The Statistical Farm Register

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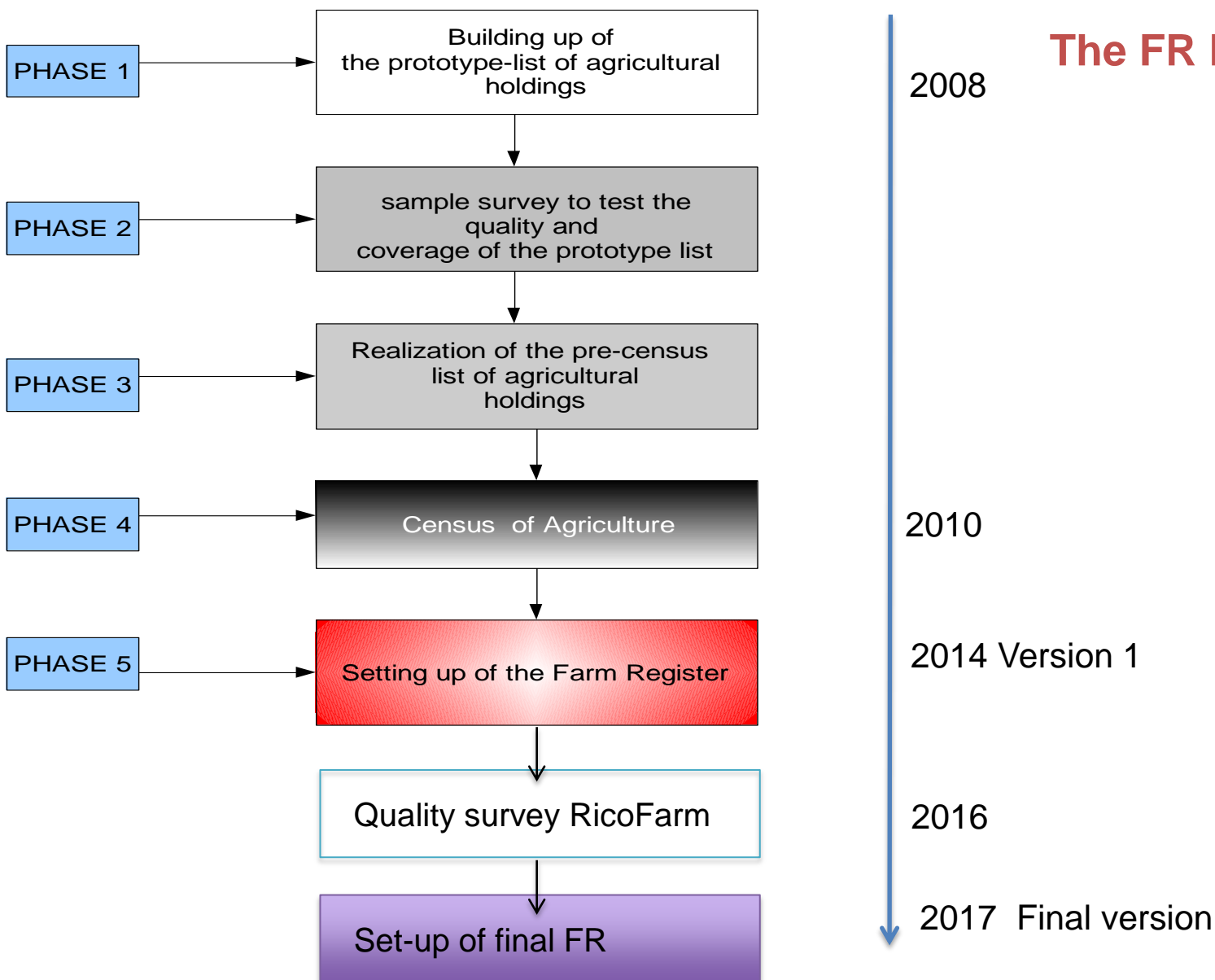Study visit on Agriculture statistics - Israel Central Bureau of
Statistics

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➤Background

➤The administrative sources

➤The Statistical Farm Register production process

➤The results

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Main purposes for setting-up and maintaining a Farm Register

❑To enlarge the statistical register system to the sector of agriculture (European regulations)

❑ To exploit all information available into administrative sources

❑To maintain high-quality sampling frames for current statistical surveys conducted in agriculture (random samples, weighting structure of the samples)

❑To update the census data in between two censuses providing immediate authoritative information on the current structure of agricultural holdings

❑Providing longitudinal analyses on historical trends in the overall structure of agricultural holdings

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The FR Project

| PHASE 1 | → | Building up of the prototype-list of agricultural holdings | | 2008 |

↓

| PHASE 2 | → | sample survey to test the quality and coverage of the prototype list |

↓

| PHASE 3 | → | Realization of the pre-census list of agricultural holdings |

↓

| PHASE 4 | → | Census of Agriculture | | 2010 |

↓

| PHASE 5 | → | Setting up of the Farm Register | | 2014 Version 1 |

↓

Quality survey RicoFarm — 2016

↓

Set-up of final FR — 2017 Final version

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Main features and difficulties

The sector

➢It is characterized by small and very small productive units, strongly aided for the realization of a minimum income

➢Labour force is mainly based on family labour, often seasonal and part-time

➢the sector is strictly integrated with other activities such as transformation, trade, tourism, etc.

These items make complex the correct identification of units as well as the estimation of their actual size and their principal activity

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The exploitation of administrative sources – an overview

Acquisition, treatment and integration of administrative sources in agricultural field present some complexity

Administrative sources are sources containing information that is not primarily collected for statistical purposes:

1) Differences in the definition of the units and variables
2) Different classification systems or applied differently
3) AD could not be available in time or could related to a different period (timing)
4) Data susceptible to political or/and fiscal regulations changes that cause spurious structural breaks
5) Operators can adapt legal procedures on the base of their owns interests (the administrative declaration do not correspond to the operator's "economic reality")
6) Problems of matching data (unit duplications)
8) Consistency between the sources

The SFR is the result of the integration of several administrative sources

Why Integration of many administrative sources?

❖ lack of a unique benchmark or pivot archive that covers the whole potential universe of agricultural holdings.

i.e: holdings that have not applied for subsidies are outside the IACS system

❖ information is gathered for different purposes such as: the payment of community contributions (IACS); the identification and registration of animals for public health reason (AA.ZZ.); the income declaration for tax reasons.

i.e. : agricultural holdings have to declare income as owners of land, not all owners of land are agricultural holdings

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❖ peculiarity in definitions and classifications that need to be translated according to a statistical framework before their usage

i.e: the main difficulty is to identify easily the statistical unit of reference starting from the units recorded into administrative files
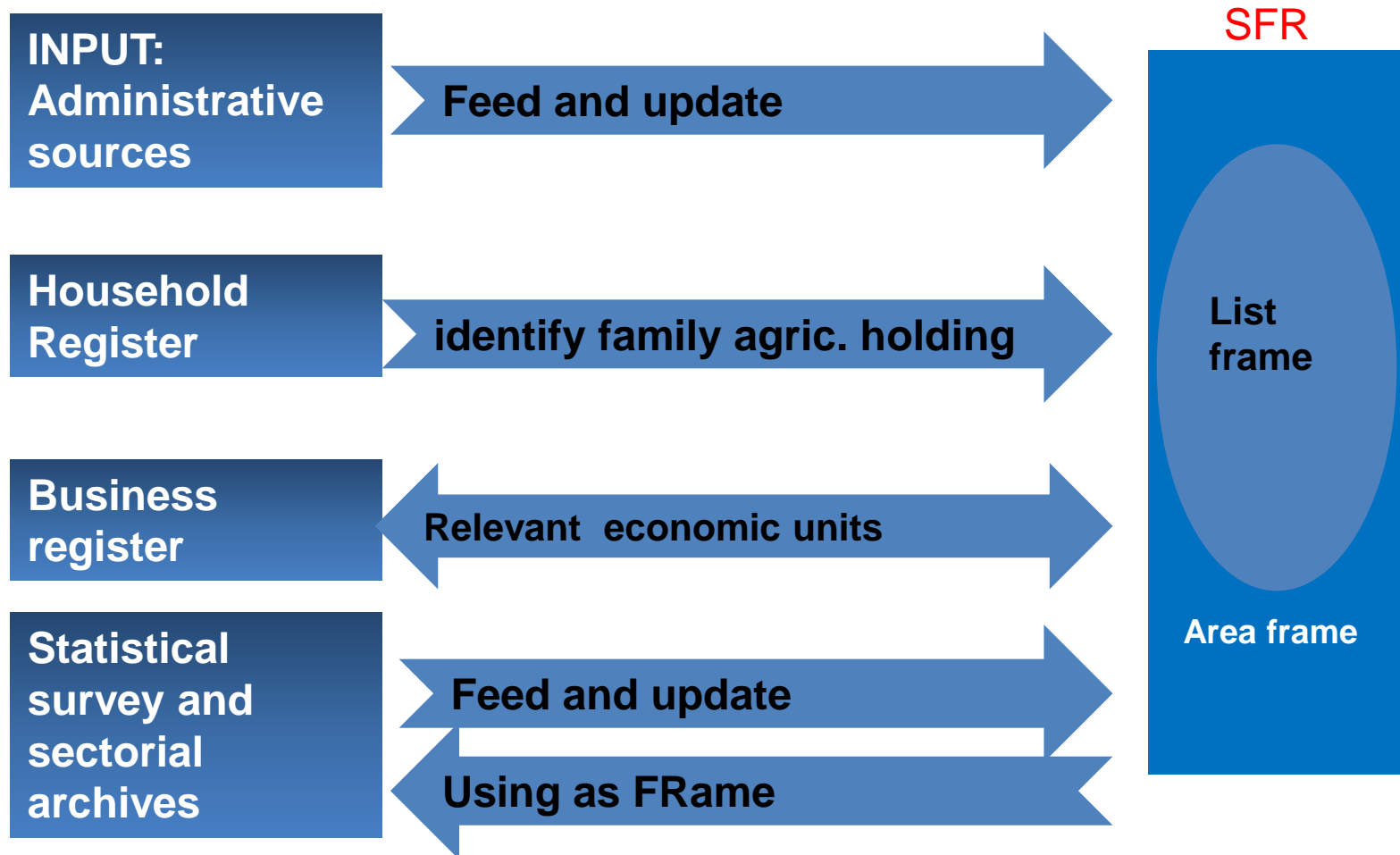
❖ recorded variables in each source can present a different degree of complexity in the statistical translation

i.e: even if the agricultural area utilized for farming is declared and recorded by a source it can be calculated only for some categories of products or it is declared only the part liable for payment.

i.e: with regards to labour dimension it can be complex to calculate the number of equivalent full-time working days of farm work when the person is also involved in other working activities.

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SFR is a SYSTEM consisting of several registers

Conceptual framework

INPUT: Administrative sources	→ Feed and update
Household Register	→ identify family agric. holding
Business register	← Relevant economic units
Statistical survey and sectorial archives	→ Feed and update / ← Using as FRame

SFR

List frame

Area frame

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In the SFR:

- the statistical unit is represented by a person (natural or juridical) identified by the fiscal code or Unique Code of Agricultural Holdings (CUAA) carrying out one or more Agricultural Holdings

- Agricultural Holdings and holder headquarter are identified on the base of the localization and distance of lands owned or managed

AH definition:
At national level is defined by the Census of Agriculture (according to the definition of the FSS regulation n. 1166/2008)

The "Agricultural holding" corresponds to:

A single unit, both technically and economically, which has a single management and which undertakes agricultural activities listed in Annex I within the economic territory, either as its primary or secondary activity

10

The Statistical Farm Register production process

0 – Preliminary analyses of the 2010 Agricultural Census results (Benckmark)

1 – Identification, acquisition and (pre) treatment of administrative sources – INPUT phase

2 – Integration of sources, estimation of variables, application of eligibility rules and first check (using unduplication methods for cluster of units and land) – PROCESS phase

3 - Evaluation of the results (internal and external coherence analyses)…*current activity - Ricofarm survey result*

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Preliminary analyses

- Learning from the agricultural Census 2010 results and from the PES 2011 with respect to the adopted pre-census list

- Evaluate the availability and contents of administrative sources (changes in regulations, in classifications, ..)

- Develop and implement new methodologies for the identification of units, for solving unduplication, for eligibility

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1. INPUT: Administrative and statistical sources

Administrative sources managed by public agencies or private companies

Statistical sources owned by Istat
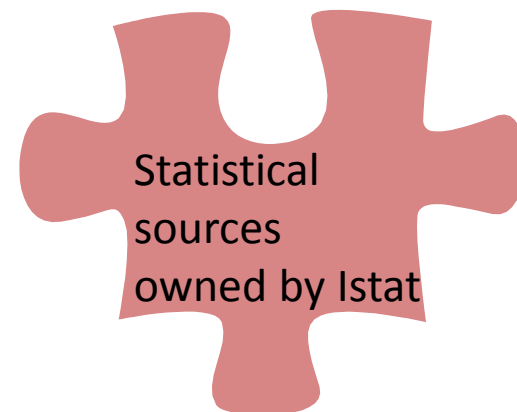
LIST FRAME: SFR records all the eligible agricultural holdings and their main structural characteristics by integrating information coming from both sources

AREA FRAME: SFR records lands and livestock linked to holdings
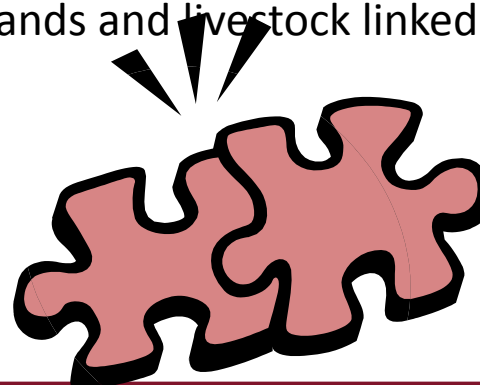
Specific – sectoral sources

1 The Integrated Administration and Control System (IACS) –
2 The System for the Identification and Registration of Bovine Animals and other species (AA.ZZ.)
3 Lands' property Incomes (Tax Agency)
4 The Land registry

General sources

5. Chambers of Commerce (CCIAA); a) Business register of Italian Chambers of Commerce (Legal units and primary and secondary economic activities) b) partners-partnership archive
6. Fiscal register (VAT)

Statistical sources

7. PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication) survey,
8. Agritourism survey
9.Business register ASIA
10 Census of Agriculture 2010

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Each administrative source must be pre-treated before integration – general activities

- **Standardization** of the tax identification codes, territorial variables, units of measurement, etc.

- **Identification** of the holder/farm according to the statistical definition

- Identification and **classification** of the variables related to holder/farm

- Identification of **duplicated** or out of target units, ceased or with duplicated land

- **Quality** checks on outliers e missing values

- **Metadata** analysis

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The Integrated Administration and Control System (IACS)
Source name: AGEA- Fascicolo Aziendale (1)

The database IACS is managed by AGEA i.e. the Italian Paying Agency has been set up in accordance with the EC n. 885/2006 that, under the common agricultural policy, acts in the coordination and execution of payments to support farmers.
The Integrated Administration and Control System has been realized in order to record, verify and control data.

The core of this system is made of files containing information on data that each agricultural holding is obliged to present for any aid application That file (called "*fascicolo aziendale*") is constituted the first time a request of premium is presented, then information must be taken updated on the basis of the following yearly requests of aid.

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The Integrated Administration and Control System (IACS)
Source name: AGEA- Fascicolo Aziendale

unit identification: the *unique ID code (CUAA) that identifies the holding*

Relevance

➢ To identify the farms
➢ To get the utilized agricultural area and the major crops
➢ To locate companies in the territory (calculation of holder headquarter)

*the presence of **a unique ID code** (CUAA) solves problems of links with different sources having a system of units identification based on fiscal codes.*

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Identification data:

Unique Code of Agricultural Holdings (CUAA code) i.e. the fiscal code of the holder, holder's name, permanent address or place of residence, VAT number if present, dates of inscription and updating

Territorial data:

agricultural parcels managed by the farmer, use of each parcel (crops, livestock), hectares invested by type of product (cadastral area and agricultural area utilized for farming), fiscal code of landholders if different from the holder and the type of contract that links farmer to landholder, dates of start and end of conducted parcels

Coverage

each agricultural holding having relations with the PA and that by law should set up the "*fascicolo aziendale*" independently from the type of cultivation

(Undercoverage) Coverage is partial, both in terms of recorded crops (there are no aids for some growing crops like orchards)
or/and in terms of units, in fact it is possible that not all the holders ask for an subsidies.

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unit identification: CUAA = Holder's fiscal code
LAND = parcel of territory

| IACS	
Identification info	1,9 million (CUAA)
of which with land	1,7 million (89% of CUAA)
Number of land	20,34 million (parcels)
Number of land and main crops	34 million (parcels)
Total area	16,7 million (hectares)

Unduplications made by parcel, crop code and agricultural area utilized:

CUAA	parcel cadastrel code (land)	cadastral area	fl_terra	crop code	agric. Area	scelgo_terra	start date	end date
MNTxxxx	001001_0039000440000	979	FCP	40	700	1	20140101	20240101
QRUxxx	001001_0039000440000	979	SD	40	973	0	20120101	20200101
MNTxxxx	001001_0040001870000	1228	FCP	40	900	1	20140101	20240101
QRUxxx	001001_0040001870000	1228	SD	480	239	1	20120101	20200101
QRUxxx	001001_0040001870000	1228	SD	40	989	0	20120101	20200101
QRUxxx	001296_0005002490000	999	MD2	40	678	1	20120101	20200101
QRUxxx	001296_0005002490000	999	MD2	480	288	1	20120101	20200101

Territorial data: input = 16,7 ml. hectares
        "unduplicated" =15,3 ml. hectares

(2) Aggregate all the parcels and land use by ID (CUAA) of the holder

CUAA	Particella cat	SAU (in m	Macrouso
XXXX	001001_xxxx	1.532	160
XXXX	001001_xxxx	24.097	160
XXXX	001001_xxxx	1.210	160
XXXX	001001_xxxx	4.585	210
XXXX	001001_xxxx	2.696	840
XXXX	001001_xxxx	702	840
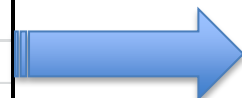
CUAA	SAT_tot (*are*)	SAT non utilizzata (*are*)	SAU Totale (*are*)	di cui:	
				SAU_ olivi	SAU _vite
XXXX	348	34	314	268	46

(3) intra-archive link between holder's Identifying data and lands BY CUAA

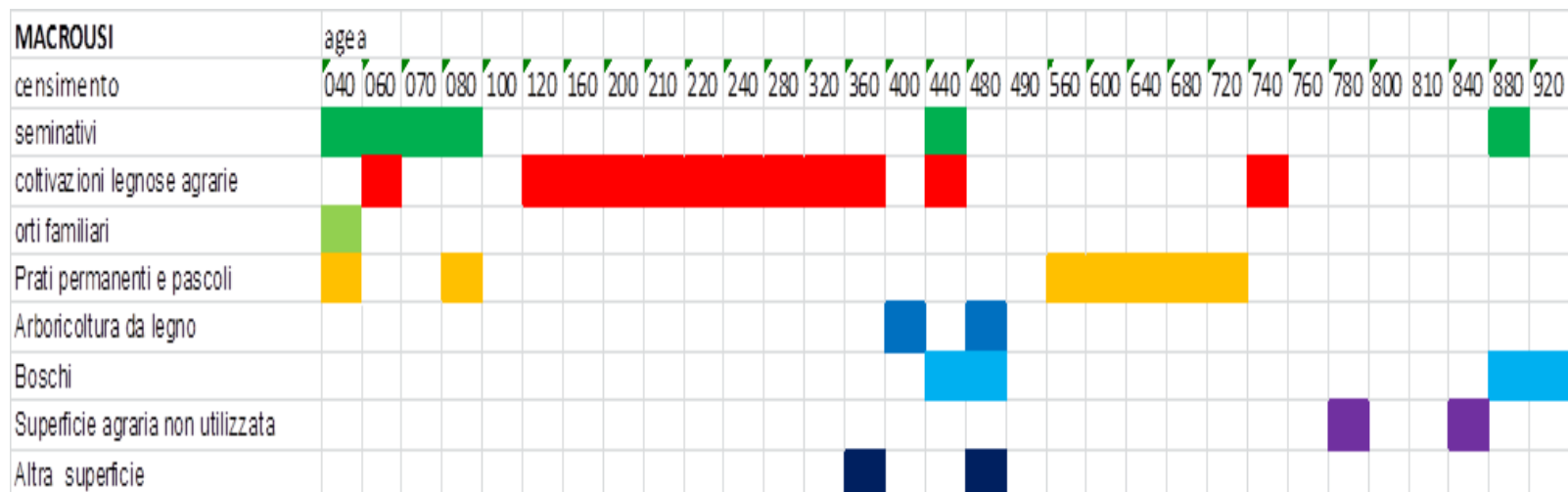| AGEA	
Identifying data	1,9 milion (CUAA)
of which with lands	1,7 milion (89% di CUAA)

Identification of CUAA without lands (personal data only)

AH only livestock ?
Units not (no more) in agricultural field?

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(4) riclassification of crops (by Agea) according to a common connection table to the Agricultural Census classification

The System for the Identification and Registration of Bovine Animals and other species (AA.ZZ.)

Data managed by the Ministry of Welfare

The national database of Bovine Animals realized in accordance with the EC n. 1760/2000 for the setting up of a System for the Identification and Registration of Bovine Animals, is the only fully operative register up to date

For sheep and goats, pigs , the existing regulation (EC n. 21/2004) to set up a register is not yet fully operative

Relevance

➢ To identify livestock farms
➢ To calculate the species and number of animals

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Information content
-the farm livestock identification code
-the holder's and owner's fiscal code
-fiscal address, name, telephone,
-the bred species, number of animals (only for bovines, sheep, goats, pigs),
-dates of beginning and closing activity

Number of farm livestock units:

1) Bovines (monthly data) – two deliveries per year, 180 thousands records
2) Sheep and goats (punctual data) =130 thousands records
3) Pigs (punctual data) =144 thousands records

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Unit identification: a system of 3 fiscal codes (of the structure, the holder, the owner**)**

Livestock farming identification
Concatenation of codes that identify the farm livestock and species by holder

the farm is the place where the animals are bred

- In the same farm can be different holders
- the same holder can hold more than one farm

Main activities:
1) Translation, standardization of identification codes (like VAT codes and fiscal codes)
2) Attribution of Istat localization codes
3) Exclusion of not significant livestock
   (not active units, n. of animals <3 and self consumption)

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The land's property income (RA)

The database managed by the Tax Agency

Natural persons: have to declare an income coming from any agricultural activity carried out on lands, or/and income coming from the landlords' rights

Juridical persons: simple partnerships, non profit institutions

Relevance
- coverage of potential additional agricultural holdings not obliged to apply for subsidies

Information content
Identification data concerning taxpayer (fiscal code, fiscal address, name), property title, percentage of property, amount of income (both income deriving from the agric. activity carried out on the land and income deriving from the landlord's rights)

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Coverage

under-coverage – all different forms of organization, like limited liability companies or cooperative, are not included in this universe as they produce business income (so they have to fill in different models)

Over-coverage – because of a very big difference in terms of unit definition in comparison to the statistical one, more than one administrative unit can represent only one agricultural holding and therefore an over-coverage is predictable

For example both the owner and the tenant of the same land have to make tax declaration as well as two or more co-landowners but only one is the holder according to the statistical rule.

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Pre-treatment of Input source: land's property income (RA)

Over 3 million tax payer declaring agricultural income

Unit's attributes:
- Models structure composition, by taxpayer - agricultural income Breakdown by landlord's rights

	Type of ownership				Total
	1 land's (not leased) owner	2-3 land's (leased) owner	4 fund's conductor (not owner)	7-8-9 agricultural enterprise's holder	
agricultural income	RA1	RA23	RA4	RA789	TOTAL_RA
Percentage over total	PCT_RA1	PCT_RA23	PCT_RA4	PCT_RA789	100%

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The Land registry (LR) or Cadaster

Data organization and content:
- **File parcels**
- **File ownership's title**
- **File owners**

Specific identification codes to link these file

*File **parcels***
- parcels identify a portion of land

- Content: parcel identification codes, parcel characteristics like "soil quality" (i.e. land devoted to vineyard or sowable ground), hectare, estimated agricultural income

- Each land is univocally identified by a unique identification code (inside the municipality)

File **ownership's title**:
land's rights (property, usufruct), property share and property settlement.
Title is the link between land and its owner

File **owners**
- natural person -name, surname, sex, birth date, fiscal code
– juridical person – name, fiscal code, VAT code

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Linkage scheme

FILE PARTICELLE		FILE TITOLARITA'		
- Codice amministrativo		- Codice amministrativo		
- Sezione	→	- Sezione		
- Identificativo immobile		- Identificativo immobile		
- tipo immobile		- Tipo immobile		
		- Codice amministrativo		
		- Sezione	→	FILE SOGGETTI
		- Identificativo soggetto		
		- Tipo soggetto		

87 ml.

156 ml.
92,7% natural persons
7,3% juridical persons

28,1 ml. owners:
of which
16 ml. Owners (fiscal code available)

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Advantages

Full coverage in terms of lands but..turning into over-coverage in terms of units (holdings)

Problems

✓enormous variety of information difficult to treat
✓the parcel's owner cannot be the holder
✓updating is not homogenous
✓soil quality could not be updated
✓difficult to identify agricultural uses only
✓difficulty to intercept modification of land in historical way

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General sources - Administrative

o **Chambers of Commerce** having selected only those units carrying out an agricultural economic activity, principal or secondary (section A- B of Nace rev2)

o **VAT** declared by units having a VAT code to carry out agricultural activity too.

These sources cover mostly business units and a overlapping between the farm register and the business register can be possible.

Statistical sources

- Agritourisms survey
- Farms with PDO/PGI products
- 2010 Census of agriculture
- Statistical Business Register ASIA

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Characteristics of sources – units and coverage

Source	Administrative unit	Statistical unit compliance	Coverage	
			theor.	real
IACS	Farmer or agricultural holding	High	T	P undercoverage
AAZZ	Livestock holder	High	Ts	Ts
Land's income	Natural/juridical person	Low	T	T overcoverage
Ch.Com.	Enterprise /local unit	High	P	P
VAT	Legal unit	High	P	P
Land registry	Parcels' owner	Low	Ts	Ts overcoverage

T=Total
Ts=Total for the reference population
P=partial

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1. PROCESS: Integration of sources and eligibility of units

integration rules

- Linkage by identification codes (Fiscal codes and/or VAT) for all sources
- Linkage by territorial variables (parcels) available in Agea and Land Registry

INTEGRATED DB

- A system of "flags" (1=Presence, 0=absence) assigned to each record indicating the belonging to source(s) of origin
- Assignment of the territorial codes of the estimated farm headquarter
- Choice of the land use by main crops in the SFR *(IACS or AC or Cadaster)*
- Assignment of a flag on the quality of the land use *(comparison between ICAS and census)*
- Choice of the livestock by species in the SFR *(Animal Register or AC)*

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Integrated database BY Sources – year 2013

Sources	Statistical units
IACS - AGEA - Fascicolo aziendale	1.915.077 *of which 1.696.282 with land*
Animal Register (AA.ZZ)	344.390
Land's property income (RA)/Cadaster (Land Register)	3.030.560
VAT on agricultural income/Chamber of Commerce	969.063
Agritourisms	18.891
Farms with PDO/PGI products	54.509
Agricultural census	2.120.289

OUTPUT: Integrated database includes 4.853.608 rks

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METHODOLOGY FOR SELECTING THE ELIGIBLE UNITS

Hypothesis

- Sources have a different relevance
- Rules are hierarchic, according a sequence based on a priori and chosen order
- Rules assign both eligibility or the non-eligibility

38 rules according to:

- the sources where the unit comes from
  (presence in one or more sources, some sources are considerer more reliable then others)

- Characteristics of the unit
  (if the unit is active or ceased in the database or if reach some physical or economic threshold)

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The units are divided in 4 lists

1. IACS and Animal Register

2. Land's property income and Cadaster

3. Chamber of Commerce and VAT on agricultural income

4. Agricultural census and statistical list of Agritourisms and PDO/PGI farms

Different rules that operate differently according a hierarchic order in the selection of the units

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Eligibility rules for the list 1

Rule	Specification	ELEGGIBILITY
1	unit coming from IACS without duplicated parcels	YES
2	unit coming from IACS with duplicated parcels	NO
3	unit coming ONLY from IACS without parcels	NO
4	unit coming ONLY from IACS without parcels and census	NO
5	unit coming ONLY from IACS without parcels and CCIAA/TVA	NO
6	unit coming ONLY from IACS without parcels, census and CCIAA/TVA	NO
7	unit coming from animal register with livestock	YES
8	unit coming from animal register without livestock but coming also from IACS or CCIAA/TVA or tax/cadaster or DOP/IGP or agritourisms	YES
9	unit coming ONLY from animal register and CA, with livestock for self consumption or already included or ceased in the business register	NO
10	unit coming ONLY from animal register and CA, without livestock	YES
11	unit coming ONLY from animal register without livestock	NO
12	unit coming ONLY from animal register, IACS without parcels and CA, without livestock	NO
13	unit coming ONLY from animal register and IACS without parcels, without livestock	NO

Eligible units (total) = 1,9 ml
Eligible units EU field = 1,7 ml

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POST-VALIDATION OF ELIGIBLE UNITS

❖ **UnDuplication of units whether belonging to the same family**

Two members of the same family can register the same land in two different sources or can divide the land by registering the same holding separately in the same source
→ Eligible individuals with family ties -Use of municipal registry (LAC) - choice of one subject eligible, maintenance of the link

❖ **UnDuplication of units whether owners of the same lands**

Two owners of RA with such land may be declared eligible but the area would be duplicated → choice of one subject eligible

❖ **Errors in existence of units or measuring**

By comparison with other agricultural surveys – conflicting data

➢ Manual Check micro and macro

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Main information in the Italian Statistical Farm Register
holders of AH with main structural characteristics

- ID (fiscal code) of AH
- Territorial codes of the farm headquarter
- Territorial codes of the holder residence
- Flag of the sources where the unit comes from
- Legal form
- Land use by main crops
- Flag on the quality of the land use
- Livestock by species
- *Labour force (to be estimated)*
- Flag on farm typology
- Eligibility
- Flag on the selection rule

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The quality survey of Farm Register: RICOFARM survey

It a sample survey aiming at validating the FR

1) Correct identificatin of units

2) Measuring correction for utilized agricultural area and classification of the main types of land use

Sampled units are stratified according to different level of "certaincy" for elegibility

The survey was completed recently, results are still under analisis

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Thanks for your attention

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