Data Article

Survey data on joint cropland management among agri-food cooperatives in Mediterranean Spanish Regions

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\textbf{A B S T R A C T}

This dataset presents data collected from joint cropland management practices survey in agri-food cooperatives of Mediterranean Spanish Regions. The objective was to examine to what extent cooperatives offer joint services, including joint management or integral exploitation of smallholdings, for the incorporation of new professionals. Data collection was conducted to five agri-food organizations: three agri-food cooperatives federations -Castilla-La Mancha, Comunitat Valenciana, and Murcia-, two second-degree agri-food cooperatives -Anecoop and Unió Nuts-, all of them located in Mediterranean Spanish Regions. A total of 1,168 survey questionnaires were distributed between July 2020 and February 2021 across five organizations through the snowball sampling method. Data from 112 collected questionnaires

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were correctly answered, but 106 were selected for analysis. The dataset includes socioeconomic data, productive information, and innovative characteristics from agri-food cooperatives surveyed, all in order to be able to examine the relationship between those factors and joint cropland management practices they carry on.

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Specifications Table

| Subject                         | Agricultural and Social Sciences |
|---------------------------------|----------------------------------|
| Specific subject area           | Factors affecting joint cropland management in agri-food cooperatives from Mediterranean Spanish Regions |
| Type of data                    | Raw database and analyzed data (.xlsx) |
| How the data were acquired      | Data was acquired via online survey (Google Forms), completed by CEOs of agri-food cooperatives from Mediterranean Spanish Regions. See Data Accessibility section for access to the questionnaire. Main characteristics of the data were analyzed after eliminating wrong answers. |
| Data format                     | Primary, raw, and analyzed data obtained from the survey. |
| Description of data collection  | Data were gathered through questionnaires distributed to agri-food cooperatives members of five agri-food organisations from Mediterranean Spanish Regions. The surveys were hosted in survey web platform and invitations to answer them were sent through organization networks. Data were screened for missing values and eliminating bias answers. Outliers were checked before pursuing data analysis. The final sample size consists of 106 valid responses. |
| Data source location            | • Institution: Cooperativas Agro-alimentarias de Castilla-La Mancha, Cooperatives Agro-alimentaires de la Comunitat Valenciana, Federación de Cooperativas Agrarias de Murcia, Unió Nuts SCCL and Anecoop S. Coop. • Region: Castilla-La Mancha, Cataluña, Comunitat Valenciana and Murcia • Country: Spain |
| Data accessibility              | Repository name: Zenodo Digital Object Identifier: 10.5281/zenodo.551819 Direct URL to data: https://zenodo.org/record/5511819#.YZItHU6ZM2w |

Value of the Data

- The data provides agri-food cooperative information of Mediterranean Spanish Regions in terms of socioeconomic characteristics, member features, the evolution of area cultivated and land abandonment, product and governance innovation, formulas of cooperation applied, and agronomic services offered. All this information is useful to provide some guidelines to identify the conditions observed in cooperatives that implement joint cropland management initiatives.
- In addition, data can be used in studies on the level of cropland abandonment, in studies that relate the social economy to product, process and organizational innovation, and in studies on social innovation in agriculture, among others.
- The main beneficiaries of the dataset include researchers and policymakers dealing with social economy, land abandonment, and joint management initiatives. Furthermore, it is helpful to agri-food cooperatives who are coping with aiming to reorient their organizational structure to adopt different cropland management initiatives.
- The dataset can be used to identify the economic and social attributes, or combinations thereof, that characterize a cooperative profile capable of undertaking a joint cropland
management strategy. Additionally, the dataset and the questionnaire elaborated may be used by other researchers who aim to conduct similar studies in other regions, either Spanish, European or other places.

1. Data Description

Land abandonment is currently a challenge in Europe [3], especially worrying in certain regions with a large proportion of small farms and where land fragmentation is a problem [7,11], as is the case of permanent crops of citrus orchards, vineyards and other fruits, mainly grown in the Mediterranean areas of Spain. As farms disappear without generational renewal and stop cultivating their land, many marketing cooperatives find themselves in an awkward position [9].

There are different strategies to reduce farmland/cropland abandonment [2,4,6]. One of them is the grouping of plots for joint cultivation. This is a recent strategy adopted by marketing cooperatives to deal with land abandonment, often due to the lack of generational renewal, which is especially useful for small-scale farming and can be considered a form of social innovation and collective entrepreneurship [10]. One significant advantage of such strategy lies in the fact that it does not necessarily change cooperatives’ land ownership, which lowers the transaction costs of the improvement in farm structure [9].

Through this strategy, collaboration between smallholders can make it possible to efficiently address the production and management of some crops [1,5,8]. Joint cropland management by marketing cooperatives enables an increase in farmers’ incomes through cost reductions achieved via economies of scale and more professional management.

The dataset provides information on data collected from 106 Mediterranean-Spanish-Region agri-food cooperatives on a wide range of issues, all focused on joint cropland management practices carried on agri-food cooperatives. The survey data include the following sections: (i) socioeconomic characteristics, (ii) member features, (iii) land abandonment, (iv) product innovation, (v) governance innovations applied, (vi) inter-cooperation formulas participated in, and (vii) agronomic services and farming sections offered. The questionnaire and datasets are provided as a supplementary file.

Table 1 presents the main characteristics of the agri-food cooperatives surveyed. Most of the agri-food cooperatives are located in the region of Valencia (29%), Castellón (20%), Tarragona (17%), and Alicante (13%). They are especially dedicated to olive oil (43%), dry fruits (42%), and citrus fruits (36%). Furthermore, their average turnover in the last two years is, mainly, between 1 million € and 10 million € (47%), followed by those with a turnover from 300,000 € and 1 million € (19%), and from 10 million € to 50 million € (15%).

Table 2 shows member features of the agri-food cooperatives surveyed. Generally, 48% of them have between 100 and 500 members. On the one hand, most of them (53%) have a percentage between 0% and 10% of members under 40 years old. Of those cooperatives who have members under 40, 40% have a percentage more than 20% of professional members. On the other hand, 36% of the cooperatives have a ratio between 50% and 75% of members who are more than 65 years old, and 28% a percentage between 25% and 50%. Finally, 43% of agri-food cooperatives have a share of more than 75% of no-professional members, followed by 20% of those who all members are professional.

The land abandoned in the agri-food cooperatives is 51% between 0% and 25% of the total land, as shown in Table 3. Furthermore, the average land abandonment rate of most agri-food cooperatives surveyed (53%) is less than 5 hectares per year. In general terms, 28% of them have not changed their cultivated area, but 57% have reduced it with different rates (less than 5%, 12%; from 5% to 10%, 21%; more than 10%, 24%). The main reasons for land abandonment are poor performance (53%) and retirements (50%).

The answers to the product innovation section, in Table 4, show that 33% of cooperatives surveyed have not promoted new varieties, new crops or cropping systems, or differentiated payment for quality in the last five years, but 25% have somewhat promoted them. Moreover, 52% of them have not promoted organic farming or waste farming in the previous five years,
Table 1
Main characteristics of the agri-food cooperatives surveyed.

| Frequency | % |
|-----------|---|
| Region    |   |
| Alicante  | 14 | 13 |
| Valencia  | 31 | 29 |
| Castellón | 21 | 20 |
| Albacete  | 2  | 2  |
| Ciudad Real | 2 | 2 |
| Cuenca    | 2  | 2  |
| Toledo    | 2  | 2  |
| Tarragona | 18 | 17 |
| Lleida    | 2  | 2  |
| Murcia    | 7  | 7  |
| Other     | 5  | 5  |

| Main type of product (multiple response) | Frequency | % |
|-----------------------------------------|-----------|---|
| Citrus fruit                            | 38        | 36 |
| Other fruits                            | 31        | 29 |
| Vine (wine)                             | 23        | 22 |
| Dry fruits                              | 44        | 42 |
| Olive grove (oil)                       | 46        | 43 |
| Vegetables                              | 9         | 8  |
| Supply                                  | 26        | 25 |
| Agrarian services                       | 9         | 8  |
| Grain                                   | 6         | 6  |
| Other                                   | 10        | 9  |

| Value of the cooperative's turnover (avg. last two years) | Frequency | % |
|---------------------------------------------------------|-----------|---|
| From 0 to 300,000 Euro                                   | 10        | 9 |
| From 300,000 to 1 M Euro                                 | 20        | 19|
| From 1 M Euro to 10 M Euro                              | 50        | 47|
| From 10 M euros to 50 M euros                            | 16        | 15|
| More than 50M                                          | 3         | 3 |
| No data                                                | 7         | 7 |

and 75% have not done it for new processed, 4th- or 5th range products in the previous five years.

The governance innovation section, whose answers are in Table 5, shows that 53% of the agri-food cooperatives surveyed have not promoted women or young people as members in the last five years. Of those who have promoted them, 42% have used the measure of access to operational plans or other aids for their inclusion. In addition to this, 56% of the cooperatives have promoted young people, women, or non-members of the board in the Board of Directors of the cooperative in the last five years, and 72% have no terms limit for the members of the Board of Directors in the cooperative’s bylaws or have no plan to implement it.

Table 6 shows 34% of agri-food cooperatives have not participated in inter-cooperation, integration, or other formulas in the last five years. 23% have done it in flexible formulas for collaboration with other organizations, same percentage as those who have done it in binding agreements in the form of commercial partnerships. For those who have participated in one of the different cooperation formulas, 54% have experienced with peer entities.
Table 2  
Members features of the agri-food cooperatives surveyed.

|                                | Frequency | %  |
|--------------------------------|-----------|----|
| **Number of members**          |           |    |
| < of 100                       | 19        | 18 |
| Between 100 and 500            | 51        | 48 |
| > of 500                       | 36        | 34 |
| **Percentage of members under 40? (from 0 to 100)** |           |    |
| 0                              | 10        | 9  |
| Between 0 and 5                | 28        | 26 |
| Between 5 and 10               | 29        | 27 |
| Between 10 and 20              | 19        | 18 |
| > of 20                       | 19        | 18 |
| No data                       | 1         | 1  |
| **Percentage of professional members under 40? (from 0 to 100)** |           |    |
| 0                              | 18        | 19 |
| Between 0 and 5                | 25        | 26 |
| Between 5 and 10               | 6         | 6  |
| Between 10 and 20              | 9         | 9  |
| > of 20                       | 38        | 40 |
| **Percentage of members over 65? (from 0 to 100)** |           |    |
| 0                              | 3         | 3  |
| Between 0 and 25               | 20        | 19 |
| Between 25 and 50              | 30        | 28 |
| Between 50 and 75              | 38        | 36 |
| > of 75                       | 12        | 11 |
| No data                       | 3         | 3  |
| **Percentage of no-professional members? (from 0 to 100)** |           |    |
| 0                              | 21        | 20 |
| Between 0 and 25               | 15        | 14 |
| Between 25 and 50              | 11        | 10 |
| Between 50 and 75              | 13        | 12 |
| > of 75                       | 46        | 43 |
### Table 3
Land abandonment of the agri-food cooperatives surveyed.

| Percentage of abandoned land in the last 5 years? (from 0 to 100) | Frequency | %  |
|---------------------------------------------------------------|-----------|----|
| 0                                                             | 9         | 8  |
| Between 0 and 25                                              | 54        | 51 |
| Between 25 and 50                                              | 20        | 19 |
| Between 50 and 75                                              | 7         | 7  |
| > of 75                                                       | 15        | 14 |
| No data                                                       | 1         | 1  |

| Average rate of land abandonment? (ha/year)                   | Frequency | %  |
|--------------------------------------------------------------|-----------|----|
| < 5 ha                                                        | 56        | 53 |
| 5 to 10 ha                                                   | 29        | 27 |
| 10 to 20 ha                                                  | 9         | 8  |
| > 20 ha                                                      | 5         | 5  |
| No data                                                      | 7         | 7  |

| Change in terms of cultivated area over the last five years? | Frequency | %  |
|-------------------------------------------------------------|-----------|----|
| Loss of more than 10%                                        | 25        | 24 |
| Loss from 5 to 10%                                           | 22        | 21 |
| Loss of less than 5%                                         | 13        | 12 |
| Approximately stable                                         | 30        | 28 |
| Increase of less than 5%                                     | 6         | 6  |
| Increase from 5% to 10%                                      | 7         | 7  |
| Increase of more than 10%                                    | 3         | 3  |

| If lost, what are the reasons for this decrease? (multiple response) | Frequency | %  |
|---------------------------------------------------------------------|-----------|----|
| Abandonment of plots of land due to poor performance                | 51        | 53 |
| Abandonment of plots due to retirements                              | 48        | 50 |
| Abandonment of plots due to deaths                                  | 26        | 27 |
| Plots that leave the cooperative but continue to be farmed by their owners | 22        | 23 |
| Sale or leasing of plots of land to non-members                      | 25        | 26 |
| Plots dedicated to non-agricultural uses                            | 6         | 6  |
| Others                                                              | 6         | 6  |

### Table 4
Product innovation.

| Scale of promotion of new varieties, new crops or cropping systems or differentiated payment for quality in the last 5 years | Frequency | %  |
|------------------------------------------------------------------------------------------------------------------------|-----------|----|
| Not at all                                                                                                              | 35        | 33 |
| Very little                                                                | 19        | 18 |
| Somewhat                                                                  | 27        | 25 |
| Quite a lot                                                               | 16        | 15 |
| A lot                                                                      | 9         | 8  |

| Scale of promotion of organic farming or zero waste farming in the last 5 years                                         | Frequency | %  |
|------------------------------------------------------------------------------------------------------------------------|-----------|----|
| Not at all                                                                                                              | 55        | 52 |
| Very little                                                                | 10        | 9  |
| Somewhat                                                                  | 10        | 9  |
| Quite a lot                                                               | 16        | 15 |
| A lot                                                                      | 15        | 14 |

| Scale of promotion of new processed, 4th or 5th range products in the last 5 years                                      | Frequency | %  |
|------------------------------------------------------------------------------------------------------------------------|-----------|----|
| Not at all                                                                                                              | 80        | 75 |
| Very little                                                                | 10        | 9  |
| Somewhat                                                                  | 9         | 8  |
| Quite a lot                                                               | 4         | 4  |
| A lot                                                                      | 3         | 3  |
Table 5
Governance innovation.

| Promotion of women and youth as members in the last 5 years | Frequency | % |
|------------------------------------------------------------|-----------|---|
| Yes                                                        | 50        | 47|
| No                                                         | 56        | 53|

If yes, which measures have been adapted for inclusion? (multiple response)

| Measures                                                 | Frequency | % |
|----------------------------------------------------------|-----------|---|
| Membership fee reduction                                  | 8         | 16|
| Access to financing                                      | 11        | 22|
| Access to operational plans or other aids (young farmers...) | 21        | 42|
| Access to land                                           | 1         | 2 |
| Other                                                    | 19        | 38|

| Promotion of women, young people or non-member of the board in the Board of Directors in the last 5 years | Frequency | % |
|---------------------------------------------------------------------------------------------------------|-----------|---|
| Yes                                                                                                      | 59        | 56|
| No                                                                                                      | 47        | 44|

Term limits for the members of the Board of Directors included in your cooperative’s bylaws or planning to implement it

| Term limits included in bylaws or planning to implement | Frequency | % |
|---------------------------------------------------------|-----------|---|
| Yes                                                                                                    | 30        | 28|
| No                                                                                                     | 76        | 72|

Table 6
Cooperation formulas applied.

| Participation in inter-cooperation, integration or other formulas in the last five years (multiple responses) | Frequency | % |
|----------------------------------------------------------------------------------------------------------------|-----------|---|
| Nothing at all                                                                                               | 36        | 34|
| It has explored integration formulas that have not materialized                                              | 14        | 13|
| It has participated in flexible formulas for collaboration with other organizations                           | 24        | 23|
| It has entered into binding agreements in the form of commercial partnerships                               | 24        | 23|
| It has participated in merger or integration processes                                                        | 19        | 18|

With what type of organization? (multiple responses)

| Organization                                             | Frequency | % |
|----------------------------------------------------------|-----------|---|
| With peer entities                                       | 44        | 54|
| With second-tier cooperatives and other higher-tier entities | 31        | 38|
| With non-cooperative companies                           | 11        | 14|

Al least 61% of the cooperatives surveyed have a farming services section, as shown in Table 7, and 71% of those who do not have are not planning to implement it. The main agro-nomic services offered are pest and disease control (93%), land tillage (80%), pruning and waste management, fertilization, and harvesting (three all with 73%). Additionally, 14% have a joint cropping section that consolidates mainly between 10 and 40 hectares (40%).
Table 7
Agronomic services and farming sections offered.

| Is there a farming services section? | Frequency | % |
|-------------------------------------|-----------|---|
| Yes                                 | 41        | 39 |
| No                                  | 65        | 61 |

| If not, possibility of implementing it? | Frequency | % |
|----------------------------------------|-----------|---|
| Yes                                    | 19        | 29 |
| No                                     | 46        | 71 |

Agronomic services offered in farming service section (multiple responses)

| Pruning and waste management          | 30 | 73 |
| Irrigation                           | 24 | 59 |
| Fertilization                        | 30 | 73 |
| Land tillage                         | 33 | 80 |
| Pest and disease control             | 38 | 93 |
| Harvesting                           | 30 | 73 |
| Grouping of plots of land transferred or leased to facilitate their cultivation by professionals, members, or collaborators | 5 | 12 |
| Integral direct management by the cooperative of plots of land transferred or leased by owners, whether members or non-members | 13 | 32 |

| Is there a joint cropping section?    | Frequency | % |
|--------------------------------------|-----------|---|
| Yes                                  | 15        | 14 |
| No                                   | 91        | 86 |

If yes, how much area is grouped? (ha)

| Area (ha)               | Frequency | % |
|-------------------------|-----------|---|
| 0 (recently created)    | 1         | 7 |
| Less than 10            | 3         | 20 |
| Between 10 and 50       | 6         | 40 |
| Between 50 and 100      | 1         | 7 |
| More than 100           | 4         | 27 |

2. Experimental Design, Materials and Methods

In order to collect empirical data of joint cropland management among agri-food cooperatives in Mediterranean Spanish Regions, a questionnaire was designed, according to a preceding study [9], and an online survey was carried out, thanks to the collaboration with agri-food cooperatives federations of Castilla-La Mancha, Comunitat Valenciana, and Murcia, and two second-degree agri-food cooperatives, Anecoop and Unió Nuts, all of them members of the operational group InnoLand, of the European Innovation Partnership for Agricultural productivity and Sustainability (EIP-AGRI).

The questionnaire content was based on aspects that were found to be relevant for joint cropland management. The main characteristics of agri-food cooperatives sought were socio-economics information, member features, surface area evolution and land abandonment, product innovation, governance innovation, cooperation formulas, and agronomic and farming services. Characteristics of all questions of the questionnaire are shown in Table 8. It was included mainly closed, semi-open and open questions, some of them multi-response and 5-point Likert scale as well. The survey required an estimated 15–20 min to be completed.

Between July 2020 an February 2021 the questionnaire was hosted online and invitations to answer it were distributed to CEOs of agri-food cooperatives of Mediterranean Spanish Regions. The survey was closed when no responses were collected for a month. From the 1168 invitations to answer the survey which were sent, 112 were finally answered. Informed consent which include statements about the use of the information for academic purposes, and participation was voluntary was obtained from all participants. The anonymity of participants was ensured in the
Table 8
Questionnaire questions characteristics.

| Part 1. Main characteristics          | Type                           |
|---------------------------------------|--------------------------------|
| Region                                | Semi-open-ended                |
| The three main types of products      | Multi-response, semi-open-ended|
| Average turnover value                | Open-ended                     |
| Number of members                     | Open-ended                     |

| Part 2. Members                        |                               |
|---------------------------------------|-------------------------------|
| Percentage of members under 40 years  | Open-ended                    |
| Percentage of professional members    | Open-ended                    |
| Percentage of members over 65 years   | Open-ended                    |
| Percentage of non-professional members| Open-ended                    |

| Part 3. Surface and abandonment       |                               |
|---------------------------------------|-------------------------------|
| Percentage of the area cultivated     | Open-ended                    |
| abandoned by members in the last 5    |                               |
| years                                 |                               |
| Average annual rate of land           | Closed-ended                  |
| abandonment                           |                               |
| Change in terms of cultivated area    | Closed-ended                  |
| in the last five years                |                               |
| Reasons for land abandonment         | Multi-response, semi-open-ended|

| Part 4. Product innovation            |                               |
|---------------------------------------|-------------------------------|
| Promotion of new varieties, new crops | Likert, closed-ended          |
| or cropping systems or                |                               |
| differentiated payments for quality   |                               |
| Type of promotion of new varieties,  | Open-ended                    |
| new crops or cropping systems or      |                               |
| differentiated payments for quality   |                               |
| Promotion of organic farming or zero  | Likert, closed-ended          |
| waste farming                         |                               |
| Promotion of new processed products, | Likert, closed-ended          |
| 4th or 5th range products             |                               |

| Part 5. Governance innovation        |                               |
|--------------------------------------|-------------------------------|
| Promotion of women and young people  | Closed-ended                  |
| as members                            |                               |
| Measures of promotion of women and   | Multi-response, semi-open-ended|
| young people as members               |                               |
| Promotion of women, young people or  | Closed-ended                  |
| non-members on the Board of Directors|                               |
| Inclusion of term limits for the     | Closed-ended                  |
| members of Board of Directors in     |                               |
| cooperative’s bylaws                 |                               |

| Part 6. Inter-cooperation and mergers| Multi-response, closed-ended  |
|--------------------------------------|-------------------------------|
| Participation in inter-cooperation,  |                               |
| integration, or other cooperation    |                               |
| formulas                             |                               |
| With which type of organization?     | Closed-ended                  |

| Part 7. Services provided and sections|                               |
|---------------------------------------|-------------------------------|
| Is there a farming services section?  | Closed-ended                  |
| If not, is it possible to implement it?| Closed-ended  |
| If there is, what agronomic services does it offer?| Multi-response, closed-ended  |
| Is there a joint cropping section?    | Closed-ended                  |
| If not, is it possible to implement it?| Closed-ended  |
| If there is, how much area is it grouped?| Open-ended |

survey which did not included any personal information. After a screening for missing values and eliminating bias answers, the final sample size was 106 valid responses correctly answered.

Ethics Statements

We confirm that the participants in the survey have given their informed consent to participate. Participants were ensured that their participation was voluntary and that they could leave or pause the online survey at any point. It was guaranteed that any information provided will be treated confidentially and anonymously.
Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT Author Statement

Consuelo Calafat-Marzal: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Validation, Supervision, Project administration, Funding acquisition; Francesc J. Cervera: Writing – original draft, Formal analysis, Visualization, Writing – review & editing; Veronica Piñeiro: Methodology, Writing – original draft, Investigation, Formal analysis, Data curation, Validation, Writing – review & editing; Paula Andrea Nieto-Alemán: Software, Resources.

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