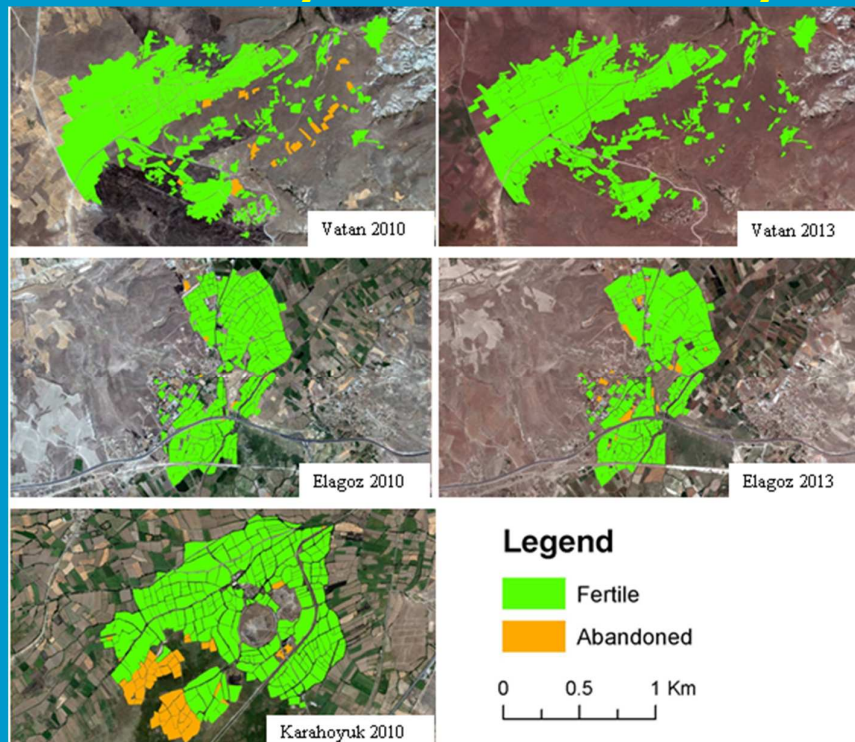
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Production Classification of Physical Blocks – in only two classes



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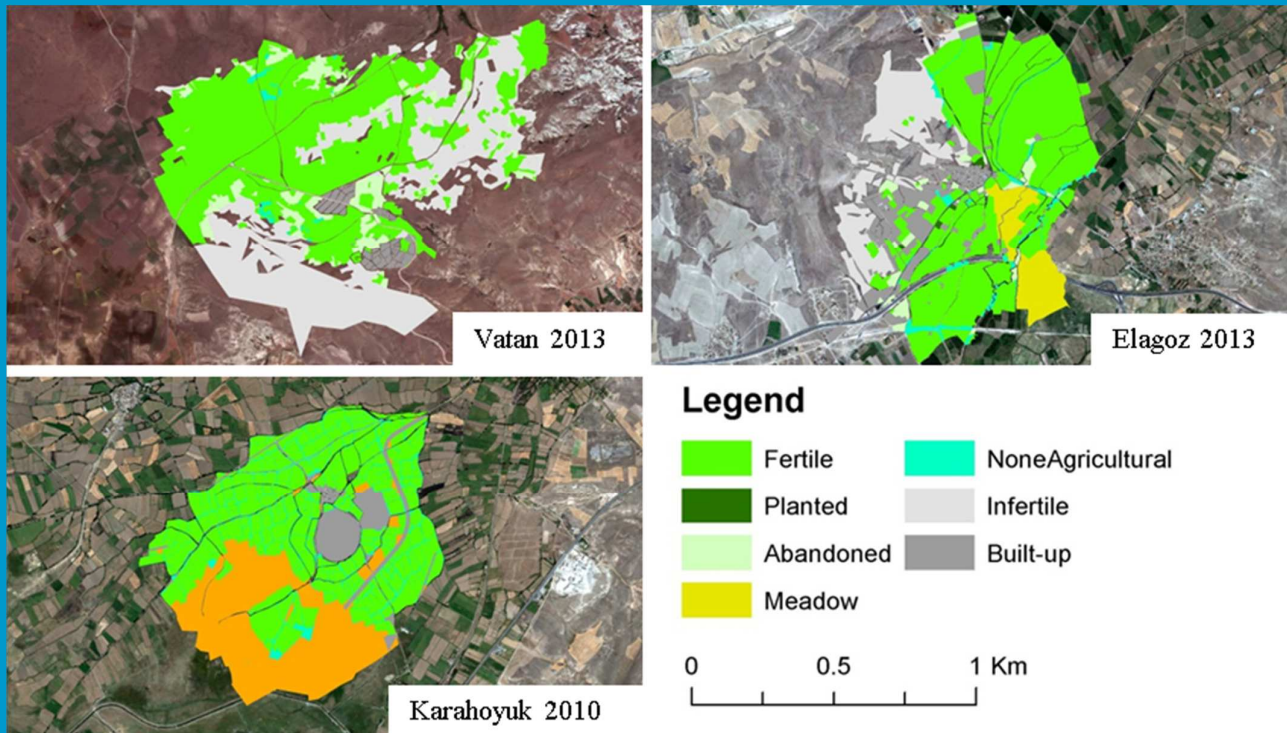
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Production

Classification of Sub-Parcels – all classes



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Updating Procedures For Sub-Parcels

- Hierarchical topology between cadastral parcels and related sub-parcels must be preserved during maintenance/updating,
- Geometrical changes/updates on cadastral parcels should be traced and necessary sub-parcel updating should be carried out accordingly,
- Sub-parcel boundaries must not change seasonally/yearly, so they should be updated only they are changed,
- Changes of different sub-parcel boundaries representing different land use/cover class may occur differently, therefore different updating strategies for each land use/cover class should be developed.
- Edge detection algorithms may help for the detection of change in sub-parcel boundaries.

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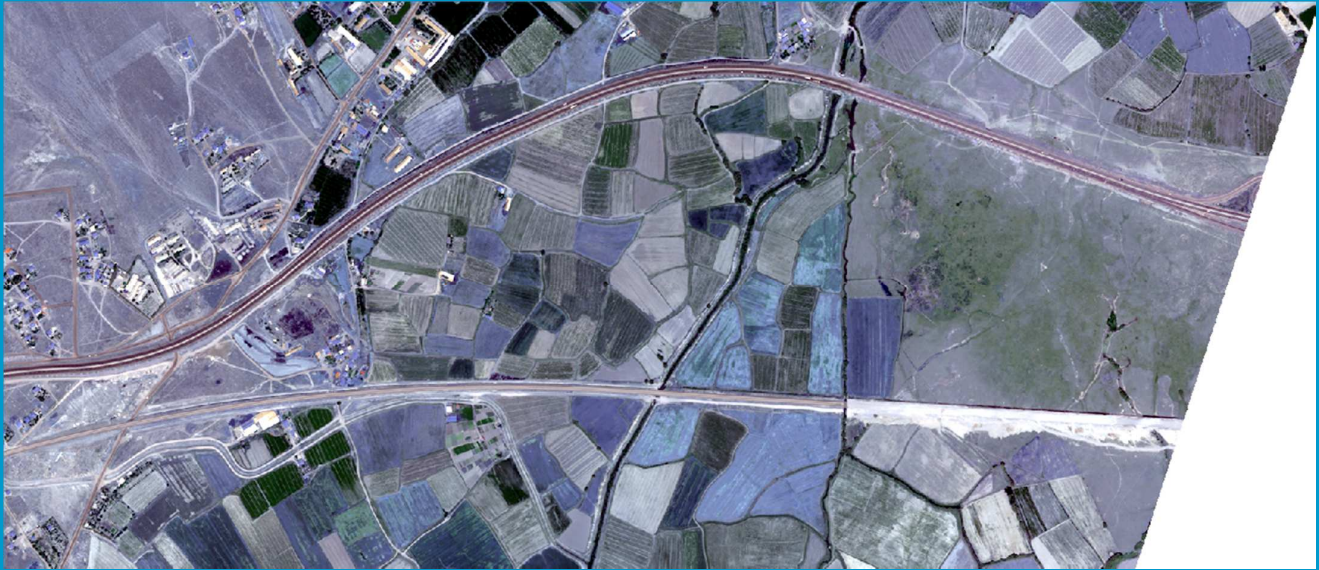
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Updating Procedures (future work)

Detecting boundaries with edge detection algorithms



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Updating Procedures (future work)

Detecting boundaries with edge detection algorithms



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Results

Important ones ...

- Fixed boundaries approach only works for agricultural fields,
- It is impossible to digitise all physical block boundaries using fixed boundaries approach,
- Incorporating CORINE land cover methodology for non-agricultural areas makes the implementation ineffective,
- However, using cadastral parcel boundaries makes the classification of all types of land (except for state lands not registered in the land registry and cadastre system) possible,
- For unregistered state lands, in combination with sub-parcels inside cadastral parcels, easily identifiable physical blocks may be defined outside cadastral parcels.
- For sustainability of such a data set, the methodology and the classification as well should be further refined to meet the needs of all related government or private bodies.



Thanks...