Typology of Farmers' Perceptions Regarding Water Conservation: A Road to Food Security
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Introduction

- Water scarcity, along with rapid population growth, urbanization, and climate change, has become one of the world’s most challenging problems.
- In the agricultural sector, as a food producer and the largest consumer of water in the world, it is necessary to manage and protect water.
- Farmers’ water protection behavior is an important factor for food security and ending hunger.
- Farmers have heterogeneous attitudes, values, viewpoints, and behaviors, thus showing different perceptions and behavior on water conservation strategies and policies.

Objective

- To characterize and classify farmers’ perceptions regarding water protection in northeastern Iran (Neyshabur plain) with farmers selected using a stratified sampling method.

Methods

- This study is a quantitative cross-sectional survey that was carried out in Neyshabur plain in Khorasan Razavi Province in northeastern Iran.
- The sample comprises 235 farmers selected through a multistage random sampling procedure.
- The data were collected by a questionnaire administered during face-to-face interviews with farmers.
- SPSS version 24 software was used to analyze the data.

Results

- Descriptive analysis showed that the mean age of the farmers was 46.80 years.
- Water resources used by farmers contain well (178 farmers), Qantas (44 farmers) and well and Qantas (13 farmers).
- Farmers used different irrigation techniques including traditional (213 farmers), modern (13 farmers) and a combination of traditional and modern techniques (9 farmers).
- The results of the K-Means Cluster Analysis showed that farmers can be divided into four clusters.
- Comparison of the four clusters reveals that farmers in the first cluster have a higher level of egalitarianism worldview, farmers in the second cluster have a higher hierarchy worldview, farmers in the third cluster have a higher level of individualism and finally, the fourth cluster has a higher level of fatalism.

<table>
<thead>
<tr>
<th>Worldview</th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egalitarianism</td>
<td>14.75</td>
<td>8.18</td>
<td>7.39</td>
<td>9.77</td>
<td>49.58</td>
<td>0.0001</td>
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<tr>
<td>Hierarchy</td>
<td>12.25</td>
<td>11.63</td>
<td>8.32</td>
<td>11.79</td>
<td>99.17</td>
<td>0.0001</td>
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<tr>
<td>Fatalism</td>
<td>8.62</td>
<td>8.84</td>
<td>10.16</td>
<td>16.21</td>
<td>106.32</td>
<td>0.0001</td>
</tr>
<tr>
<td>Individualism</td>
<td>9.36</td>
<td>8.68</td>
<td>13.61</td>
<td>9.21</td>
<td>30.65</td>
<td>0.0001</td>
</tr>
<tr>
<td>Number of people in each cluster</td>
<td>95</td>
<td>38</td>
<td>31</td>
<td>71</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

- Farmers have heterogeneous attitudes, values, viewpoints and behaviors on water conservation, so that they can be divided into different groups.
- Identifying these different perspectives can be useful in planning and policy-making in dealing with water scarcity so that each group of farmers can be offered specific strategies and policies to increase their impact and reduce costs.