crea
Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

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USE OF FADN DATA IN ITALY: SOME EXAMPLES OF THE USE OF DATA FOR ENVIRONMENTAL ANALYSIS

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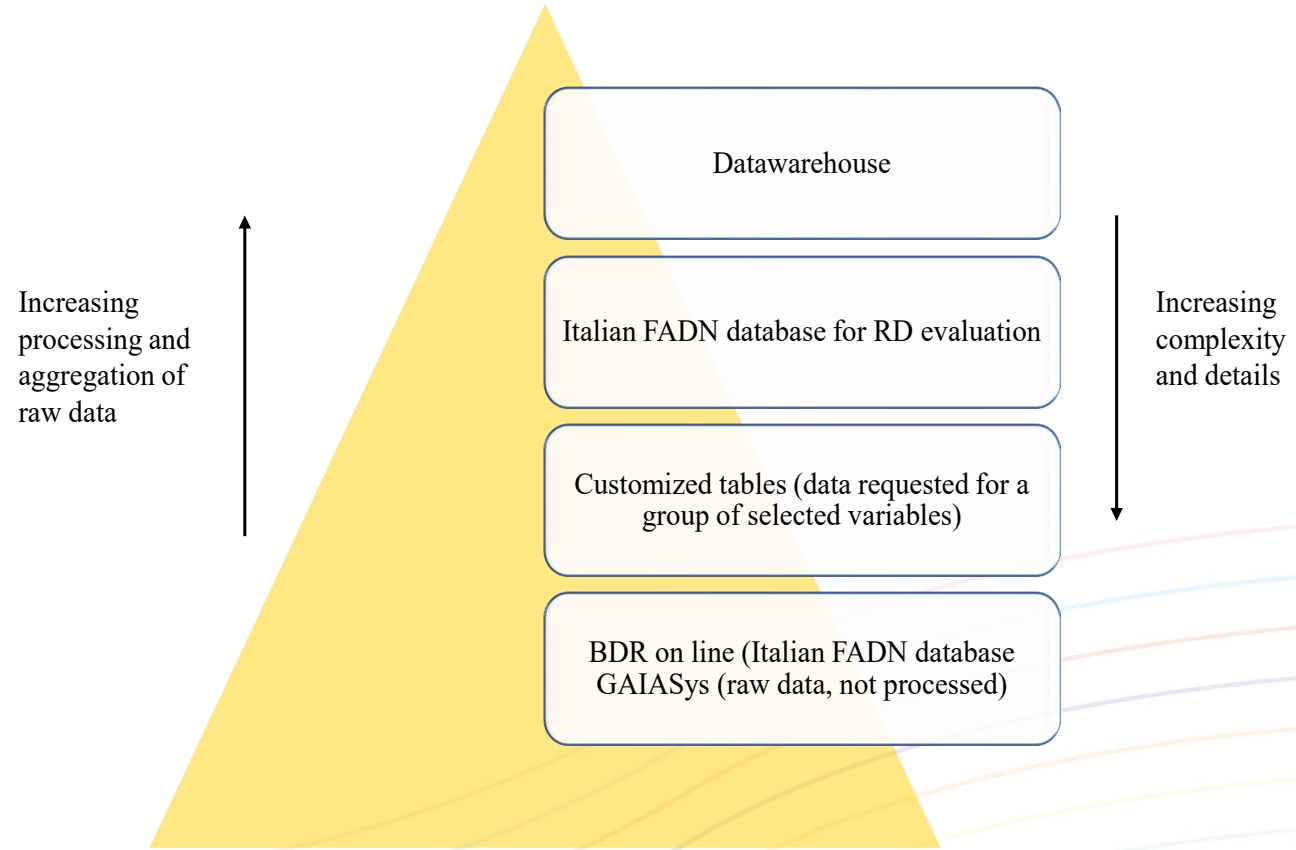
RICA
Rete d'Informazione Contabile Agricola

General context of Italian FADN

- CREA-PB (Unit of Policy and Bioeconomics of the Council of Agricultural Research and Economics) is the Italian Liaison Agency for FADN. It is a Public Research Institution of the Italian Ministry of Agriculture.
- FADN is an important source of information for the national research system, meeting a wide range of informative needs (public institutions, universities, public and private research) and feeding institutional analysis supporting the activity of the Ministry of agriculture, Regions and local authorities
- Data are collected and stored by CREA and most part of information is available at different levels, with different details, data aggregation and complexity
- The Italian FADN collects data from around 11,000 holdings

General context of Italian FADN



GAIASys contains the raw data → not available (only FADN unit)

BDR on line: anonymized data (no georeferenced, no NUTS3, no name of the holder, no farm ID….)

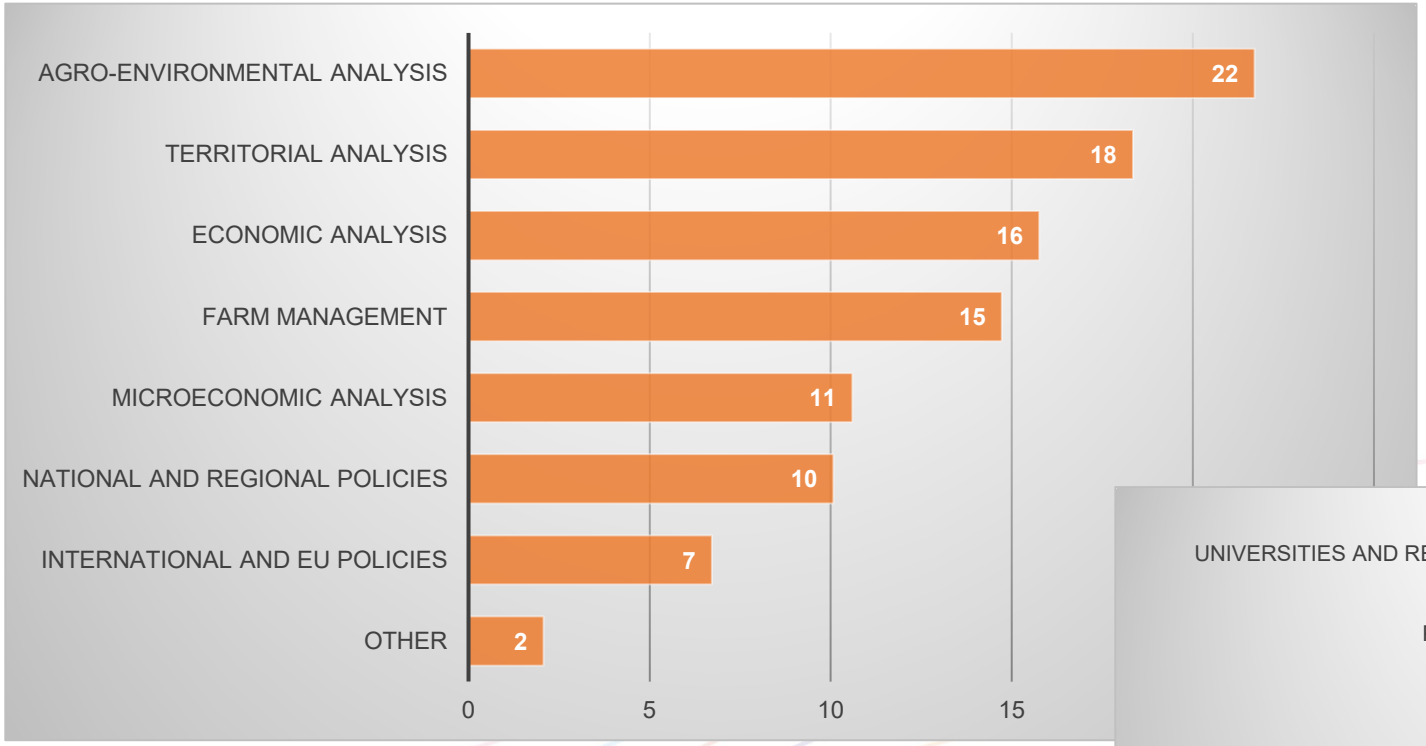
FADN data for scientific analysis

Customized tables (→ request form limited to a set of variables) and the access to the **BDR on line** (→ after an agreement with the users) are the most important source of information for the research system.

Users and uses of the Italian FADN have been monitored through (i) an analysis of the request forms (2011-2020) and (ii) a questionnaire for the recorded accounts having access to the platform.

Use and users of Italian FADN

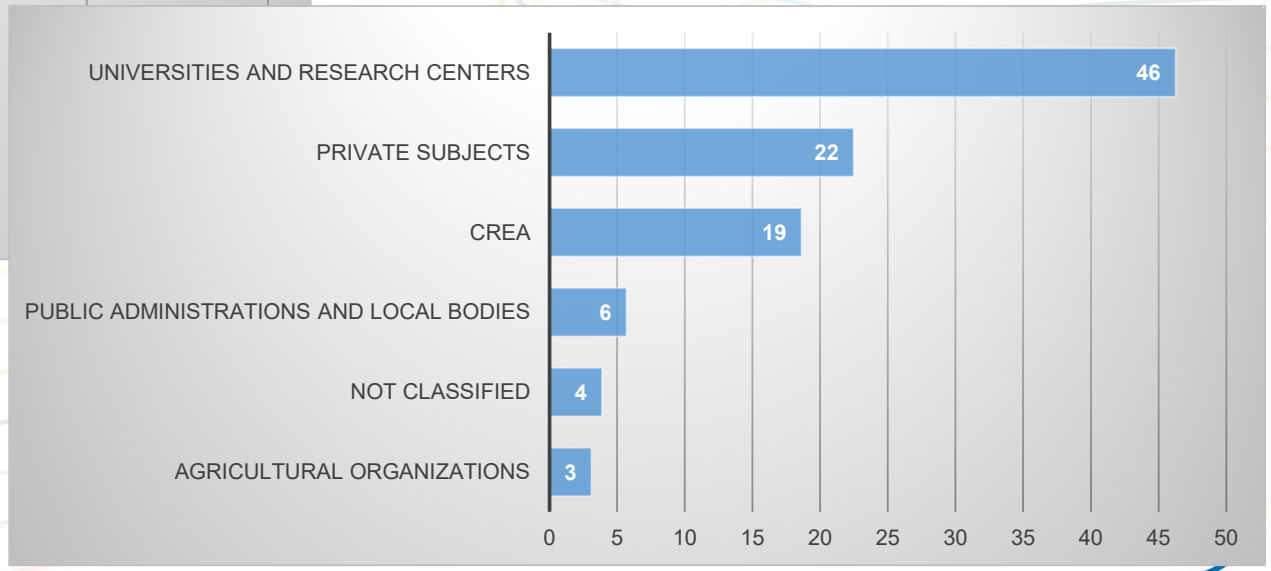
Use of Italian FADN by thematic area → Request forms



22% of FADN users asks data to implement agro-environmental analysis (CREA is not included); 18% for territorial analysis; 16% for economic analysis.

46% of users come from Universities and other research centers.

Users of Italian FADN



Distinctive features of Italian FADN compared to EU Farm Return

- Higher number of variables
- High level of details for certain variables

- Estimation of costs and gross margins for production process (for single farm enterprise)

Categories	EU FADN	IT FADN
Types of machinery and equipment	0	300
Types of farm buildings	0	70
Types of soil (physical characteristics and fertility)	0	20
Arable and permanent crops	<100	380
Animal species and categories	<30	100
Types of crop products (main and processed)	<50	54
Types of livestock products (main and processed)	<10	35
Categories of technical inputs (fertilizers, seeds, etc.)	<25	110
Subsidy types (EU, National, Regional)	<300	500
Total Variables (approximatively)	1,000	>2,500

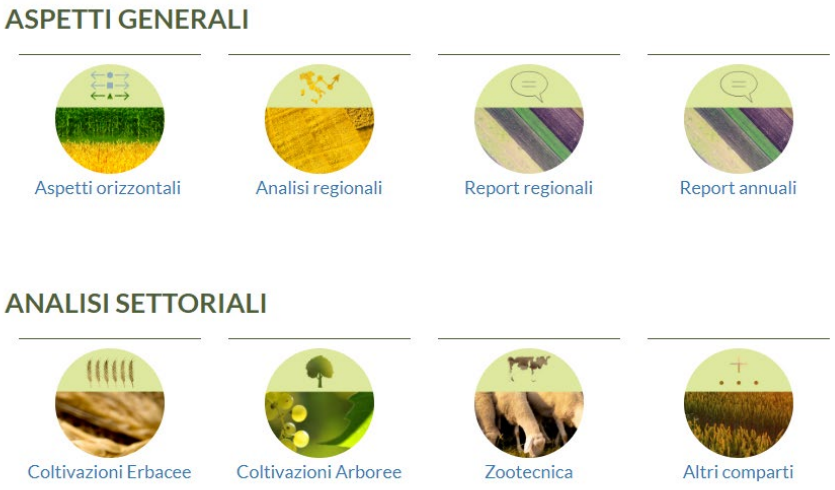
Environmental variables
Water volumes of irrigation and fertigation
Unit of N, P and K used in a single crop
Use of crop protection products (toxicity class)
Type of tillage management (minimum tillage/no-tillage)
Cover crop (e.g., date of seeding, date of harvest)
Altitude of farm (in m asl)
Details on the use and production of renewable energy

Social Variables
Description of farmer's family (farm members, relationships, role, off-farm income, etc.)
Gender balance: of manager, family members, seasonal workers
Nationality of seasonal workers
Educational level of farm manager
Interaction with Producer Associations, Consortia, territorial entities
Certifications: territorial marks (PDO, PGI, TSG) for productions and products
Marketing channel

Outputs

FADN publications: general and sectoral aspects

- Reports (annual and regional)
- Policy briefs
- Scientific publications in economics reviews
- Dissemination for farmers and advisors



La RICA in Trentino: al via la rilevazione per l'anno contabile 2021

RICA
Rete d'Informazione Contabile Agricola

Cos'è la RICA.

La Rete di Informazione Contabile Agricola (RICA) è un'indagine campionaria annuale, istituita dalla Commissione Economica Europea nel 1965 (in Italia svolta a partire dal 1968) in maniera omogenea in tutti i Paesi Membri dell'Unione Europea, che rappresenta l'unica fonte armonizzata di dati microeconomici sull'evoluzione dei redditi e sulle dinamiche economico-strutturali delle aziende agricole (Regolamento del Consiglio Europeo 1217/2009). Nata per rispondere ai fabbisogni informativi della Commissione Europea derivanti dall'attuazione e monitoraggio delle politiche agricole comunitarie, con il tempo si è ampliata, includendo variabili importanti che consentono di analizzare aspetti importanti come quelli ambientali o legati alla multifunzionalità delle aziende. L'indagine RICA prende in considerazione soltanto le aziende orientate al mercato, al di sopra di una certa soglia di produzione standard variabile tra i paesi in relazione alle caratteristiche dell'agricoltura. In Italia la soglia minima è di 8.000 euro. Il campione nazionale racchiude attualmente circa 11.000 aziende, stratificato in base a regione, dimensione economica e ordinamento tecnico-economico. Le variabili raccolte sono tante: aspetti strutturali dell'azienda, riparto della superficie agricola, rilevazione delle attività connesse, registrazione dei costi e dei ricavi, registrazione dei contributi, gestione della stalla, certificazioni, lavoro (sia familiare che esterno), ecc.

Il campione RICA in Trentino

In Trentino il campione conta 282 aziende: il 41% include aziende frutticole (principalmente mele ma anche i piccoli frutti), il 30% aziende viticole, il 16% allevamenti bovini da latte e il resto diviso fra seminativi, ortofloricoltura e aziende miste. La SAU media delle aziende frutticole e viticole facenti parte del campione è di circa 5,5 ettari mentre per gli allevamenti si arriva a una media di 48 ettari e 58 UBA. Sono tanti i parametri e gli indicatori di reddito che possono essere usati per l'analisi generale e settoriale delle aziende. In base ai dati RICA del 2020 il reddito operativo medio delle aziende trentine è stato di 28.965 euro (+10,6% rispetto alla media nazionale) mentre la produttività agricola della terra espressa in termini di Produzione Lorda Vendibile (PLV) sulla SAU è stata di 9.115 euro (+153% rispetto alla media nazionale). L'incidenza degli aiuti pubblici sul reddito netto è stata del 16,7% (38,8% è la media nazionale).

La rilevazione annuale dei dati consente di fare delle comparazioni nel tempo per i principali aggregati colturali della Provincia. Nel 2020, la Produzione Lorda Vendibile (PLV) ad ettaro delle mele si è attestata sui 15.318 euro (+11,4% rispetto al 2019) che in un contesto di costi in diminuzione ha significato un incremento del 16,6% dei margini lordi. Gli stessi parametri per la vite hanno invece messo in evidenza una situazione più stabile, con variazioni poco rilevanti nel biennio 2019-2020.

Tabella 1: Valore di PLV, costi specifici, margini lordi e rese per la coltura del melo e della vite in Trentino (elaborazioni CREA su dati RICA 2016-2020)

		2016	2017	2018	2019	2020
		Melo				
Produzione Lorda Vendibile	€/ha	17.029	11.970	16.621	13.754	15.318
Costi Specifici	€/ha	3.283	3.080	3.701	3.701	3.599
Margine lordo	€/ha	13.746	8.890	10.053	10.053	11.719
Resa	q.li/ha	567	397	469	469	504
		Vite per vino di qualità				
Produzione Lorda Vendibile	€/ha	12.695	11.960	15.344	13.394	13.624
Costi Specifici	€/ha	1.679	1.607	1.786	1.908	1.930
Margine lordo	€/ha	11.079	10.397	13.596	11.525	11.725
Resa	q.li/ha	131	120	148	131	130

agricoltore trentino

There is also a rich academic literature based on Italian FADN data.

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USE OF IT FADN

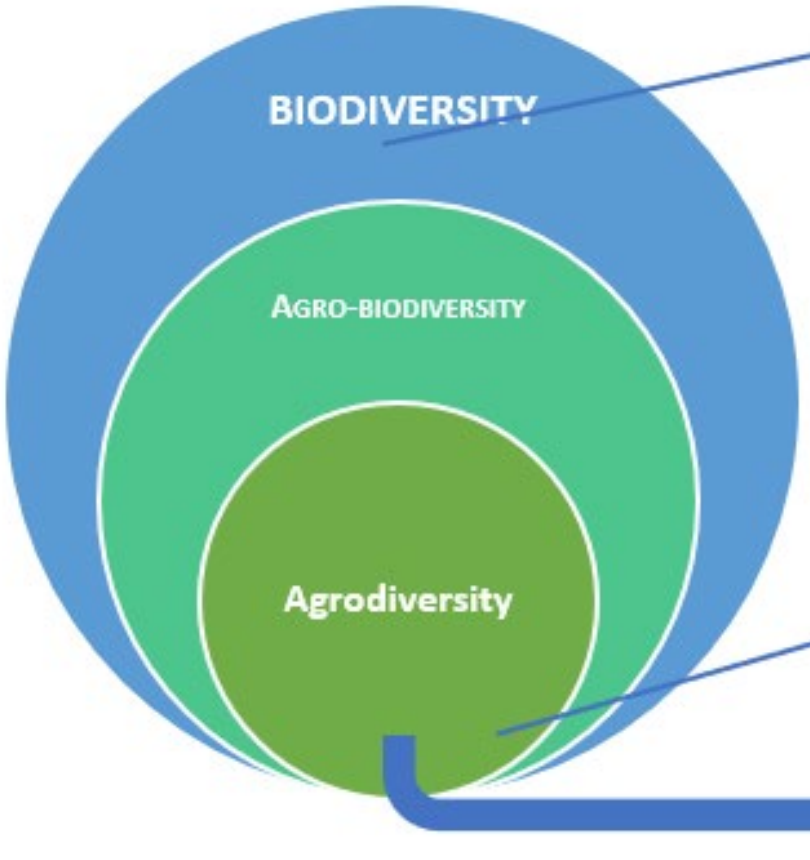
FOR

ENVIRONMENTAL

ANALYSIS

(AGRODIVERSITY)

- QUESTION: IS AGRODIVERSITY A STRENGTH OR A WEAKNESS FOR AGRICULTURAL FARMS, HOW IS IT DISTRIBUTED/CONCENTRATED,
- VERY SIMPLE METHOD: DEFINE VARIABLES DETERMINING AGRODIVERSITY, SELECT A SUBSAMPLE, PROCESS VARIABLES AND CREATE INDICATORS, ANALYSE THE SITUATION OF DIFFERENT TYPE OF FARM, SIZE, INCLUDING ECONOMIC PERFORMANCES (WEIGHTED DATA)
- ITALIAN FADN COLLECTS A LARGER SET OF VARIABLES THAN EU STANDARD:
- SPECIES AND VARIETIES, THE CROPPING SYSTEM, THE ADOPTION OF PRECISION AGRICULTURE TECHNIQUES, PROCESS CERTIFICATION SYSTEMS AND COMMITMENTS TO GOOD AGRICULTURAL PRACTICES.
- THE TYPES OF IRRIGATION AND VOLUMES OF WATER, THE DENSITY AND TYPE OF PLANTING, INTERCROPPING , THE FORM OF FARMING, THE NON/MINIMUM TILLAGE OF THE SOIL,



Crop varieties/species and animals
Varieties of plant and animal germplasm
Soil organisms in cultivated areas
Disease biocontrol agents
Wild species
Local knowledge/culture of diversity
Management and organizational agrodiversity

Mixed crop groupings
More animal species bred
Surfaces of woods and woody agricultural crops
Associations, Rotations
Ecological areas, meadows and permanent pastures
Combination of production factors (land, labour)

ENV: Evaluation of agrodiversity in the IT FADN farms

Objective: classification of FADN farms in three levels of agrodiversity (high, medium, low) on the basis of a selected set of variables (first assessment, Report in progress) → easy index, repeated each year

Period: 2016-2020

IT FADN variables: (i) Crop diversification and crop combination (six clusters); (ii) number of varieties; (iii) intercropping; (iv) woodlands or EFA; (v) livestock and combination of animals; (vi) nectar producing plants

Biodiversity: difficult to assess with FADN data (local varieties yes or no)

1 = present; 0 = not present

GLOBAL SCORE OF AGRODIVERSITY FOR EACH FARM

LOW: less than 2.5

MEDIUM: 2.5-5.0

HIGH: more than 5.0

Several economic indicators have been calculated for each agrodiversity class (using Gross Saleable Production, Total Revenues, AWU, UAA, costs, subsidies)

Score increases on the basis of the numbers of crop groups grown in the farm:

- LOW: Farms with 1-3 different crop groups
- MEDIUM: from 3 to 5
- high 6 different crop groups in one farm

Other indicators are considered to calculate the global score.

Crop grouping (cluster)	
	1 – Cereals
	2 - Other field crops
	3 – meadows
	4 – Legumes
	5 –Pastures
	6 – fruit tree plantations and wine

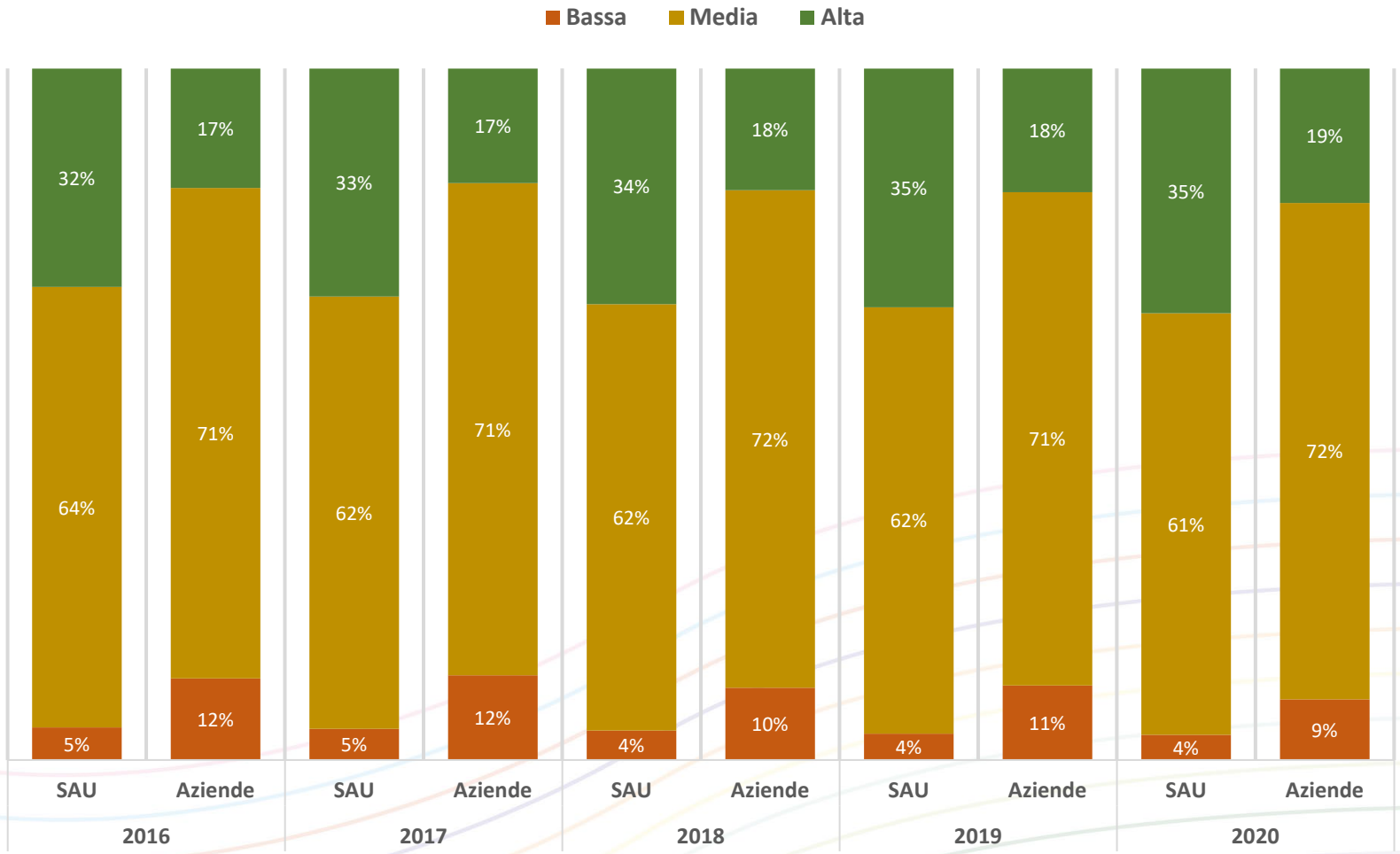
How we calculate the GLOBAL SCORE OF AGRODIVERSITY

categories	Variables/indicators
Diversification and crop mix	Number of homogeneous crop groupings
	Number of crops even in the case of a single crop grouping
	Intercropping (excluding mixtures of herbaceous crops)
	Share of more than 95% of the agricultural area occupied by cereals. (negative)
	Combined presence of several animal species breded on the farm
Managerial and organisational diversification	Presence of nectariferous plants
	Presence of Ecological Focus Area (EFA) in holdings with more than 2 crop groups
	Inter-row grassing in fruit trees plantations and vineyards
	Woodland area (natural and/or plantations)

Agrodiversity per type and size of farms

		N. of farms per class of agrodiversity (%)			UAA per class of agrodiversity (%)		
		Low	Medium	High	Low	Medium	High
Size of farms	Large > 100 th euro of SO	1,2	9,1	4,8	1,5	**23,0**	**19,5**
	Medium 25-100 th euro SO	3,3	**26,3**	7,5	1,1	**24,0**	10,5
	Small <25 th euro SO	6,3	**36,0**	5,4	1,6	15,1	3,7
Type of farming	Crops	9,9	**54,8**	8,2	3,6	**38,8**	**14,9**
	Livestock Farms	0,7	**11,0**	6,5	0,5	**19,2**	**14,1**
	Mixed Farms	0,3	5,6	3,0	0,1	4,1	4,8

Agrodiversity – trend in the last years

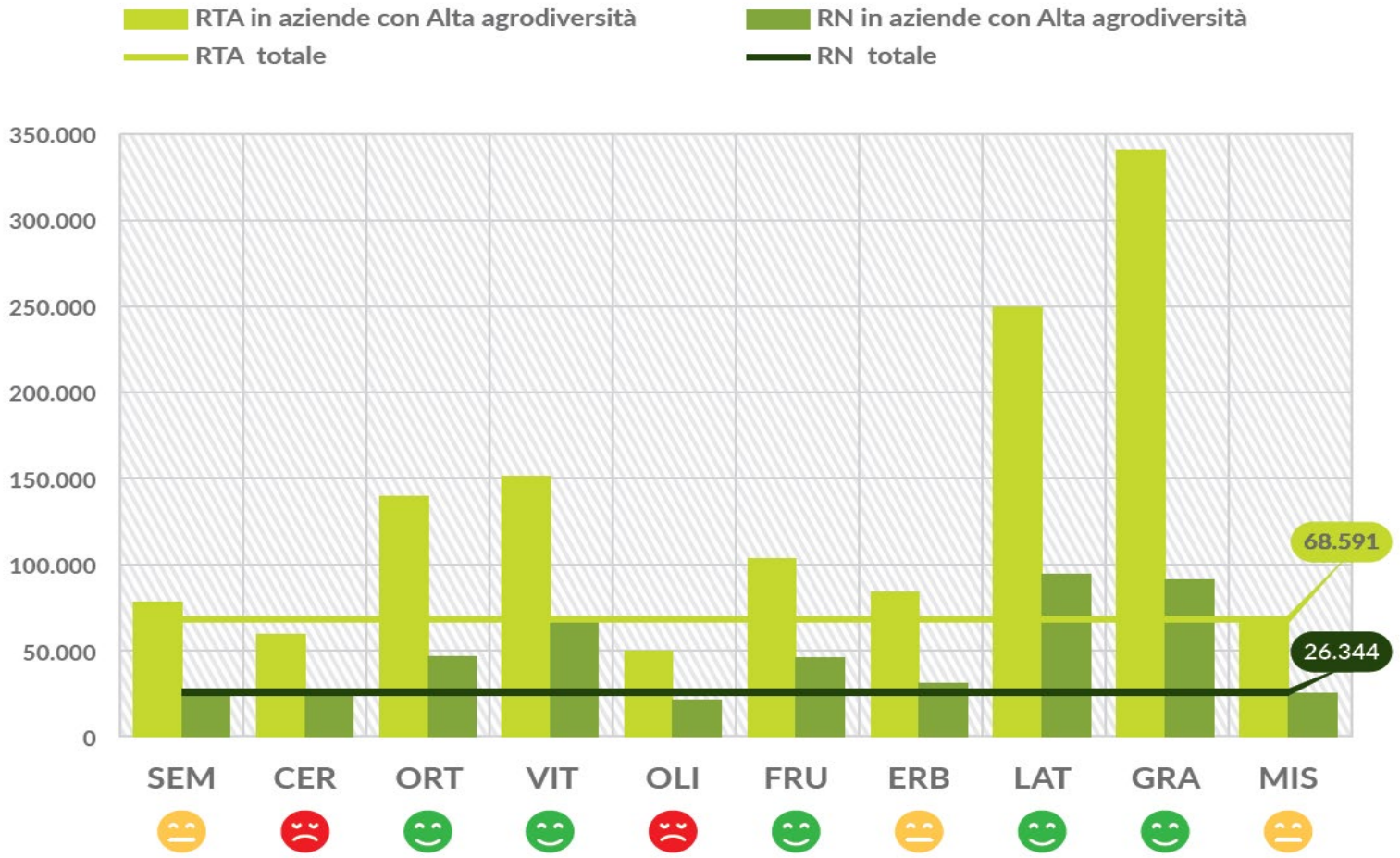


Analysis on time series

FADN farms: from 2016 to 2021

- Increase of the number of farms with high agrodiversity (17.3% → 19.5%)
- Increase of UAA with high agrodiversity (31.6% → 36.3%)

Economic results of farms with high global score

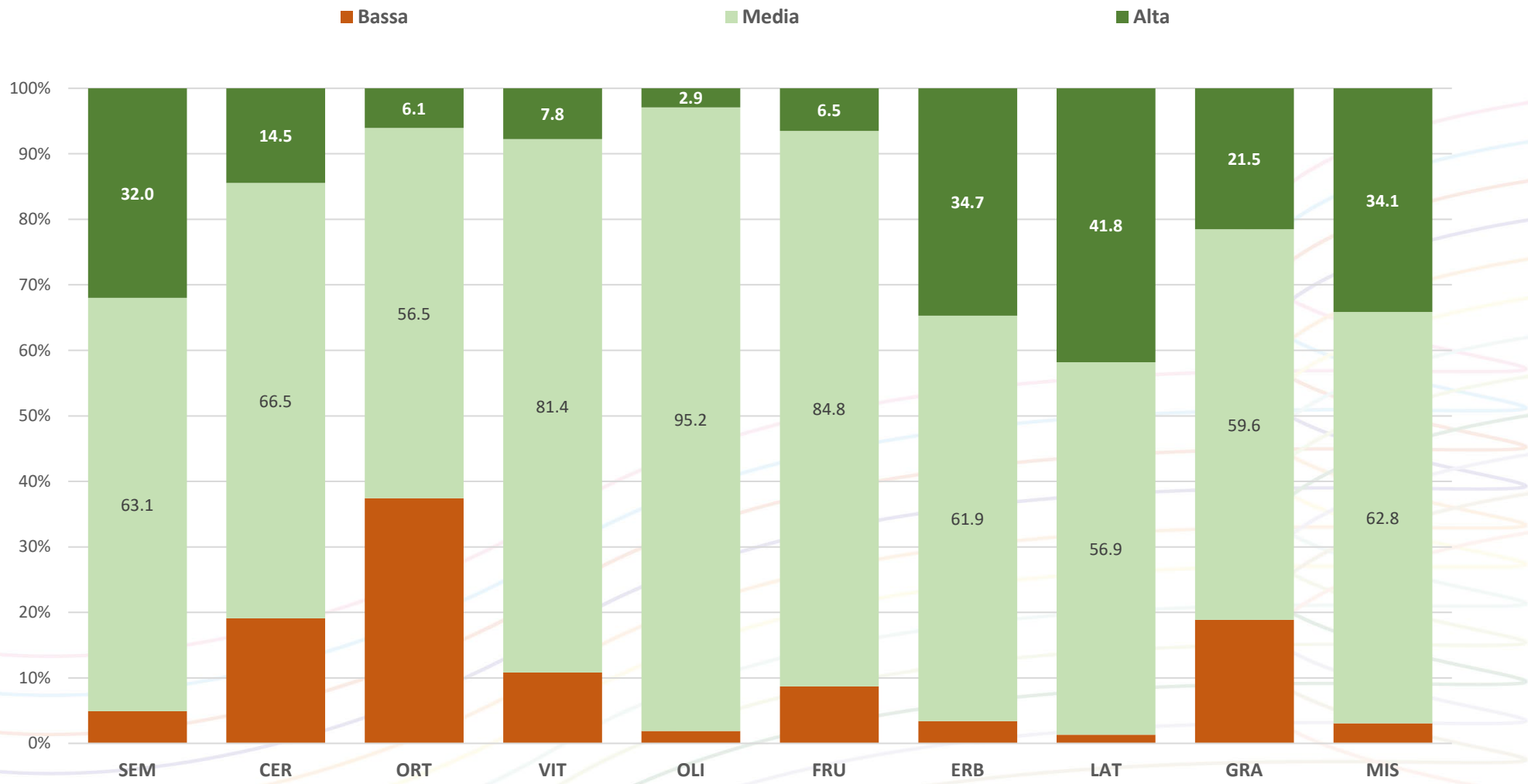


Analysis on economic results

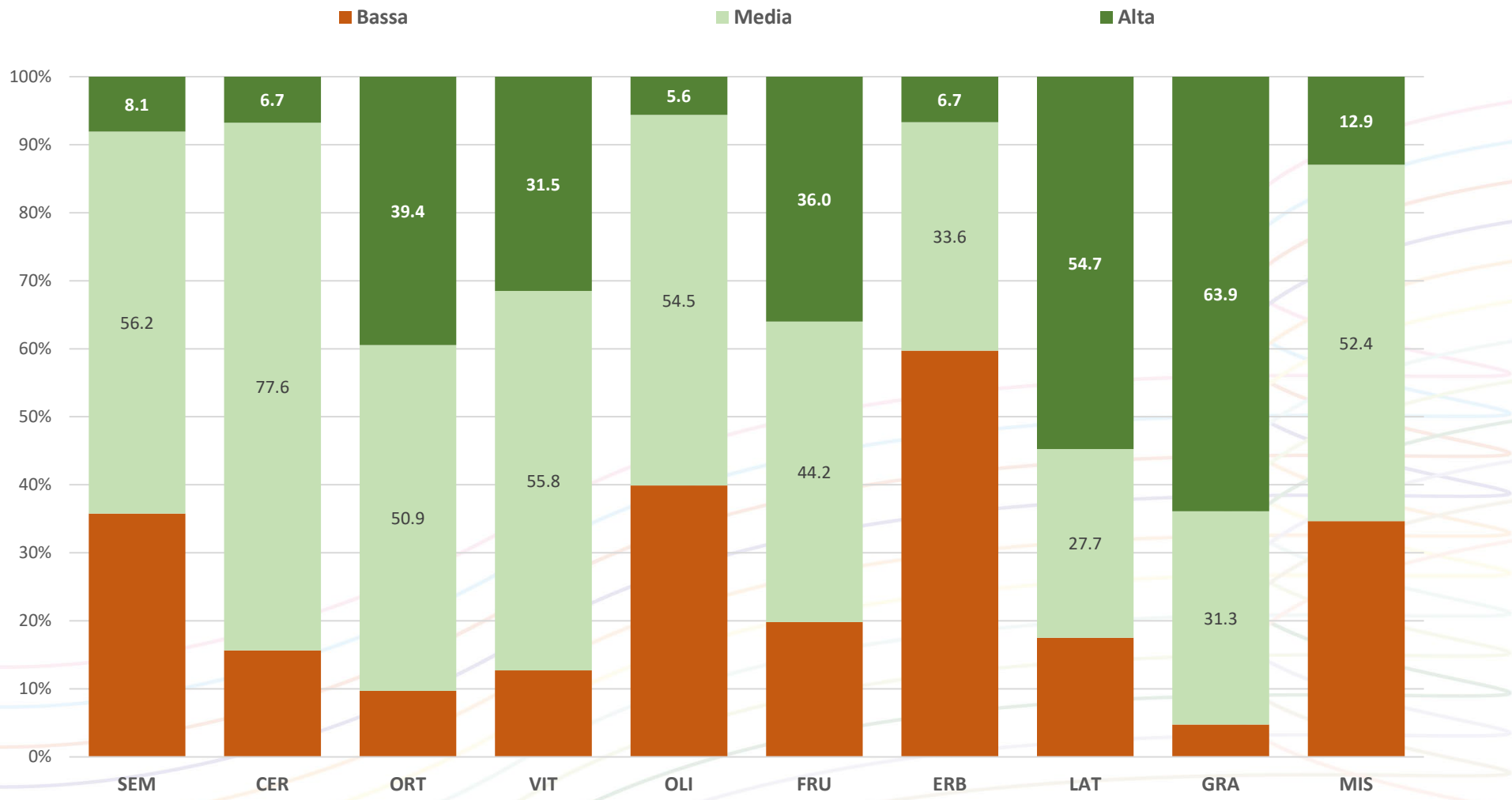
Total revenues and Net revenues in farms with high agrodiversity per Farm Type vs average value

- Higher values for farms specialized in arable crops, horticulture, permanent crops, livestock (bovines for milk), granivores

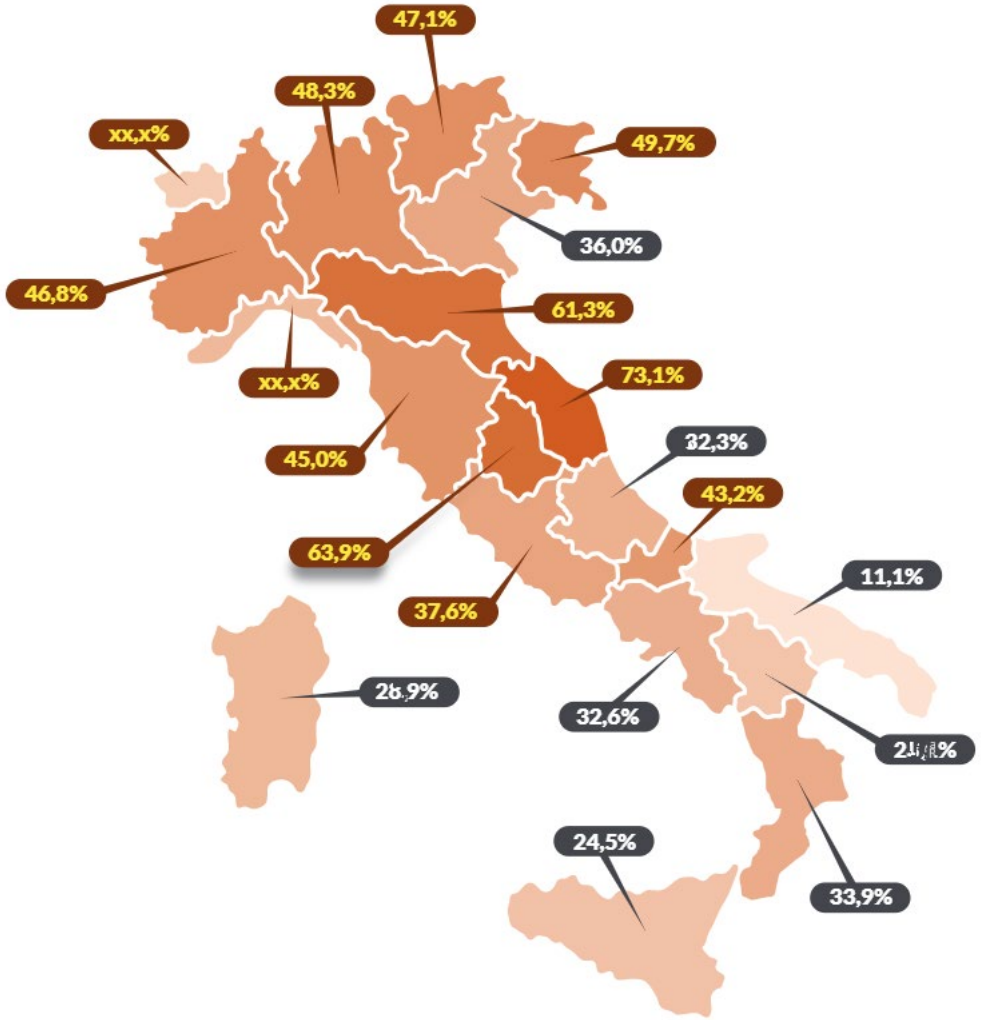
Agrodiversity per type of farms (n. of farms %)



Agrodiversity per type of farms (UAA %)



Evaluation of agrodiversity in the IT FADN farms



% of FADN farms with nectar producing plants

Other elaborations: agrodiversity score by region, by Italian macroarea, ratio cost/revenues by agrodiversity class, etc.

In progress:

- Add other variables (even outside FADN) in the classification
- Efficiency analysis in each class
- Investigation on the relationship between agrodiversity characteristics and subsidies typology (IT FADN collects more details about subsidies).

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Grazie per l'attenzione
Thanks for Your attention

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