OP-178 [Beekeeping Economy]
Honey cost: determination of sustainability and efficiency in honey production

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The lack of accurate and reliable information in the beekeeping supply chain allowing for estimation of production costs has gained considerable attention. The Honey Cost project realized by CREA-PB seeks to fill this gap, developing methodology and tools for data collection and evaluation for the Bees and Honey sector and set up a sample survey on it. The Honey Cost statistical survey aims to deepen knowledge on the economic and production dynamics and responds to the cognitive needs of the institutional, scientific and economic system.

The determination of the costs is carried out through a questionnaire submitted to a sample of 434 farms with an economic size of at least 8,000 euros of Standard Output and represent a population of about 6,000 professional beekeepers. In the methodology adopted, 3 cost levels are envisaged, a first level referring only to current expenses, a second level, in which other general expenses are added, and finally, a third level which contains also the cost of family labor.
The first experimental survey was carried out in 2023 and referred to 2021 and 2022. Following this pilot period, the yearly survey was carried out again. It emerges that in 2023 about 2/3 of the farms practice nomadism while the rest are permanent and the value of the three cost levels analyzed can vary greatly depending on farm type and economic size. On average, first-level costs are around 3 euros per kilogram and rise to about 6 euros if second-level costs are added. Depending on farms type, the costs of transport, packaging or emergency nutrition can vary remarkably. Finally, the strong presence of family work has a great impact on the formation of the productions cost and can lead to situations in which the farm produces at costs above the price recognized by the market for their product.

This work is useful for the beekeeping sector: for farms to better define their strategies, for political decision makers to better design support tools, for researchers to have the correct information to determine the consistency and trend of the sector and to build analyses of evolutions and scenarios.

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CREA – Centre for Policies and Bioeconomy – Rural National Network

Honey Cost

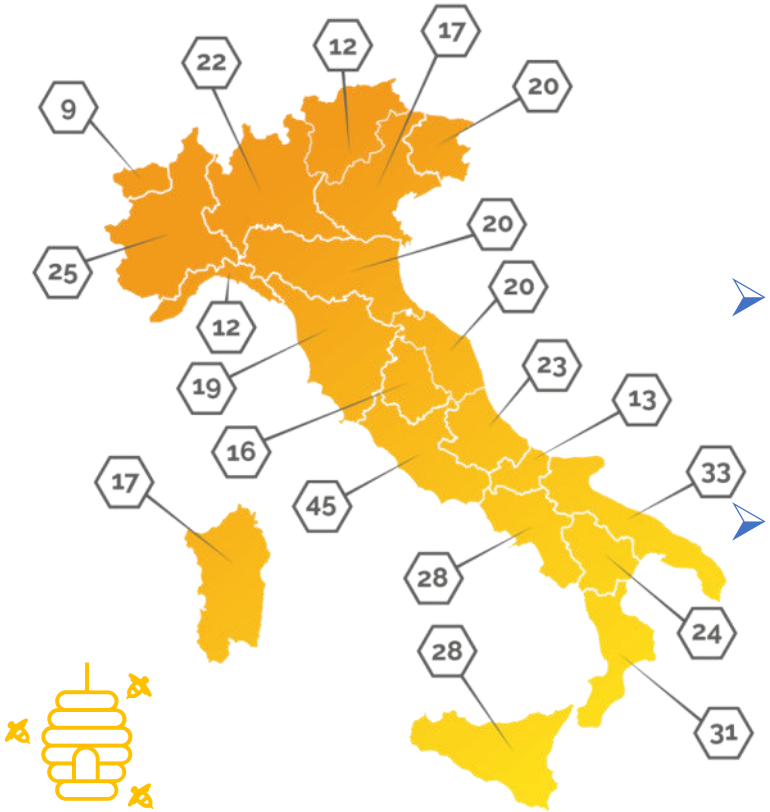
ECONOMIC SURVEY FOR IDENTIFYING HONEY PRODUCTION COSTS

- Born from the need to collect and systematize analytical elements to deepen knowledge of the sector and provide useful information to understand its dynamics.
- Useful for better targeting support measures and policies.
- Aims to fill an information gap on the economic, environmental, and social sustainability of beekeeping enterprises.

HONEY COST – Objectives of the survey:

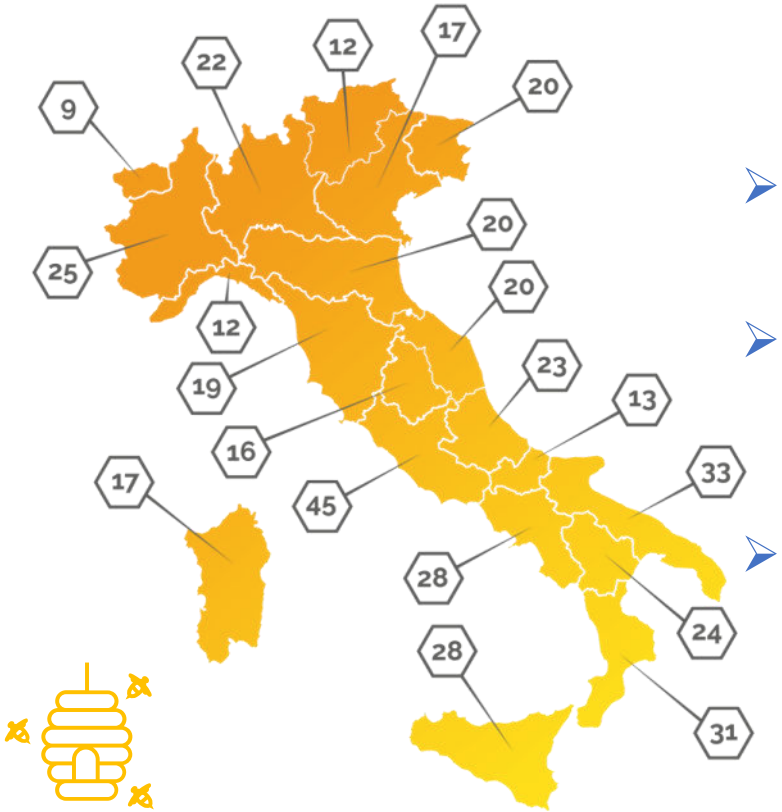
- Conduct an annual statistical-economic survey focused on **determining honey production costs** in market-oriented beekeeping enterprises, to analyze their economic and productive capacity and monitor the situation across different production contexts.
- **Respond to information needs** of sector operators, the Ministry of Agriculture, researchers, consultants, and evaluators.
- Provide a free **benchmarking service**, useful for both beekeepers and consultants.

The DATA COLLECTION (1)



- A fundamental premise for the launch of the Survey is the presence in the Italian system of a National Livestock Registry (BDN), established by law (for public health purposes), which records and certifies all farms present in the country, for some species even at the level of individual animals and their movements.
- The survey database is the Beekeeping Data Bank (BDA), a subset of the BDN, which periodically records the location, characteristics, and movements of apiaries.
- After initial experimentation, the survey was accredited as part of the National Statistical System.

The DATA COLLECTION (2)



- The theoretical sample includes **434 enterprises**, representing about 6,100 beekeepers (approx. 10% of the total) with a Standard Output (SO) value over €8,000. The current sample is based on the BDA universe surveyed in 2019
- Sample representativeness is based on region and economic size class (3 SP classes).
- Data is collected via a dedicated web application: **honeycost.crea.gov.it**, supported by a PDF version of the questionnaire an online support and technical assistance from CREA.
- Data collection, processing, and dissemination comply with GDPR and statistical confidentiality regulations.

Methodology

Preparation of the questionnaire: in 2021, a first test phase was carried out with a small group of beekeepers

Selection of a sample of farms representative of the BDA universe.

Data collection is conducted annually using the CAWI-CATI system. The beekeeper can complete the restricted-access web questionnaire independently, or alternatively, with the support of surveyors.

Participation in the survey is voluntary, in compliance with statistical confidentiality. Data collection is for statistical purposes only.

The data is validated and stored in the CREA database

Methodology

- Sample type: random-stratified
- Reference population from BDN 2019:
  - Initial: 140,744 records (60,366 CUAA)
  - Final: 6,077 commercial enterprises
- Strategic variables: Number of hives and Standard Production
- Stratification variables: 20 regions and 3 SP classes
- Error rate: 5% national, 10% regional
- Enterprise allocation method: Bethel
- Final sample size: **434** enterprises

The methodology provides insights into **three levels of honey production costs**:

- First level: technical inputs, services, transport, medications, nutrition, insurance, farm management, energy consumption, packaging.
- Second level: includes first level + labor, maintenance of buildings and machinery, depreciation.
- Third level: includes first two levels + opportunity cost of family labor.

Production process balance – cost and margin section

	COSTO VARIABILE UNITARIO (CVU = CVP / PROD)	[CVU] €/kg	0,00		PLT=100%
	MARGINE LORDO (ML = PTL - CVP)	[ML]	0,00		%
	MARGINE LORDO UNITARIO (MUL = ML / PROD)	[MUL] €/kg	0,00	0,00	0,0%
	Incidenza COSTI VARIABILI ((CV = CVU/Prezzo)	[ICV] %	0,00		
Costi fissi	Affitti, leasing e altre spese generali	[SG]	0,00		
	Manodopera retribuita e oneri sociali	[MR]	0,00		
	Ammortamenti cespiti	[AC]	0,00		
	Manutenzione ordinaria	[MN]	0,00		
	Totale Costi Fissi (CF = SG + MR + AC + MN)	[CF]	0,00	0,00	0,00
	BREAK EVEN POINT (BEP = CF / (Prezzo - CVU)	[BEP] kg	0,00		
	COSTO TOTALE DI PRODUZIONE (CTP = CVP + CF)	[CTP]	0,00	0,00	CT=100%
	COSTO TOTALE UNITARIO (CTU = CTP / PROD)	[CTU] €/kg	0,00		
	Incidenza COSTI TOTALI (ICT = CTU/Prezzo)	[ICT] %	0,00		
	MARGINE OPERATIVO (MO = ML - CF)	[MO]	0,00	0,00	0,0%
	MARGINE OPERATIVO UNITARIO (MOU = MO / PROD)	[MOU] €/kg	0,00		PLT=100%
	Costo opportunità lavoro famigliare	[CLF]	0,00	0,00	0,0%
	COSTO COMPLESSIVO (CC = CTP + CLF)	[CC]	0,00		
	COSTO COMPLESSIVO UNITARIO (CCU = CC / PROD)	[CCU] €/kg	0,00	0,00	0,0%
	MARGINE OPERATIVO FAMIGLIARE (MOF = MO - CLF)	[MOF]	0,00		

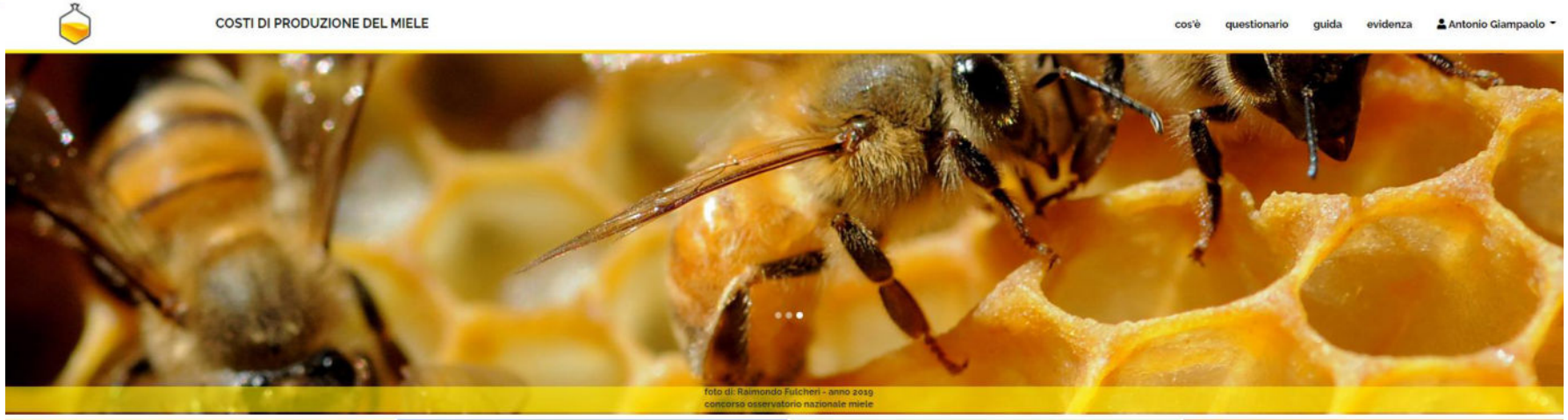
1 2 3

The questionnaire

- **General Data**
  (Type of farming and organization of production activity)
- **Structural Data**
  (The provision of buildings, artefacts, systems, machines and equipment)
- **Forms of marketing**
  (marketing channels and any commercial agreements and certification systems adopted)
- **Composition of the workforce**
  (In addition to some general data on the tenant, the possible presence of family members, collaborators and employees)
- **Consistency of breeding**
  (excluding the hive structure)
- **The productions**
  (Production of the year, sales, self-consumption and stocks)
- **The expenses and costs of breeding**
  (current costs and expenses for packaging, marketing, rentals/leasing, ordinary maintenance of owned assets and general expenses)
- **Employment and transfers**

The questionnaire consists of 8 sections, some of which are only filled during the first census, while others are updated if the same enterprise participates in multiple years.

The web site

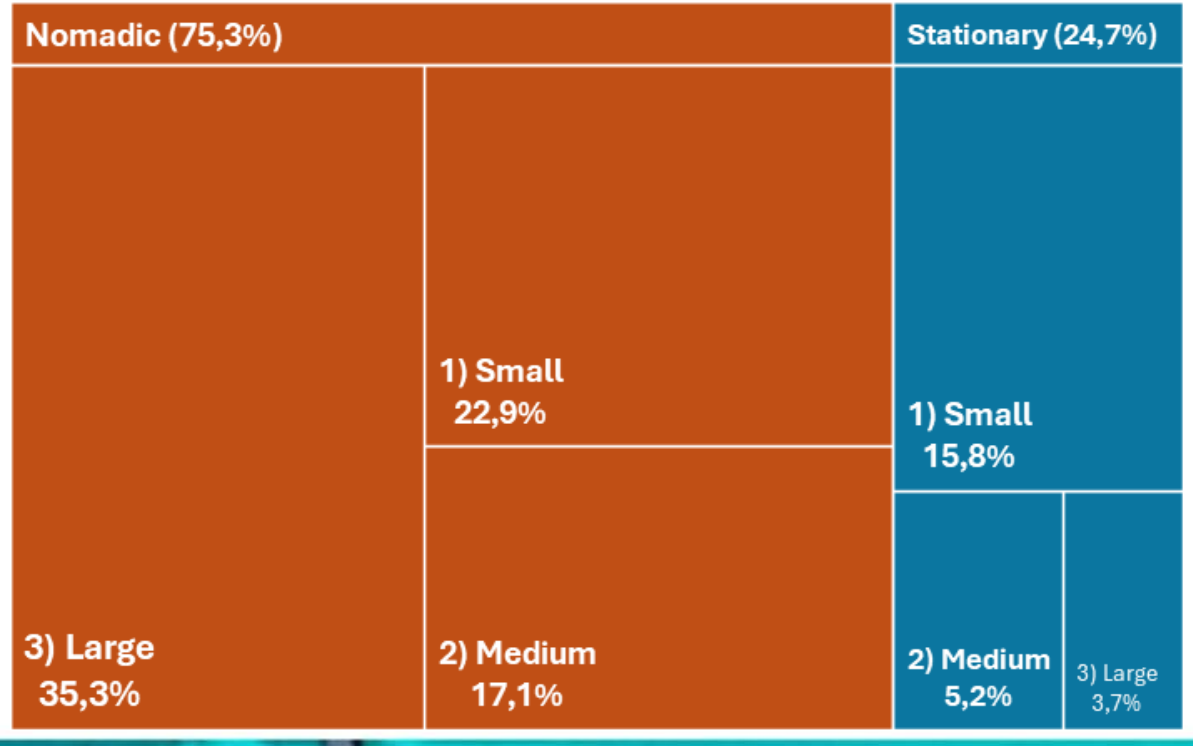


honeycost.crea.gov.it

Tool for knowledge dissemination and survey platform (questionnaire access, data entry, and updates)

Enterprise characteristics

The survey provides a snapshot of the sector in Italy.

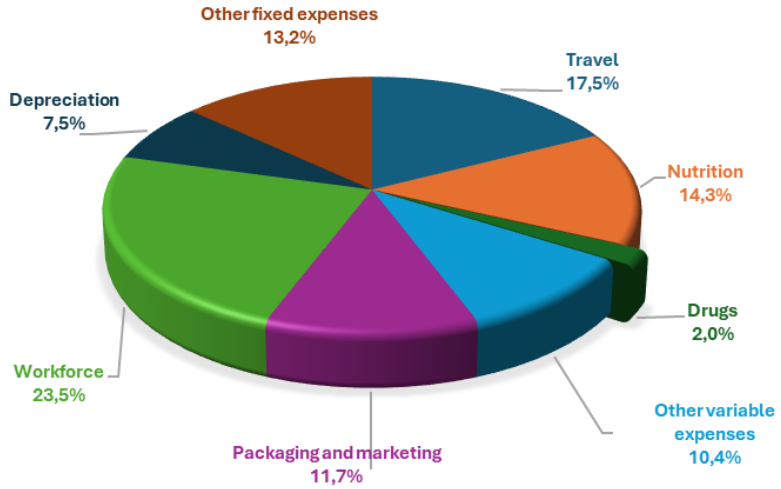


Nomadic beekeeping is practiced by most professional enterprises, especially larger ones.

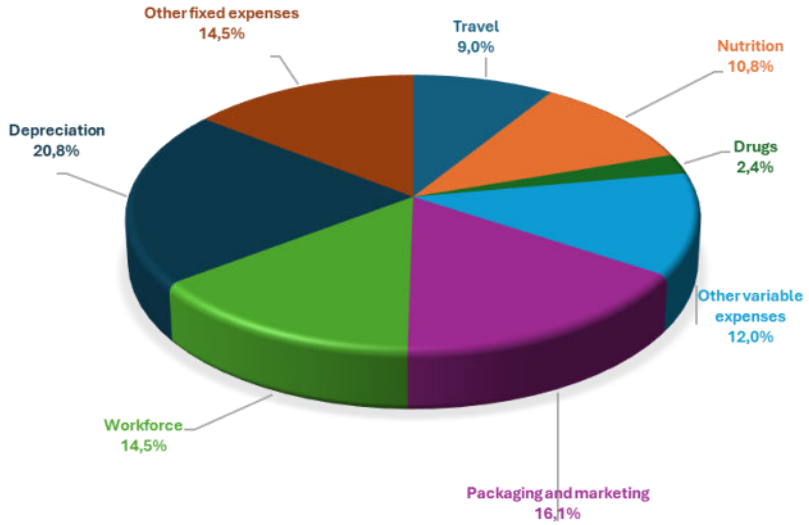
Production cost incidence

Cost composition (variable + fixed) is mainly influenced by farming type and economic size

Nomadic enterprises



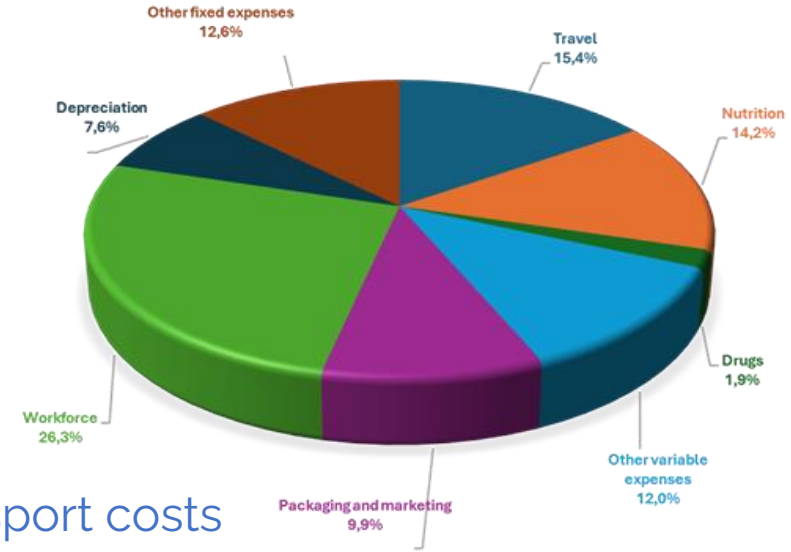
Stationary enterprises



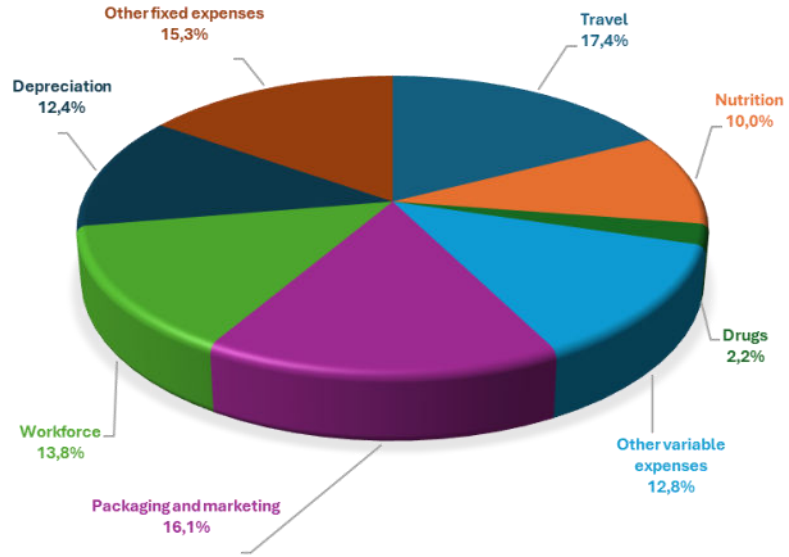
> transport and labor costs
< nutrition expenses

Production cost incidence

Large enterprises



Small enterprises



< transport costs
> labor costs
< nutrition expenses
< packaging expenses

Production costs per year and farm type

		2023		2024	
		Nomadic	Stationary	Nomadic	Stationary
		Values for Kg of honey			
Total Variable Costs (CVT)	euro	**3,34**	**3,59**	**3,84**	**4,04**
Travel	euro	1,13	0,59	1,12	0,77
Nutrition	euro	0,89	0,89	0,94	0,76
Drugs	euro	0,13	0,16	0,13	0,20
Other variable expenses	euro	0,50	0,80	0,83	1,03
Packaging and marketing	euro	0,70	1,16	0,80	1,28
Variable Costs for bulk honey	euro	***2,53***	***1,98***	***2,96***	***2,24***
Fixed Costs (CF)	euro	**2,64**	**3,98**	**3,04**	**3,56**
Workforce	euro	1,44	1,37	1,57	0,83
Depreciation	euro	0,32	1,50	0,64	1,66
Other fixed expenses	euro	0,88	1,12	0,82	1,08
Operative Costs (CO = CVT+CF)	euro	**5,98**	**7,58**	**6,87**	**7,61**
Opportunity cost of family workforce (CLF)	euro	**2,97**	**5,52**	**3,40**	**6,09**
Total Costs (CET = CO+CLF)	euro	**8,94**	**13,10**	**10,27**	**13,69**

Conclusions

- ✓ Solid methodology, reliable data collection (professional surveyors), progressive results, and creation of historical series (from 2022).
- ✓ Analysis of cost structure in its different components, production capacity, and management efficiency.
- ✓ Better understanding of the sector's market relationship (economic sustainability).
- ✓ Improved knowledge of the sector (production, social, environmental).
- ✓ Economic insights for better evaluation and calibration of policy intervention.
- ✓ Benchmarking: comparison with similar enterprises and across years.
- ✓ Integration into the National Statistical System.

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More info:

honeycost.crea.gov.it

Thank you for your attention

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