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Spanish Agriculture and Water: Educational Implications of Water Culture and Consumption from the Farmers' Perspective

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Abstract: The responsible management and consumption of water is a challenge that involves all segments of society. Having access to sufficient quality and quantity of water is not only a technological issue, but requires that the adopted measures and programmes take into account the dimensions of society and education. Spanish agriculture, as in other areas of the world, is a major consumer of water and more so than other sectors, including household consumption. Within the field of environmental education, this study covered the water culture and consumption of Andalusian farmers, based on their own perceptions. For this purpose, a questionnaire was created and validated, and included a sample of 1030 farmers selected with pseudorandom number sampling. An analysis of the data showed relevant results with respect to the values and notions supporting the justification for farmer behaviours, both from a cognitive-representative viewpoint and from an affective-expressive stance, as well as assertions made by the irrigators about other key sectors concerning the responsible management of water usage and water consumption. The findings of this study may assist in the design of environmental education programmes addressing this sector, which could also include other similar populations.

Keywords: foreign countries; agricultural occupations; water; environmental education; surveys; sustainability

1. Introduction

The responsible management and consumption of water is a challenge that involves all segments of society. Having access to sufficient quality and quantity of water is not only a technological issue, but requires that the adopted measures and programmes consider the dimensions of society and education. Awareness and environmental education programmes addressed to the population have a positive effect on the rationing and reduction of water consumption. Nevertheless, for large consumers, these extensive education programmes must be more focused and address their specific needs and behavioural patterns [1]. Spanish agriculture, as in other areas of the world, requires vast amounts of water, more than the industrial sector and domestic consumption. The proportion of water used in Spanish agriculture has increased steadily, from 62.00% in 1987 to 68.19%, in 2012, based on the latest published data. During the same period, the extraction of water for household consumption has increased from 12.00% to 14.21% [2].

Table 1, summarizing the data collected from the AQUASTAT information system [2], depicts the extraction of water according to sector—agriculture, industry, and municipal—and the total per capita. This table helps to compare water usage in Spain, using 2012 data, with other surrounding countries and countries around the world. It reflects the relative significance of the agricultural water usage compared to both industry and municipal usage. Apart from agriculture generally consuming greater volumes, some appreciable data also exists, such as for those countries that use minimal water in agricultural practices, for example, the Central African Republic or Seychelles. In some countries, agriculture consumes high volumes of water, for example, China and the United States. The total water consumption per capita reveals telling data, such as the high consumptions in countries such as Azerbaijan, Chile, New Zealand, United States and Turkmenistan.

Table 1. Water withdrawal by sector and country.

Country	Agriculture [a]	Industry [a]	Municipal [a]	Total [a]	Total per Capita [b]
Argentina	27.93	4.00	5.85	37.78	897.50
Australia	10.59	2.77	4.01	17.37	724.70
Azerbaijan	10.10	2.36	0.52	11.97	1279.00
Brazil	44.90	12.72	17.21	74.83	369.70
Canada	4.75	33.12	5.88	38.80	1113.00
Central African Republic	0.00	0.01	0.06	0.07	17.25
Chile	29.42	4.74	1.27	35.43	2152.00
China	392.20	140.60	75.01	607.80	431.90
Comoros	0.00	0.00	0.00	0.01	17.38
Egypt	67.00	2.00	9.00	78.00	910.60
France	3.14	21.61	5.48	30.23	475.60
Germany	0.21	32.60	5.41	33.04	410.50
Greece	7.92	0.33	1.29	9.63	865.20
Iraq	52.00	9.70	4.30	66.00	2646.00
Israel	1.02	0.11	0.71	1.95	282.30
Italy	12.89	16.29	9.45	53.75	899.80
Japan	54.43	11.61	15.41	81.45	640.60
Lesotho	0.00	0.02	0.02	0.04	23.24
Maldives	0.00	0.00	0.01	0.01	17.11
Mexico	61.58	7.28	11.44	80.30	657.80
Morocco	9.16	0.21	1.06	10.43	316.20
Portugal	8.77	1.50	0.91	9.15	867.30
New Zealand	3.21	1.18	0.81	5.20	1172.00
Saudi Arabia	20.83	0.71	2.13	23.67	907.50
Seychelles	0.00	0.00	0.01	0.01	150.80
Spain	*25.47*	*6.57*	*5.31*	*37.35*	*800.90*
Turkmenistan	26.36	0.84	0.75	27.95	5753.00
United Kingdom	1.05	1.19	5.87	8.21	129.20
United States of America	175.10	248.40	62.09	485.60	1543.00

Notes: [a] 10^9 m^3/year; [b] m^3/inhabitant/year. Adapted from AQUASTAT [2].

As shown in Table 1, Spain's situation is unique in Europe. Water consumption per capita is among the highest in Europe (800.9 m^3/inhabitant), much higher than in the United Kingdom (129.2), Germany (410.5) and France (475.6); but similar although somewhat lower than Greece (865.2), Portugal (867.3), and Italy (899.8). In absolute terms, Spain leads consumption in agriculture (25.47 $\times$ 10^9 m^3/year). Regarding water consumption in industry and by citizens, water consumption in Spain (68.19%) is only exceeded by Greece (82.24%), and Portugal (95.85%), which are Mediterranean countries like Spain that have very little industrial water consumption, at 0.33 and 1.5, respectively.

Farmers, a key component in the consumption of water and in various aspects concerning the quality and quantity of water, are far too often overlooked in terms of scientific research. Generally, this is a sector of the population that is difficult to access and has its own culture and traditions that are dependent on local contexts, which are seldom addressed or understood by other associated populations [3,4]. A review of the international literature shows that not many studies have addressed this issue. Research in the field of agriculture and environmental education is scarce. In the following paragraphs an analysis of the existing literature is made, highlighting the aspects that are the focus of this research.

In Oberkircher and Hornidge [3], a study was conducted with farmers from Khorezm, Uzbekistan. The unsustainable use of water for irrigation has created a major crisis in the Aral Sea. This study analysed farmer perceptions of water and its management, as well as how certain practices could promote water conservation and savings. Another study in Papua New Guinea [4] showed how little "indigenous knowledge" is acknowledged regarding environmental and agricultural education. This knowledge, a fundamental aspect of indigenous culture, is essential for the management and responsible consumption of water. Also, the results of an educational outreach programme on water resource management, and their effects on the beliefs and attitudes of local farmers in the Upper Taieri River Catchment, New Zealand [5], were analysed. Moreover, a review was undertaken in Iran using 36 studies with farmers [6], which showed the importance of education in improving sustainable behaviours.

Despite these examples, most of the studies on water management and consumption issues were conducted with the general population or with educational populations in mind [7–10]. In Thompson and Serna [11], a study was conducted revealing that 94.00% of the students who participated in an educational programme on water conservation had broadened their knowledge base and increased their commitment. For this reason, an examination of the behaviour of water management and consumption in specific sectors of the population, such as farmers, is pertinent and relevant from a researcher's perspective.

The Autonomous Community of Andalusia, Spain, was chosen as the area of study. Andalusia is the most populated autonomous community in Spain. It covers an area of 87,268 km^2, of which 45.74% is arable land. According to official data [12], noting that groundwater and treated wastewater were not included, Andalusia is the region in Spain where agriculture annually consumes the most water, 28.20% of the total, amounting to 4,216,350,000 m^3.

Accordingly, we conducted a study on water consumption and culture of farmers, based on their own points of view from an environmental education perspective. The specific objectives of the study were (1) to determine the understanding of farmers, their attitudes and moods concerning water management and consumption; and (2) to determine their position in terms of proposals for change and possible improvements in that subject; additional specific objectives include (3) verifying if any differences or correlations existed between the information, attitudes, and moods of farmers, and other variables such as age, gender, employment situation, cultivated surface area, and production.

2. Materials and Methods

A descriptive study was completed in a pre-research phase [13]. In that study, a sample of 24 participants, selected by theoretical sampling, was interviewed in depth. In the theoretical sampling, the participants are selected because they fulfil a series of characteristics according to the objectives of the research [14]. The participants belonged to several sectors with a relevant role related to the management and responsible use of water, including employees or members of water companies, administration, conservation associations, and environmental education and specialised media companies. The interview script included three main categories: (1) how they perceive and the importance they attribute to problems related to water; (2) the responsibility the entity assumes in this problem; and (3) solutions that it considers suitable for the problems related to the consumption and management of the water.

From the information gathered during the interviews, a 30-element questionnaire was designed, using a Likert scale from 1 to 5, with 1 meaning "fully disagree" to 5 meaning "fully agree". The questionnaire was formulated with the purpose of determining various aspects relating to water use and consumption, along with understanding farmer values and culture. The structure of the questionnaire consisted of three dimensions. The dimensions were based on Jakobson's model of language functions [15]: (1) representative, or referential, to gather information on various relevant facets of water management, with a total of 6 elements; (2) emotive, or expressive, to gather information on farmer feelings, attitudes and moods, with a total of 17 elements; and (3) appellative, or conative, to determine any appraisals regarding proposals for change and improvement directed at various sectors, with a total of 7 elements.

Furthermore, a number of questions related to classification variables, such a gender, age, employment situation, surface area, crop type and production, were included to achieve a better understanding of the selected sample and to conduct differential analyses.

Before starting the interviews, an expert validation occurred. Seven research methodology and environment experts reviewed and assessed the adequacy of the elements and dimensions of the questionnaire. After considering the experts' suggestions, a second version of the questionnaire was drafted. Using this second version, a pilot application of the questionnaire was conducted using a sample of 105 participants.

A reliability study, through internal consistency using Cronbach's alpha, and structural validity, through factorial analysis of principal components, were performed on the data collected during the pilot application. The reliability study provided a Cronbach's alpha of 0.79, which is considered acceptable [16]. A factorial analysis allowed for a model of nine components to be elaborated, which accounted for 68.45% of the total variance. The components of the model were fully consistent with the dimensional structure of the questionnaire.

After several adjustments had been made to the questionnaire based on the pilot application, a second application of the questionnaire was conducted on a pseudorandom and non-probabilistic sample of 1030 participants. The sample consisted of both men (53.00%) and woman (47.00%), between the ages of 17 and 77, with a mean age of 36 and standard deviation of 11.13. Other data that define the sample are the cultivation area, with a mean of 18.13 hectares and standard deviation of 8.62, the type of crop (olive grove 47.54%, cereals 23.16%, industrial crops 10.67%, fruit trees 9%, and other 9.63%), and production, with a mean of $53,915.10/year. A post evaluation study on the representativeness of the sample, by comparisons of distributions across χ^2, showed how the variables of age, gender, surface area of cultivation, type of crop, production and geographical areas were represented in similar proportions as in the source population.

As for the data gathered after the second application, descriptive analyses (measures of central tendency and dispersion), nonparametric tests of χ^2 (comparing observed and expected frequencies), analyses using the Pearson correlation coefficient (between classification variables such as age, surface area of cultivation, and productivity and the remaining elements on the questionnaire) and multivariate analysis of variance (provinces and employment situation with the rest of the questionnaire elements) were conducted. All analyses were performed using the SPSS v.22 statistical package.

3. Results

First, the descriptive results of the questionnaire are presented along with a brief analysis of the frequency distribution observed regarding the expected frequencies, including Pearson's χ^2 test. Second, the results of the bivariate, correlation coefficients, and multivariate analyses of variance are presented.

3.1. Descriptive Results

Tables 2–4 present the most relevant results from the questionnaire (Table S1 contains all the results). The most frequent options, the mean, and standard deviation are summarized. Non-parametric tests using χ^2 demonstrated significant differences ($p < 0.0005$) for all observed frequency distributions compared with the expected value, and for each element on the questionnaire. Table 2 displays some of the most significant results in terms of percentages, corresponding to the elements associated with the representative function (objective 1). Based on this function, we thought that information would be obtained for some relevant aspects of water usage and consumption from the farmer perspective.

Table 2. Results expressed in terms of a percentage of the respondents of the representative function.

Element	5	4	3	2	1	Me	SD	χ^2 *
1. When it comes to consumption, the agricultural sector should have more say in political decisions on water management	48.20	27.30	20.40	2.60	1.50	4.18	0.94	769.25
2. Water management would be better if the situation of farmers was considered	41.40	29.30	23.50	4.00	1.80	4.04	0.98	589.13
5. Water is not a problem for the general population, instead, it is a problem for farmers	7.00	10.70	17.80	12.20	52.30	2.07	1.32	702.69
6. It is a pity that all this water is lost at the river mouth	46.50	16.50	20.60	7.80	8.60	3.84	1.32	511.73

Note: * χ^2 Pearson Test, with df = 4, all significant with $p < 0.0005$.

A large majority of the respondents considered that the agriculture sector should have more of a say in political decisions on water management, with 48.20% fully agreeing and 27.30% agreeing to a certain extent, and that it would be better if water management considered farmers' circumstances. The average of both these elements was high, with means of 4.18 and 4.04, respectively, with a low dispersion of opinions, with standard deviations of 0.94 and 0.98, respectively.

Farmers, although they belong to the sector that consumes more water, do not think that the water problem is exclusively theirs. On the contrary, they do not agree that water is not a problem for the general population, with 52.30% totally disagreeing and 12.20% partially disagreeing. Nevertheless, most believe that the water "lost" at the river mouth is a pity, with 46.50% totally agreeing and another 16.50% partially agreeing. For both cases, the dispersion of opinions is not low (1.32), however, a marked tendency stretched in both directions.

Table 3 includes the most important elements corresponding to the emotive function. This function was intended to obtain an approximate notion of the feelings, attitudes and moods of farmers regarding water consumption (objective 2).

Table 3. Results of the emotive function.

Element	5	4	3	2	1	Me	SD	χ^2 *
8. If the infrastructure were improved, there would be a larger irrigated area	48.10	28.10	18.10	4.00	1.70	4.17	0.97	746.60
10. Using fertilisers above the recommended rates of application improves production	6.10	9.00	14.70	12.20	58.00	1.93	1.27	951.28
15. A social criterion should be utilised for the distribution of water (crops that generate more employment)	33.90	27.50	27.10	7.10	4.40	3.79	1.12	365.46
17. Development and growth cannot slow down due to a lack of water	30.70	21.40	27.80	10.00	10.00	3.53	1.29	194.30
18. Fertilisers are responsible for soil and water pollution	33.50	18.20	29.10	11.10	8.10	3.58	1.27	251.89
19. Improvements to infrastructure would allow for more irrigation	46.20	26.40	18.70	5.50	3.20	4.07	1.08	629.11
20. Investing in more efficient irrigation techniques would make it possible to endure times of drought	57.00	22.60	15.70	3.80	0.90	4.31	0.93	1041.07
21. Low quality or recaptured water could be used for agriculture	44.40	26.10	18.70	6.40	4.40	3.99	1.31	547.23

Note: * χ^2 Pearson Test, with df = 4, all significant with $p < 0.0005$.

Farmers support the idea of infrastructure improvements to achieve a larger irrigated area with 48.10% fully agreeing and 28.10% partially agreeing, whereas the average was high at 4.17. A large majority, 58.00%, of respondents disagreed with using more than the recommended rates of fertilisers to enhance production. Nevertheless, a high dispersion was seen for this case (1.27), denoting an opposing opinion of those favouring the use of rates greater than those recommended by some irrigators.

Although the opinions were dispersed around a mean of 3.47, a vast majority of respondents admitted that more water should be made available for crops that help maintain populations in the local area, with 22.90% totally agreeing and 24.70% partially agreeing. The social criterion for the distribution of water towards crops that generate further employment was supported by most of the respondents with 33.90% totally agreeing and 27.50% partially agreeing.

Most respondents stated that development and growth cannot be slowed down due to a lack of water (30.70% totally agree, with an average of 3.53), although the opinions were dispersed (SD = 1.29). Most farmers that answered the questionnaire, at 33.50%, admitted that fertilisers are responsible for soil and water pollution. Even more prominent was the opinion that improvements made to infrastructure would allow for more irrigation (46.20% totally agree). In this case, the statement was generic and it was not entirely clear if the farmers were referring to a larger irrigated area or to higher volumes per unit surface, or perhaps both.

Most agreed that investing in more efficient irrigation techniques would allow for times of drought to be endured (57.00% totally agree). The same occurred with the idea that reused water could be used in agriculture (44.40% fully agree).

Table 4 shows several of the results of the elements relating to the appellative function, the opinions and appreciations of the farmers partaking in the questionnaire regarding proposals for change and improvements targeting various sectors (continuing with objective 2).

Table 4. Results of the appellative function.

Element	5	4	3	2	1	Me	SD	χ^2 *
26. Other sectors, such as industry and tourism, manage water more poorly than agriculture	31.20	24.20	27.30	10.30	7.00	3.62	1.21	236.62
27. Domestic water consumption conceals unjustified water costs	35.30	26.50	25.50	7.70	4.90	3.80	1.15	353.23
28. There are many non-farmers who use a lot of water to cultivate their plots of land	42.40	23.70	22.50	7.20	4.20	3.93	1.15	481.62
29. Management should pay more attention to the opinion of farmers	39.80	30.20	22.50	4.90	2.60	3.99	1.03	532.05
30. Technological modernisation saves more water than advertising campaigns	42.80	25.90	24.10	4.90	2.30	4.02	1.03	597.64

Note: * χ^2 Pearson Test, with df = 4, all significant with $p < 0.0005$.

A slight trend was seen for assuming that other sectors, such as industry and tourism, manage water more poorly than agriculture, with a mean of 3.62 and SD of 1.21. Farmers participating in the questionnaire presumed that household water consumption concealed unjustified water costs, as 35.30% fully agreed and 26.50% partially agreed. Even more resounding was the view that many non-professional farmers producing furtive crops consume a lot of water to cultivate their plots of land with 42.40% totally agreeing and 23.70% partially agreeing.

The respondents believed that the administration should listen more to the opinions of farmers (39.80% fully agree, 30.20% partially agree). Along the same lines was the view that technological modernisation saves more water than advertising campaigns, as 42.80% fully agreed and 25.90% partially agreed.

3.2. Further Results

The analyses performed to meet the additional specific objectives showed a correlation between age, cultivated surface, and production, and the elements of the questionnaire (objective 3). As age increased, farmers were more in agreement with "When it comes to consumption, the agricultural sector should have more say in water management” (r_s = 0.24, $p < 0.0005$). Moreover, those with a larger cultivated surface area and/or higher production held the view that “more irrigation for rainfed crops would increase efficiency” (r_s = 0.20, r_s = 0.27, respectively, and both $p < 0.0005$). Less agreement existed for those who had a small cultivated surface area and/or reduced production. Finally, irrigators with higher production levels believed that more water should be provided for crops that help retain more people in the local area. Meanwhile, those who had a lower production level did not agree with this opinion (r_s = 0.22, $p < 0.0005$).

The multivariate analysis of variance determined that significant correlations existed between various elements of the questionnaire and the variables of gender, province, and current employment situation.

Specifically, male farmers, with a mean of 3.63, were more in agreement than female farmers, with a mean of 3.34, in thinking more water should be given to crops that encourage people to stay in the local area ($p < 0.0005$). A significant difference ($p = 0.03$) existed between the viewpoints of female farmers (mean of 3.38), who agree more than male farmers (mean of 3.21) in terms of the main use of river water being for agriculture. Likewise, women (mean of 4.10) had a significantly different opinion ($p = 0.001$) from men (mean 3.85), in thinking that many people who are not farmers use a lot of water to cultivate their plots of land.

The current employment situation (employed, self-employed, member of a cooperative or unemployed) provided some significant results. The self-employed, with a mean of 3.85, were less concerned with paying more to have access to more water than employed workers, with a mean of 2.62 ($p = 0.006$) or the unemployed (mean of 2.43, $p = 0.003$). The unemployed (mean of 3.53), also believed that more water should be provided to the larger cultivated areas than the employed workers (average of 3.53 and $p = 0.033$).

The multivariate analysis of the variance provided significant results with interesting nuances depending on if the crop area was drier or wetter. For example, respondents in drier areas, with a mean of 4.35 and p-value of 0.027, were more in agreement with the idea that “the water issue would be resolved by transferring water from catchment areas with a surplus to those in deficit” than those from the wetter areas, with a mean of 3.40. The results showed that all farmers agree with the water transfers. This result indicates how, in the drier areas of cultivation, the transfers are valued more positively as a solution. Similarly, farmers in drier areas (mean 3.88, $p = 0.05$) agreed with the opinion that “if the infrastructures were improved, there would be a larger irrigated area”, more so than those from coastal and wetter areas (average 3.98). These results agreed with the previous results. All farmers hope to increase the irrigated area by improving infrastructures, but those in drier areas more strongly supported this idea ($p = 0.05$) than those in wetter areas.

Farmers in wetter areas (mean 4.52, $p = 0.032$) believe that “water of a lower quality, or recaptured, could be used for agriculture”, more so than those in drier areas (mean 4.06). Although all farmers positively valued the use of low quality or recaptured water, those in more humid areas valued it more ($p = 0.032$). Respondents from drier areas (mean of 4.06) were more in agreement with “domestic water consumption concealed unjustified water costs” than those in more humid areas (mean of 3.51, $p = 0.025$). Similarly, all farmers thought that the water consumption of the citizens that conceals the waste of water is not justified. In this sense, farmers in the driest areas were those who were significantly more concerned ($p = 0.025$) with this issue.

4. Discussion

As in other studies [1,3,4], this research has shown the importance of cultural referents and the values of farmers for determining their water consumption behaviours. This culture, defined by a set of concrete traits, can determine farmers’ behaviour towards developing sustainable water management practices (objective 1). Huan and Lamm [1] verified how large consumers of water are less inclined to participate in water saving programmes. This study depicts a similar situation. As the cultivation area increases, farmers are less likely to save water. Farmers participating in the questionnaire preferred to save water by opting for technological modernisation instead of participation in campaigns and educational programmes. A close correlation exists between the cultural values of farmers and the setting in which they live and work. For the Aral Sea in Uzbekistan, Oberkircher and Hornidge [3] examined the effects of religious values and the risk of being fined in encouraging water savings. These farmers believed that the state is responsible for water management and their perceived water needs were beyond their own geographical reality. A similar situation occurred in this study. In Spain, farmers remarked that the growing demand for water should be satisfied by public investment aimed at building hydraulic infrastructures, to provide more efficient technologies, and to manage drought and water scarcity. For this to happen, the farmers proposed that the administration should listen to them more often and that their opinion should have more weight (objective 2).

However, some of the farmer conceptions about water were erroneous, such as the idea that water entering the mouth of rivers is wasted water, but these ideas define them and must be considered when developing educational programmes. Other notions cannot be classified as erroneous, but they determine a particular mindset that is not conducive to saving water. An example of this is when the farmers indicated that development cannot be slowed due to a lack of water. As in Radcliffe et al. [4], new crops were found to be determined more by market and less by local uses and traditions, which are more respectful in terms of sustainable water use. Thus, Spanish farmers are prepared to abandon traditional rainfed crops in favour of irrigated crops, which require more water consumption. The same occurs with the possibility of introducing more "marketable" crops to generate further employment, even if they consume more water. Despite this, as observed by Tyson et al. [5], crop choice, the development of water allocation schemes, management, and addressing water shortage and quality problems could be approached from a communicative and educational process (continuing with objective 2).

As confirmed by Vaninee et al. [6], there is an important correlation between understanding and sustainable behaviours in agriculture, where environmental education can foster this sustainable behaviour so that substantial water savings may be achieved [3]. Understanding the demands of the agricultural sector, as demonstrated by Huan and Lamm [1] elsewhere in the world, allows us to identify the specific needs and behaviour patterns of key groups regarding water management and consumption for the general population.

5. Conclusions

The analysis of the data elicited the opinions and conceptions of farmers in Spain, where the consumption of water is significant. The attitudes and moods of these farmers were analysed, along with proposals for change and possible improvements suggested for various aspects related to water usage and consumption (research objectives 1 and 2). Farmers feel that their sector should have a louder voice when it comes to water management and that management would improve if their opinions were considered. Although they admit that agricultural practices produce waste water, they say that water shortage is an issue that is due to the general population rather than agriculture.

A large majority of farmers support improvements to water infrastructure that would allow for more land to be irrigated and consider that water should not be "let go to waste" at the mouths of rivers. This erroneous belief is deeply rooted among farmers and a large portion of the Spanish population. Moreover, farmers are supportive of a growth model that supports further irrigation. Whereas the state claims it is investing more in water infrastructure and efficient technologies to counteract the effects of climate change, famers are also of the opinion that development should never be halted because of a water shortage. Concepts such as sustainability in water management seem to be subject to economic development and growth. Along these lines, farmers agreed with "social criteria" to replace traditional crops with more commercial crops that are more desirable in the marketplace and to encourage crops that allow people to stay in the area, so that rural areas remain populated, despite the fact that these new crops would require water consumption.

Several relevant and statistically significant differences were unveiled in the opinions of the respondents, and in the variables including age, gender, employment situation, surface area of cultivation, and production. Accordingly, the specific objectives of the study were accomplished (objective 3).

Following the analysis of the data, we concluded that significant results were obtained about the mindsets and values behind the rationalisation of farmer behaviour, both from a cognitive-representational viewpoint and from an affective-expressive perspective. Assertions that farmers have raised against other core economic sectors, along with the administration, that use and manage water were included, based on their own perspectives.

The findings of this study contain a wealth of information for the preparation of environmental education programmes. Having an understanding of the preconceptions and cultural behaviours of Spanish farmers may assist in the development of specific programmes that further understanding, education on values, and training in attitudes and behaviours that are more respectful towards water usage and sustainable management.

Supplementary Materials: The following is available online at www.mdpi.com/2073-4441/9/12/964/s1, Table S1: Results expressed in terms of a percentage of the respondents of the total questionnaire.

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Conflicts of Interest: The authors declare no conflicts of interest.

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