

# The Phenomenon of Social Conversion among Farmers in France: From Traditional Agriculture to the Spirulina Superfood

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## Abstract

*The purpose of this paper is to shed light on the phenomenon of social conversion that occurs when farmers change from traditional agricultural practices towards a less well-known form of aquaculture: the production of the Spirulina superfood (*Arthrospira platensis*). Certain farmers in southeast France converted their professional lifestyles and started producing the greenish alimentary bacteria known as Spirulina. It is often referred to as blue-green algae, but it is actually a cyanobacteria with nutritional, environmental, agricultural and therapeutic benefits.*

*Through interviews and surveys with local farmers, we use a qualitative approach to analyzing the overall impact that occurs when farmers engage in life-changing professional conversions. The results from our analyses highlight a general phenomenon that occurs among farmers referred to as "social conversion". In general, the research provides useful insights about the cycle of social conversion and its impact on farmers from professional, social and ethical perspectives.*

**Keywords:** *social conversion, Spirulina acculturation, agricultural ethics, sustainable food production, Spirulina aquaculture*

## Résumé

*Le but de cet article est de faire la lumière sur le phénomène de la conversion sociale qui se produit lorsque les agriculteurs changent de pratiques agricoles traditionnelles vers une forme moins connue de l'aquaculture : la production de la spiruline super (*Arthrospira platensis*). Certains agriculteurs du sud-est France ont converti leurs modes de vie professionnelles et a commencé à produire les bactéries alimentaires verdâtres connus comme la spiruline. Il est souvent désigné comme les algues bleu-vert, mais il est en fait une cyanobactérie avec des avantages nutritionnels, environnementaux, agricoles et thérapeutiques.*

*Grâce à des entrevues et des enquêtes auprès des agriculteurs locaux, nous utilisons une approche*

*qualitative à l'analyse de l'impact global qui se produit lorsque les agriculteurs s'engagent dans des conversions professionnelles qui changent la vie . Les résultats de nos analyses mettent en évidence un phénomène général qui se produit chez les agriculteurs appelé « conversion sociale » . Dans générale , la recherche fournit des informations utiles sur le cycle de conversion sociale et son impact sur les agriculteurs de perspectives professionnelles , sociales et éthiques .*

**Mots-clés:** *conversion sociale , la spiruline acculturation , l'éthique agricoles , la production alimentaire durable , la spiruline aquaculture*

## Introduction

The Spirulina superfood has often been studied from a consumer's point of view, with emphasis on attitudinal, emotional or symbolic perspectives<sup>1</sup>. The food itself fascinates us, in a sense, refreshing memories and evoking values: "the example of the beef prohibition in China, a prohibition that continues to have an impact on social processes, ethics and agricultural religious practices after a century of revolution"<sup>2</sup>. However, very few scientific studies focus on the professional activities responsible for building the food as a symbol and furthermore strengthening its perennity<sup>3</sup>. Durand (1993) describes the phenomenon well: "the human becomes one with the food as he ingests it and it is absorbed into the mysterious depths of the human body"<sup>4</sup>. Durand analyzes and evokes the act of ingesting food from a mystical (or ironical) psychological perspective. The author implements analogies and similitude's in order to nourish this unorthodox approach to analyzing the phenomena. The principle dynamic occurring is characterized by a fusion between humans and their food. The powers attributed to certain exceptional foods are generally seen as social symbols composed of beliefs, or representations, and "talk of transformation, which implies a discussion of the different degrees of potential modification"<sup>5</sup>. An anthropological approach allows us to shed light on this phenomenon of social conversion; as the farmer and the food bond and create social/biological singularity. Contemporary societies are attached to the notion of hetero culture developed by Jean Poirier; "the situation in which a society finds itself is nourished by two principal matrixes which are essential (quite possibly vital) and antagonistic: *tradition* and *modernity* otherwise observed as continuity and innovation"<sup>6</sup>.

1 Moulin L. 1975, *L'Europe à table*. Paris, Elsevier, p. 204

2 Aubin F. 2007, Vincent Gossaert, *L'interdit du bœuf en Chine. Agriculture, éthique et sacrifice*. Archives de sciences sociales des religions, p. 265.

3 Micoud A., 2003. *Ces bonnes vaches aux yeux si doux*. Communication, n° 74 : 217-237.

4 Durand G. 1993, *Les structures anthropologiques de l'imaginaire*, Dunod, 560 p.

5 Berger P. et Luckmann T. 1992, *La construction sociale de la réalité*, Paris, Méridiens klincksieck, p.214.

6 Poirier J.1993, « Tradition et novation. De la "situation coloniale" à la "situation hétéroculturelle" », in Gabriel Gosselin (dir.), *Les Nouveaux enjeux de l'anthropologie. Autour de Georges Balandier*, Paris, L'Harmattan (coll. « Logiques sociales »), p. 75.

Today, anthropology can be considered as a discipline that is increasingly focused on innovation and transformations into modernity. Georges Balandier (1991) emphasizes this perspective: “the movement into modernity evokes novelty and unprecedented evolution, the obscure and the unknown within our own society; entire domains that may appear as ‘foreign’ or confusing”<sup>7</sup>.

Spirulina is a new food that is not very attractive due to its earthy odor and blue-green color. In France, it is produced on a relatively small-scale in the southeast Var region. This production has allowed farmers to introduce this super food into society as an “admissible food” (often referred to as an alimentary supplement)<sup>8</sup>.

As a result, Spirulina produced by these farmers goes beyond a technical aspect; it creates new cultural and social representations, new confrontations, new networks, new attitudes, which structure their daily lives and especially reconstructs their identity; Hence the process of Spirulina acculturation and social conversion. As Claude Dubar highlights “identity is never given, it is always constructed and reconstructed with rather great uncertainty and is more or less sustainable”<sup>9</sup>. More precisely, our analyses focus on the process of transformation, which occurs among individuals who pass from one type of agriculture to another and more particularly, from one form of intensive terrestrial agriculture with a strong and prevalent social identification to microbial aquaculture of a marginal alimentary supplement: “Spirulina”.

We focused on the adaptation capacity and changes encountered by certain farmers (in the Var), who were initiated into the culture of production and consumption of this unique and modern superfood. The study is intended to reveal the phenomenon that we refer to as “social and ethical conversion” that is encountered by farmers who cultivate Spirulina. With a qualitative approach we aim to better understand the processes that these farmers undergo resulting in a veritable reconstruction of their identity. From a more general perspective, we are interested in the transformation of modern societies *as a process that is unique and observable* and can be considered as the fundamental basis for the evolution of social practices and cultural systems.

With the cooperative participation of Spirulina farmers and consumers in the Var, our study highlights new behaviors, new practices, and new representations that contribute to the creation of new ethical values and lifestyle changes.

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7 Balandier G. 1991, «Regard Anthropologique sur la modernité et la postmodernité», in *Corps, religion, société*, présenté par F.LAPLANTINE, Lyon, PUF, p.117.

8 Fischler C. 1990, *L'Homnivore-le goût, la cuisine et le corps*, Paris, Odile Jacob, 414 p.

9 Dubar C. 2002, *La socialisation : construction des identités sociales et professionnelles*, Paris, Armand Colin, 255 p.

## The Spirulina superfood

For a long time now, botanists have referred to Spirulina as a blue-green algae (Cyanophyceae); however, it has been confirmed by microbiologists (notably Woese in 1987) to be a cyanobacterium. Through the process of photosynthesis, Spirulina develops rapidly in warm, shallow, brackish water environments. Woese elaborates on the subject of Spirulina: “from a systematic point of view, they are Prokaryotes placed in the kingdom of Eubacteria”<sup>10</sup>. These cyanobacteria “were the incredibly active agents behind the metamorphosis of our terrestrial environment. They rendered the earth habitable by continually liberating oxygen that would form the atmosphere and breathing air. As a result, they allowed all forms of plants, animals and humans to make their appearance in this world”<sup>11</sup>.

Numerous studies have been conducted and show the impressive nutritional qualities of Spirulina including: high protein contents (more than 50% of its dry weight), rare essential lipids, numerous minerals (world record for the outstanding quantity of iron it provides) and vitamins (all except ascorbic acid). Additionally, the rapidity of Spirulina’s growth and the fact that its growing environment is easily reproduced has especially attracted the attention of farmers. Without the presence of cell walls, Spirulina is perfectly digestible raw or dried. Numerous nutritional analyses have proven the bioavailability of Spirulina’s micronutrients<sup>12</sup>.

From an agronomic and biological perspective Spirulina has maintained its “sustainable” aspect and has always been highlighted for its low consumption of water and high absorption rate of carbonic gas<sup>13</sup>.

Spirulina also has therapeutic properties. It contains several molecules, which have been the object of studies, notably for their biological activity and positive impact on human health. Its immunostimulatory and antiviral properties have made Spirulina an interesting solution to malnutrition. However, it should be noted that clinical trials have been conducted with humans, yet due to the limited scope of these studies additional research is needed<sup>14</sup>. Certain effects of Spirulina have been observed, particularly in laboratories and with animals<sup>15</sup>.

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10 Woese C.R. 1987, *Bacteria Evolution*, *Microbiol Rev*, 51, 221-271.

11 Brosse J. 2005, *La magie des plantes*, Paris, Albin Michel, 311 p.

12 Falquet J. 1996, *Spiruline, Aspects Nutritionnels*, Genève, Antenna Technologie, 126 p.

13 Fox, Ripley D. 1996. *Spirulina: Production & Potential*. Aix-en-Provence: Edisud.

14 Simpre, J., et al., 2005, *Nutrition Rehabilitation of HIV-Infected and HIV-Negative Undernourished Children Utilizing Spirulina*. *Annals of Nutrition & Metabolism*. 49

15 Cases J. 2001, *Selenium from Selenium-rich Spirulina is less bioavailable than Selenium from Sodium Selenite and Selenomethionine in Selenium-deficient rats.*, *J Nutr.*, 131(9):2343-50.

Wittrock and Nordsted first described the species in 1844 under the name of *Spirulina Jenneri platensis Nordsted*. Spirulina is characterized by miniscule filaments (0,1 mm long) wound in spiral coils. Appearing roughly 3.5 million years ago, it is one of the most ancient inhabitants of our planet and has been consumed for centuries by certain populations. This primitive creature, a veritable living fossil, still thrives naturally in certain saline lakes. Today, Spirulina is a superfood supplement that can be easily integrated into our daily diet. It can be added to a cup of orange juice in the morning, sprinkled on a vegetable salad, mixed in with yogurt, jams and jellies, or mixed in a vinaigrette sauce. The possibilities are endless - as long as the Spirulina is not cooked which significantly decreases its nutritional efficiency. Yet in all honesty, the smell and color of certain dry Spirulina is not very appetizing. On the contrary, fresh, well-prepared Spirulina is delicious and encapsulated forms have nearly no smell or taste.

It's only been 40 years since we've mastered the techniques of farming Spirulina in artificial settings instead of its natural environment. Today in Occidental countries, commercial production has developed and Spirulina is being proposed to consumers around the world; notably in undeveloped regions where Spirulina is proposed to victims of malnutrition by nongovernmental organizations who sponsor small small-scale farms.

## Premises for Professional/Agricultural Conversion

The way that agriculture and new forms of culture are regarded has changed over the course of time<sup>16</sup>; with the exception of cereals, which have been present in the Mediterranean region as an essential food since ancient times. Aristotle highly regarded farmers and esteemed them to be among the most important people in society; he favored the production of new crops and forms of agriculture and considered farmers as “the people which democracy most truly belongs”<sup>17</sup>.

In the middle ages, most people's diet consisted of vegetable soups (roots and herbs) in which, meat or fish was added if available, and pieces of bread were dipped in and eaten. The principle sources of calories were obtained from breads/cereals. The ancient Greeks considered that a man must earn his bread *by the sweat of his brow*. Cereals were “*sitos*”, human foods that were sanctified by the Christian religion in delegating bread as a principal element of the Eucharist<sup>18</sup>. Another example includes the beliefs around the chestnut tree<sup>19</sup>, which were neither human food nor Christian food, as a result, they were considered as a subsidiary form of food as opposed to an essential one.

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16 Mazoyer, Marcel, and Laurence Roudart. 2002. *Histoire des agricultures du monde: du néolithique à la crise contemporaine*. Paris: Éditions du Seuil.

17 Citation from Aristotle, *Politics of Organizing Power in Democracy and Oligarchy*, book VII, Chap. II

18 Flamand, J.-C. 2004, (*Var 2020 : Quel futur pour l'agriculture*), *Agrobiosciences, TPM*, 35 p.

19 Riciardi-Bartoli F. 2009, *Image de la châtaigne au travers l'histoire*, 105 p

The 17th and 18th centuries made notable progress in the domain of agriculture with the growing of new plants and the implementation of new farming techniques. New crops were developed including corn, potatoes, chestnuts, dry fruits and vegetables, rice, and grapes. The soil was enriched with the cultivation of turnips and forage legumes, and green manures were implemented into the agricultural practices.

The 19th century was host to the agricultural revolution and a time when new agronomic approaches were implemented in order to increase yields with a variety of grains and cereals which more or less depleted soils on which they grew. It is at this point in time when we encountered the birth of agrarian individualism (the enclosure movement), which is ultimately responsible for the transformation from subsistence to capitalist agriculture. In this era, agricultural production became an increasingly technical and chemical oriented process.

The 20th century was characterized by intensive modern agriculture with economic incentives (high yields and profits); from a biological perspective, disastrous secondhand effects were neglected. Today, institutions demand more comprehensive and environmentally friendly agriculture, leading to the experimentation with Genetically Modified Organisms (GMO's) or new species deemed more "sustainable".

Since 2004, a new and unique training program was created in the Var at the Center for Training and Professional Agricultural Promotion (CFPPA). This program is the first of its kind and is endorsed by France's Ministry of Food, Fishing and Agriculture. At the completion of the program students are awarded a specialized diploma<sup>20</sup> in the production of the sustainable superfood and alimentary supplement "Spirulina". This new branch of aquaculture has been institutionally validated for its agro-environmental and nutritional qualities.

Additionally, more and more farmers in the Var, and particularly horticulturist, have stopped their activities and abandoned their greenhouses in search of a conversion to new agricultural activities. As a result, over the last four years, certain farmers have chosen to enroll in the professional training program and engage themselves in the production of Spirulina. Consequently, the first "Spiruliners"<sup>21</sup> began to appear in the Var and a transformation emerged towards a form of social singularity. With an average of seven new producers per year (installation and production of Spirulina), the Var has developed a new agricultural sector certified by the Ministry of Food, Fishing and Agriculture<sup>22</sup>, which has spurred a new and modern economic niche.

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20 *Specialized in Local Initiatives (SIL) delivered by the Center for Training and Professional Agricultural Promotion in the Var*

21 *Name attributed by Spirulina producers designating a person who produces Spirulina; the new term was also reapplied to France's National Federation of Spiruliners*

22 *The Ministry of food, fishing and agriculture currently assists the installation of "Young farmers" in this domain of production.*

In Southeast France's Var region, farmers have been significantly impacted by an intensification of diverse pressures and influences, which has consequently forced them to redefine their identities. These different forms of pressure are essentially derived from associative sources such as environmental protection and terrestrial development organizations. Horticulturalists are a typical example of what these associations label as "peasant polluters".

The Var region in France offers an ideal environment for farmers who are in search of restructuring their identity; especially in correspondence with their own personal values and search for a place in society (with meaning beyond economic fulfillment).

## Socialization through Spirulina Acculturation

Through the firsthand experiences of farmers we observed the existence of common factors and invariants in the context our analyses e.g. the conversion from one familiar form of agriculture to another type that is very atypical. By orienting themselves towards the production of Spirulina, certain farmers are not only looking for a new and original form of alimentary production; it's much more than that, their identity is at stake. In this paper we attempt to reveal that Spirulina, through its various representations, is a veritable fruit of identity reconstruction and that the daily practices of these farmers are a sign of their social belonging (group identity). In observing these farmers, we are simultaneously "studying the divisions of society"<sup>23</sup>.

In light of negative public opinions labeling farmers as "polluters" and "poisoners", the Varois<sup>24</sup> farmers included in our study were motivated to enroll in the Spirulina production training program because it offered a new form of accreditation to their professional occupations. It appears as if they've passed from one status as irresponsible, to a more highly esteemed status as respectful to the environmental and to their own well-being. This new lifestyle change not only encompasses a professional conversion, but more importantly a *social and ethical conversion*.

The professional dimension of one's identity is of particularly special importance. Everett Hugues emphasizes the essential fact that "the world within which we live while we are exercising our professional occupation" cannot be reduced to a simple economic transaction (labor/money): "the individual personality and social identity of the subject is at risk. The act of engaging in one's professional occupation crystallizes the individuals' self-interpretation, providing a clearer definition of social belonging and consequently social recognition." As a result, the social conversion of these farmers conditioned the construction of a new social identity. It appears in our study as a type of "remarkable

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23 Grignon C.2001, (*Le « je ne sais quoi » et « le faute de mieux »*), in *casse croûte, aliment portatif, repas indéfinissable, revue autrement*, 206 : 15-24.

24 From the Var Department of PACA Region, Southeast France

transformation”<sup>25</sup> where particular “objects of passion” such as Spirulina, induce delicate identity transformations. This is especially due to the fact that training is implemented well beyond the spatiotemporal boundaries of the academic setting. This is evident as farmers implement knowledge and training in their daily social/professional practices *well after the expiration of the training period*.

The term *socialization* possesses various significations. It is part of the fundamental concepts of sociology (as well as anthropology and social psychology) and can be interpreted from many diverse perspectives that are evoked when observing “social” phenomena. As a result, theories of socialization have unique traits that differentiate them from the major theories of social research. From a more global perspective: “the act of socializing transforms the antisocial individual to a social one; it modifies the state of mind/way of thinking and the way the person feels and acts. Consequently, the act of socializing stabilizes the individual’s personal understanding of their acquired behaviors. This internalization of norms and values is also conducive to the development of social constructs (rules, limits, etc...) which are applied during social exchanges and responsible for increasing solidarity among members of the group in which the individual interacts”<sup>26</sup>.

In the context of our work regarding the “Spirulina culture”, the concept of socialization describes the acquisition of new professional and alimentary practices (consumption of Spirulina). Additionally, it represents the different types of learning that the individual is confronted with and how, over the course of their professional development, the food itself becomes a symbol of social belonging.

This professional socialization appears complex from “structural” and “biographical” perspectives as the farmer’s undergo insertion into a new profession while developing new knowledge and public recognition of their newly accredited competence. In all social processes and notably socialization, subjects are engaged in action/reaction exchanges. In our analyses, we found it necessary to observe the social dynamics that farmers experienced throughout the learning process in order to understand how the cultivation and consumption of Spirulina *transcends* throughout process.

George Herbert Mead<sup>27</sup> evokes that for the social actor, learning starts at an early age as they are introduced with the concept of elaborating knowledge. This process of knowledge acquisition is powered by diverse phenomenological occurrences and developments<sup>28</sup>.

Socialization can be defined by the immersion of individuals into what is referred to as the “past world” which represents a “cultural and symbolic universe” as well as the individuals “knowledge about the world”<sup>29</sup>. Children absorb the social world in which

25 Charlot B. et Glasman D. 1998, *Les jeunes, l’insertion et l’emploi*, Paris, PUF

26 Cherkaoui M. 1990, « socialisation », *Dictionnaire, Larousse*, p.181.

27 Mead K.-H. 1963, *Mind, Self and Society*, trad. *L’esprit, le soi et la société*, présentation de J. Caseneuve, Paris, PUF

28 Schutz A. 1967, *The Phenomenology of the Social World Evasion*, North Western University Press.

29 Hugues E. 1996, *Le regard sociologique, Essais choisis, Textes rassemblés et présentés par Chapoullie J.M.*, Paris, l’E.H.E.S.S.



they live “not as if it is one possible universe among others, but as the universe itself.” The children’s educators implement the initial phase of socialization; it is followed by a secondary phase of socialization that enriches the fundamental basis of the individual with more specific and professional knowledge. Throughout this process values, norms and symbolic codes are internalized and constitute the individual’s personalized culture notably with “the internalization of specialized institutional sub-world’s”. These forms of specialized knowledge are referred to as *professional knowledge* and constitute a new form of knowledge. What are the impacts of socialization in the process of Spirulina acculturation and the phenomenon of social conversion?

### **Common objectives and individual reinterpretation –driving forces behind the social conversion phenomena**

Through a comprehensive participant observation method, we collected data and results from two targeted groups composed of 30 individuals each. The first group was represented by farmers enrolled in the Spirulina production training program and the second group consisted of Spirulina producers who completed the training course and were already professionally active.

The participants had varied personal agendas, strong personalities and differing ideas about this bacterium, but there was a surprisingly high level of commonly shared views about the representations that Spirulina evoked. There are various models of perception that can come into play when speaking of Spirulina cultivation and consumption; however, they all serve to justify a certain practice: environmentally ethical food production. In our study groups, this universally shared perspective acted as a “total social phenomenon” with a significant impact on transforming the farmer’s professional and social perspectives.

A generalized layout of the social conversion cycle can be broken down into three stages that are intertwined and evolve simultaneously:

-- Failure before Spirulina: most of the interlocutors had similar past experiences with unsuccessful professions; ultimately finding themselves in a type of “no man’s land” in the professional sphere. Along with unsuccessful professional occupations in the past, participants were also confronted with failure at economic, social and ethical levels as one of the farmers explains:

“I was burnt out, nothing functioned anymore. I was economically torn and labeled as a “peasant polluter”; a disastrous image that my profession imposed. Everything seemed to lose value and I didn’t know where to go with my life.” The majority of the farmers had past professional activities that failed; errors along their professional paths that acted as a precursor to their own identity crises. They represented intensive agriculture as polluting the environment, disrespectful towards man and nature, obsolete and

degrading for the overall image of farmers. As a result of these types of experiences, all of the interlocutors embarked on a path looking for a new orientation and identity that would satisfy their needs. These past experiences led to a certain distrust of agricultural institutions and primed them for an experience that would change their life. For the farmers who participated in our analyses, their past failures triggered an existential quest and introspective approach to finding their place in life and society.

Professional training allowed the farmers to discover *Spirulina* and the culture around its production and consumption. The training also resulted in a transformation of their worldviews; an effect that was intensified due to the group dynamic. A collective group dynamic was established as the participant's developed commonly shared representations. As a result, the collective identity was conceived and a sense of belonging created. The participants adopted new social practices and enriched themselves with exposure to new life ethics that were more respectful to the environment and their own health.

We observed the phenomenon of social conversion at the individual level and indicators leading to the construction of a group. This social conversion started with the initial training when the farmers discovered *Spirulina* in a group setting. During this initial stag, they were accompanied by professors who opened up a new worldview to them; one that corresponded with their expectations.

The similarities between farmers who had mutually endured unsuccessful professional endeavors led to a considerable increase in individual motivation and a cohesive group dynamic. These future "professionals" began to create daily ties that intensified development of a strong group dynamic. A form of social singularity was created as they integrated themselves into the *Spirulina* culture and established the grounds for the process of social and ethical conversion.

The discovery of *Spirulina* acted as a revelation to a new worldview that resonated with the farmers deep inner desires for identity reconstruction; the social and ethical conversion was initiated.

The end of the cycle of social and ethical conversion is represented by the professional installation and new accreditation as "specialized in aquaculture and the production of *Spirulina*". This final stage solidifies the phenomenon of social and ethical conversion by modifying the participants inherent cultural system. Along with their new accreditation, the farmers reveal a new life philosophy to their families and the "outside" world; a critical factor in their individual self-perceptions. Today, beyond their new behaviors, these professionals represent the food and culture of *Spirulina* as sustainable, ethical, modern and as a form of social solidarity. For these newly trained farmers, this primitive bacteria at the origin of life on earth acted as a total social phenomenon that provided a universal solution through the re-appropriation of their inherent power as individuals and professionals. As Jean-Marc, one of the farmers described: "with *Spirulina*, my worries are gone." Along with new accreditation and professional competencies, *Spirulina* as a

food and culture reconnected these farmers with their proper morals and allowed them to impliment new, more ethical values and rituals. They naturally abandoned their old representations in exchange for new, more operational ones that paved the way for their desired way of life. They wanted to differentiate themselves from an agricultural system that seems to be dangerous for man and the planet. They've broken out of a system that suffocated them in order to become *Spiruliners*<sup>30</sup>.

The farmers in our study have become stronger people who've found a new sense of liberty with an ethical way of life and profession that corresponds with their social and ethical beliefs. At the end of this cycle of social and ethical conversion, the farmers who participated in our study expressed a feeling of relief; their emotional and psychological tensions were dissipated. They distanced themselves from past failures and consistently expressed that the quality of their life is better than ever before; their needs and expectations were satiated with the Spirulina culture.

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