

Journal of Economy Culture and Society

ISSN: 2602-2656 / E-ISSN: 2645-8772

Araştırma Makalesi / Research Article

Markets and Collective Action: A Case Study of Traditional Wheat Varieties in Turkey

Piyasalar ve Kolektif Davranış: Geleneksel Buğday Türleri Üzerine Bir Örnek Olay İncelemesi

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Submitted: 06.03.2018

Accepted: 21.06.2018

Citation: Atalan-Helicke, N. (2019). Markets and collective action: a case study of traditional wheat varieties in Turkey. *Journal of Economy Culture and Society*, 59, 13-30. <https://doi.org/10.26650/JECS402676>

ABSTRACT

Turkey one of the centers of origin and genetic diversity for wheat. There are concerns about a global decline in crop genetic diversity in centers of agricultural diversity, the replacement of traditional varieties with modern varieties and implications for food security and climate change resilience. Market-oriented solutions can help conserve traditional wheat varieties, secure livelihoods and promote food security. However, overcoming marketing challenges of traditional varieties require collective action of small farmers. Based on fieldwork in Turkey, this article examines the conservation and development outcomes for two traditional wheat varieties, einkorn (*Triticum monococcum*) and a local bread wheat variety zeron/zerun (*Triticum aestivum*). While external development interventions are critical to secure guaranteed markets for farmers, bonding, bridging and linking social capital between farmers and external actors sustain collective action in the long term. Previous collective action of farmers and non-market solutions for agricultural biodiversity conservation, particularly seed exchange networks, also are critical for the effectiveness of market-oriented solutions. The national context, legal changes as well as socio-economic policies, also affects the decisions of farmers to cultivate the traditional varieties, and thus, should be included in the sustainability of market-oriented solutions for traditional wheat variety conservation.

Keywords: Traditional wheat variety, einkorn, livelihood, Turkey, collective action, social capital

ÖZ

Türkiye buğdayın yabancı atalarının ekilip biçilmeye başlandığı bir coğrafyada yer alır ve önemli bir buğday genetik çeşitlilik merkezidir. Küresel olarak bitki genetik çeşitlilik merkezlerinde çeşitliliğin azaldığı, geleneksel (atalık) türlerin modern türlerin hakimiyeti altında gitgide kaybolduğu ve bunun gıda güvenliği ve iklim değişikliğine karşı adaptasyon sürecinde etkileri üzerine kaygılar vardır. Geleneksel (atalık) buğday çeşitlerini pazara

ulařtırmaya yönelik proje ve politikalar bu kaynakların korunması yanında geimlik kaynaklarının korunmasını ve gıda gvenliđine eriřimi de sađlar. Fakat geleneksel eřitlerin pazarlanması iin reticilerin kolektif eylemi gereklidir. Trkiye’de alan alıřmasında derlenen bilgilere dayanan bu makale, geleneksel iki buđday eřidi, siyez (*Triticum monococcum*) ve zeron/zerunun (*T. Aestivum*) korunması ve geliřtirilmesini incelemektedir. reticilerin geleneksel buđdayların satıřı iin daimi ve gvenceli pazarlara eriřiminde dıřsal kalkınma mdahaleleri kadar reticilerin kendi aralarında ve dıř aktrlerle iliřkileri ve bađlayıcı, birleřtirici ve kpr kuran sosyal sermayeleri gereklidir. reticilerin gemiř kolektif eylem deneyimleri ve tarımsal biyolojik eřitliliđin korunması iin tohum ađları gibi pazar-dıřı zmleri de pazar odaklı zmlerin uzun srete etkin olabilmesi iin gereklidir. Ulusal yasal dzenlemeler ve sosyo-ekonomik politikalar da reticilerin karar alma srelerini etkilediđi iin geleneksel buđday eřitlerini pazara ulařtıran zmlerin srdrlebilirliđi srecinde ele alınan bařlıklardan olmalıdır.

Anahtar Kelimeler: Geleneksel buđday, siyez, geimlik kaynađı, Trkiye, kolektif eylem, sosyal sermaye

1. Introduction

Rural development and increasing market integration can create new opportunities for agricultural biodiversity conservation. Agricultural biodiversity, or agrobiodiversity, includes all components of biological diversity related to food and agriculture, the diversity of crops and their wild relatives, trees, livestock and landscapes, which are often adapted to local and low-input agricultural systems (Brookfield, 2001). Scholars argue that market-oriented mechanisms, such as niche markets, voluntary standard systems (e.g., organic, fair trade) and protected designation origins, can support rural livelihoods, promote biodiversity, and address climate change adaptation and nutrition security (Guiliani, 2007). In contemporary agricultural markets, small farmers often face disadvantages compared to large-scale commercial farmers who can provide larger volumes at market-demanded standards, bargain better for their economic interests, and have better access to information, technology and capital (Devaux, et al., 2009). Moreover, various forms of market provisioning, such as proximity to market centers, the availability of infrastructure, regional employment opportunities, and remittances from migration affect the cultivation of crop diversity, often in negative ways (Isakson, 2011). Small farmers who utilize and manage agrobiodiversity can improve their prospects in agricultural markets through collective action, defined as voluntary action to pursue common interests or achieve common objectives (Guiliani, et al., 2009).

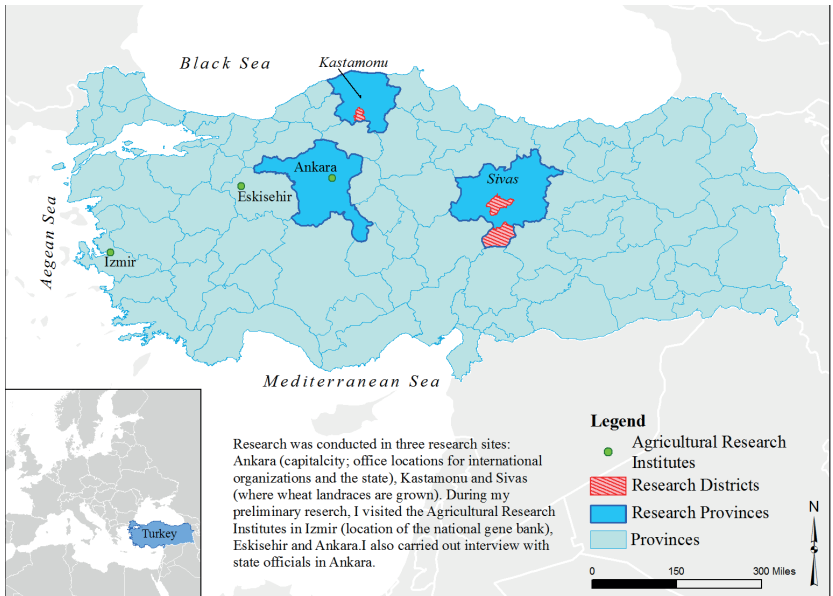
There are concerns about a global decline in crop genetic diversity in centers of agricultural diversity and the replacement of traditional varieties with modern varieties that have a narrower range of genetic material (Bellon, 2004). Scholars have discussed collective action from other centers of agricultural domestication and diversity, highlighting examples of quinoa and potato farmers in the Andes in South America (Devaux, et al., 2009), kowa farmers in Thailand, South East Asia, and kokum farmers in India, South Asia (Kruijssen, et al., 2009). However, a limited number of works discuss collective action of small farmers in the Middle East, a center of domestication and diversity of wheat. This article aims to address this gap by examining the challenges for conservation of two traditional wheat varieties from northwest and central Turkey through market-oriented mechanisms.

The wheat varieties examined are einkorn (*Triticum monococcum*), locally known as *siyez*, and a bread wheat variety (*T. aestivum*), locally known as *zeron/zerun*. As a center of agricultural domestication and diversity of wheat, farmers in Turkey have cultivated wheat for over 10,000 years, a situation that has resulted in a large number of named wheat varieties in addition to the existing wild and semi-domesticated wheat relatives. *Siyez* and *zerun* are still two of the top ten most cultivated wheat landraces in Turkey and are important in relation to progenitor species used in plant breeding for Mediterranean and global temperate agricultural systems (FAO, 2015). Turkey also has been a key player in the global conservation of agricultural biodiversity through its collaboration with the Consultative Group on International Agricultural Research (CGIAR), a global research partnership for a food-secure future, and by hosting winter and facultative wheat breeding programs (FAO, 2015). After the outbreak of the civil war in Syria, one of the CGIAR centers in Syria, International Center for Agricultural Research in the Dry Areas (ICARDA), that was working in collaboration with Turkey to develop wheat varieties for drylands in Central Asia and the Middle East abandoned its decades-long field research (Foreign Policy, 2016). In the light of this, the conservation of agrobiodiversity in the fields of Turkish farmers through collective action and its implications for local, national and global food security become more significant.

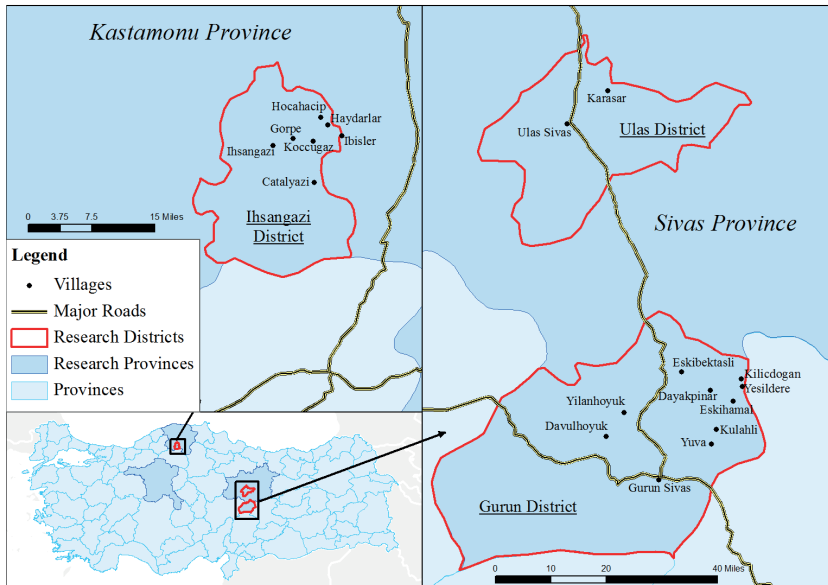
This article demonstrates that market forces can facilitate the cultivation of traditional varieties and sustain rural livelihoods. Overcoming marketing challenges is not easy and requires the effective collective action of small producers. Bonding, bridging and linking social capital are needed to sustain the connections of small producers to each other as well as national and external actors at multiple scales. The national context also affects farmers’ willingness to collaborate to sustain the markets for agrobiodiversity. Market mechanisms are grounded in social, geographical, political and environmental contexts. In the context of agrobiodiversity conservation, the vitality of seed exchange networks are integral for collective action. The seed exchange networks are a non-market solution to agrobiodiversity conservation, and the bonding and bridging of social capital within the seed exchange networks have implications for the market-oriented agrobiodiversity conservation. The seed exchange networks, formal or informal, also provide an experience for small producers to establish trust and transfer traditional knowledge, which are also key aspects of agrobiodiversity conservation (Atalan-Helicke, 2015; Pautasso, et al., 2013).

2. Methodology

The data for this article comes from ethnographic work in Kastamonu and Sivas, northwest and central Turkey respectively, gathered in multiple field trips from 2007 till 2014 (*Map 1*). Data was collected through semi-structured interviews (with 10 local state officials, seven representatives of international organizations, 15 representatives of nonprofit organizations, four traders, 40 men and 16 women farmers) in the cities of Ankara, Eskişehir, Izmir, Sivas, Kastamonu, and the villages of three districts, Ihsangazi (Kastamonu), and Ulaş and Gürün (Sivas) (*Map 2*). Two focus group discussions with a total of 11 farmers in the villages of İhsangazi and Gürün also complement the semi-structured interview data.



Map 1: Turkey and Research Sites



Map 2: Research districts and villages in Kastamonu and Sivas

The research sites were selected after extensive conversations with Turkish state officials, representatives of international and nonprofit organizations, and the examination of published and unpublished works, which allow a temporal and spatial comparison of traditional wheat variety cultivation and livelihood changes. Literature on traditional wheat varieties in Turkey range from categorization of crop diversity and their geographical distribution (Gökgöl, 1939; Karagöz and Zencirci, 2005) to analysis of factors that affect farmers' management of agrobiodiversity (Meng, et al., 1998), as well as potential for market chain coordination for hulled wheat varieties (Guiliani, et al., 2009). Qualitative research data was validated through triangulation by using government documents, newspapers, other printed available material, and participant observation.¹

3. Collective Action

If farmers act collectively, they can maintain greater agrobiodiversity at a lower cost, incur less probability of loss, overcome market limitations and maintain their position in the markets more effectively (Markelova and Mwangi, 2010). The image of the product, which increases its value and serves as a guarantee of its quality, is closely associated with a region and tradition and depends on the collective willingness of community members to maintain a high level of quality (Crespo, et al., 2014). However, the difficult question is how small farmers who utilize agrobiodiversity can come together to foster new social relations and achieve collective action for markets. Scholars studying collective action emphasize the importance of social capital because it “provides a synthesizing approach on how cultural, social and institutional aspects of communities of various sizes” jointly address their collective action problems (Ostrom and Ahn, 2008, p. 22).

The concept of social capital is well known in rural studies, natural resource management and sustainable development literatures. Different definitions of the term social capital exist, based on the work of Bourdieu (1986), Coleman (1988) and Putnam (1995). Scholars may draw on a certain definition but there is conceptual integrity in different definitions due to their focus on the characteristics and value of mutual connections between individuals (Flanigan and Sutherland, 2016). Bourdieu (1986) defines social capital as

the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to memberships in a group (p.51).

Social capital refers to a set of resources for individuals in a social context, through which other resources, such as knowledge and wealth, can be accessed. It is formed through material and symbolic exchanges in geographical, economic and social space (Flanigan and Sutherland, 2016). Processes of uneven development and the national context are also likely to affect the levels of social capital, which affects the rigor of collective action (Adger, 2003)

The characteristics of connections and interactions define the capacity of the communities to change, and can also explain why some communities achieve collective action while others fail (Ostrom and Ahn, 2008). Based on the connections between actors located at different levels, social capital is classified as bonding, bridging and linking. Bonding social capital refers to connections among homogenous groups, whereas bridging social capital refers to relationships between individuals with shared interests but different identities (Adhikari, 2008). Both bonding and bridging social capital help individuals benefit from common knowledge and access opportunities (Flanigan and Sutherland, 2016). Linking social capital pertains to connections to people who are in power positions and also refers to vertical connections to formal institutions (Adhikari, 2008). Mutual interaction among bonding, bridging and linking aspects of social capital can explain conditional cooperation and the success of collective action. This does not mean that more networks, greater reciprocal relations and commitment lead to more social capital. Rather, the complex combinations of bonding, bridging and linking social capital help resolve disputes within the group and take advantage of opportunities (Adger, 2003). By linking the close relationships within a local community to external actors who have new knowledge, larger stores of financial capital, and political connections, communities that already have bonding and bridging capital can effectively solve bigger problems (Ostrom and Ahn, 2008).

These interactions and connections are also crucial to enhance trust within the community and to build confidence to invest in a collective activity (Kruijssen, et al., 2009; Michelini, 2013). Similarly, external interventions can act as a “trigger” to motivate farmer groups toward collective action for marketing agrobiodiversity. Yet, the success of these external interventions depends on the support of small farmers, and their connection to production, to each other and to external actors (Crespo, et al., 2014). Bridging social bonds beyond immediate primary groups provides small farmers a better economic situation and an opportunity to sustain the collective action in the long run (Michelini, 2013). Another factor that leads to sustainability of the collective action is social learning, the process through which groups of people learn to work together, facilitate inter and intra group communications, and define problems jointly. As they interact, small farmers develop common perspectives, values and insights. As a result, the group moves from “multiple cognition” to “collective cognition.” (Kruijssen, et al., 2009)

4. Challenges for Marketing Agrobiodiversity

The idea of farmer organizations and collective marketing is not new, and farmer cooperatives demonstrate that smallholder groups can successfully achieve economies of scale to overcome the high transaction costs that individual farmers face (Markelova and Mwangi, 2010). Market development for agrobiodiversity conservation involves mechanisms to increase the value of the crop to small farmers and other actors in the market chain by mitigating market imperfections. Consumers may demand products derived from a crop locally but the crop may be underutilized or neglected at national and global scales. Similarly, there may be initial limitations in consumer demand, inefficient supply and quality control. Farmers' access to resources, including economic capital can be limited, and farmers may need capacity building to reorganize market relationships (Giuliani, 2007). Collective action may help overcome these challenges and connect small producers in the developing world to national and global consumers, who demand healthy and minimally-processed products, food and cosmetics and are willing to pay higher prices for desirable traits (Giulini, et al., 2009; Atalan-Helicke, 2018).

Literature in natural resource management point out four broad categories that contribute to the sustainability of collective action for marketing of agrobiodiversity. These are: a) characteristics of the resources (e.g., boundaries, size, low levels of mobility); b) characteristics of the user groups (e.g., shared norms, previous experience with collective action and social capital, capable leadership); c) institutional arrangements (e.g., locally devised access and management rules, enforcement mechanisms, accountability structures); and d) the external environment (e.g., interaction with governmental bodies, supportive external organizations) (Agrawal, 2001). The interaction among these variables is complex, and a pure market focus may have contradictory consequences.² Thus, collective action of farmers should also have a conservation focus while working for expanding markets for agrobiodiversity.

5. Turkey and Wheat Farmers

Turkey is a leading grain processor and processed wheat product (e.g., flour, pasta) exporting country. Wheat is planted in about 7.8 million hectares of land, constituting one-third of total arable land in Turkey (USDA, 2015; TUIK, 2015). Turkey's wheat harvests total about 18 million metric tons, with fluctuations based on weather conditions.³ Improved hybrid varieties have been available in Turkey since the introduction of semi-dwarf varieties from Mexico in 1966, with different levels of adoption regionally. Improved wheat varieties and production techniques have contributed greatly to the increasing yields in Turkey. However, these have also led to the decline of cultivation of wheat landraces, which now constitute less than one percent of total wheat production in Turkey (FAO, 2015).

Farmers in Turkey have been subject to several rural development projects, initiated and implemented through multiple actors, including the state and supranational organizations (e.g., the European Commission). After the financial crisis of 2001, Turkey implemented the Agriculture Reform Implementation Program as part of the World Bank loan for structural adjustment and stabilization program. These agricultural sector reforms caused decreases in production of sugar beets, tobacco, hazelnuts and grains. These changes, accompanied by reform of state subsidies and the agricultural cooperatives, also meant a loss of two-thirds of agriculture income (Lundell, et al., 2004). The European Commission also played a role in shaping Turkey's rural development policies by facilitating harmonization of legislation with Common Agricultural Policy and European Union standards (Atalan-Helicke and Mansfield, 2012). European Commission funding also

facilitated development in areas where there was no large-scale state-led rural development, including Kastamonu and Sivas. With the reform of state subsidies and legislation changes, the Turkish state started providing subsidies for farmers growing animal feed (after 2000), animal husbandry (after 2006), and certified organic agriculture (after 2009). Access to these subsidies affected both income and decision-making patterns of small farmers in Kastamonu and Sivas. European Commission funding also established connections among various public and private actors at national and international scales. (Kuzmanovic, 2010).

Understanding the socio-cultural context can also help assess connections among farmers and actors. Employment in both Kastamonu and Sivas depends on agriculture and their per capita production levels are lower than the national average (Kalkınma Bakanlığı, 2013). Both Kastamonu and Sivas have sent migrants to Istanbul for economic reasons. Unlike Sivas, Kastamonu was able to sustain its village populations year round. Farmers in both cities have access to extension and credit, many farmers cultivate high yielding wheat varieties for markets. In line with global trends, Turkey's farming population is aging, and those who cultivate traditional varieties are getting older: A recent FAO survey (2015) found the average age of farmers cultivating traditional wheat varieties to be 58.

6. Findings

6.1. Einkorn and Challenges for Marketing *siyez*

Einkorn, locally known as *siyez* in northwest Turkey, is a hulled wheat variety, wheat with non-threshable grain, and a semi-wild relative of wheat. It remained as a local crop, consumed as bulgur (cracked wheat) and animal feed, until its revival as a health food for its nutritional qualities (Giuliani, et al., 2009; Atalan-Helicke, 2018). It is cultivated in mountainous areas due to its resilience to local climatic conditions and low input requirements. With the expansion of modern agriculture techniques and varieties in Turkey, its production was pushed to marginal and isolated pockets in northwest near the Black Sea coast at altitudes of 1100 to 1200 meters (Bioversity International, 2006; Karagöz, 1996). *Siyez* farmers in Kastamonu process their own bulgur, and are better connected to Istanbul, Turkey's largest city, financial center and consumer market, through roadways, long-established migration chains, and the branding of their bulgur as "*siyez* bulgur."

There were already a few farmer groups, in the form of local dairy cooperatives, an Agriculture Chamber and a state-affiliated farmers' cooperative in Ihsangazi, Kastamonu. Many *siyez* farmers were members of these organizations. Kastamonu traders, as well as international and national actors, have been working with a small group of farmers, who were willing to learn new techniques in animal husbandry.⁴ Yet, these organizations neither had a mission for marketing *siyez* bulgur nor a common vision about *siyez* conservation.

Farmers growing *siyez* engaged in seed saving and exchange practices, which are still vibrant (Giuliani, et al., 2009). Seed exchanges provide strong social ties since farmers exchange seeds not only within their close kinship network but with other farmers in different villages "to change the soil," "to avoid the evil eye" (a traditional superstition) and "to improve the seeds." These informal ties enable farmers to trust each other, participate in agriculture-related events as an informal group and transfer traditional knowledge—of not only seed conservation but also *siyez* cultivation.

Until early 2000s, *siyez* has been mainly used for household consumption. Many farmers report using about one-tenth of *their siyez* harvest as seeds, one third for their household bulgur

consumption, and the rest as animal feed, while a few farmer traders also grew *siyez* for local and regional markets (Giuliani, et al., 2009). Farmers also attribute a cultural value to *siyez* and gift *siyez* bulgur to relatives or friends living in other cities. Some farmers also use these gift-relationships to engage in direct marketing of *siyez* bulgur at national markets.

The challenges of marketing *siyez* included lack of guaranteed markets (due to lack of sustained demand), low prices to sustain livelihoods, and problems with quality. *Siyez* bulgur has a distinct taste and requires longer cooking time, which require acculturation of taste among national consumers. A 46-year-old male farmer trader stated that when he started selling *siyez* bulgur in 2005, he could not even sell 100 kilos, but in the following four years, he could sell 4 tons of bulgur at Kastamonu and national markets. Another problem was “about equity in the markets and determination of prices in the national (especially Istanbul) markets,” as expressed by a 55-year-old male trader. Poor market transparency and distance between *siyez* farmers and processor-traders was also a significant challenge for expansion of *siyez* bulgur production. Because farmers had not initially benefited from access to urban health and other niche markets, they received low prices (Giuliani, et al., 2009). Farmers also faced problems with delivering standard *siyez* bulgur to the markets. The production of bulgur is labor intensive and includes taking it to millers for dehulling, boiling and drying the grains. To standardize production and increase the quality of *siyez* bulgur, local stakeholders sought alternatives to traditional sun drying, such as indoor dehydrators using solar energy. External funding was also pursued. However, farmers were not successful in establishing a common drying facility, and processing bulgur individually meant lack of common production standards. Competition among producers also ensued: The 46-year-old male farmer-trader stated that his clients only buy from him “because they know the bulgur is clean and of good quality.” Moreover, several farmer traders complained about recent changes related to food safety and hygiene regulation that brought new challenges for *siyez* farmers and farmer traders.⁵

6.2. Bonding, Bridging and Linking Social Capital for *Siyez* Markets

Since 2006, several actors have worked to overcome these marketing challenges for *siyez*. Over the years, Kastamonu traders, including businessmen associations, and representatives of Agriculture Chamber (a farmers association established through the state) have organized several Kastamonu food festivals in Istanbul and other cities. They also worked with chefs to increase awareness about *siyez* bulgur in national markets. These food festivals aimed to familiarize national consumers with the taste and cooking of *siyez*. External actors also worked to connect farmers to consumers to ensure guaranteed markets. Representatives from the United Nations Development Program Global Environmental Facility Small Grants Program Turkey National Coordinator and a few years later, Bioversity International met with stakeholders in Kastamonu. Both organizations analyzed how farmers can overcome marketing constraints through collective action and market chain coordination (Biodiversity International 2006; Guiliani et al., 2009). However, farmers could not engage with these external actors despite their willingness to market *siyez*: many farmers preferred to use a majority of their production as animal feed rather than sell it to markets. Yet, over time more farmers were connected to the expanding niche markets for *siyez* after seeing a price increase (see Table 1).

Table 1: Price increase of bulgur (1 kilogram)

Year	Turkish Lira	USD
2007	1 TL	90 cents
2009	3 TL	2.2 USD
2011 (July)	5 TL	3.1 USD
2013 (November)	8 TL	4 USD
2015 (March)	7.5 TL (Tokalı Gıda)*	2.8 USD
	10 TL (Yöresel Tatlar)	3.8 USD
	12 TL (Doğal Ürünler)	4.6 USD
2016 (March)	7.5 TL (Tokalı Gıda)*	2.6 USD
	10.95 TL (Yöresel Tatlar)	3.8 USD
	13 TL (Doğal Ürünler)	4.51 USD

Prices for 1 kilogram of siyez bulgur are calculated based on ethnographic data and a comparison of websites of Turkish gourmet and health food companies, Yöresel Tatlar, Doğal Ürünler, as well as Tokalı Gıda, the only factory producing siyez in Seydiler, Kastamonu. The Turkish lira- USD conversion rates are based on the Turkish Central Bank's monthly exchange announcements.

*for wholesale, the price is valid over 4 kilograms of purchase.

Attempts to establish markets evolved over time: Kastamonu traders, who have been at the forefront of addressing marketing constraints of *siyez* and linked social capital among multiple external actors and local producers, started collaborating with one of the Slow Food Turkey local chapters, *Fikir Sahibi Damaklar*. The representatives of the nonprofit organization who are based in Istanbul met with farmers and decided to present it as Turkey's first presidium. A presidium is granted to "a traditional product at risk of extinction, a traditional production practice at risk of extinction, and a rural landscape or ecosystem at risk of extinction," for which environmental, social and economic sustainability of the production could be verified (Slow Food, 2003). After a year of collaboration among local farmers, farmer-traders, Kastamonu traders, local and national state officials and the Slow Food Turkey chapter, *siyez* bulgur from Ihsangazi was recognized as Turkey's first national *presidium* in 2012. (Slow Food, 2017) This international recognition has served as an important factor to bring the *siyez* bulgur production chain up to legal standards: it made the actors see the potential benefits of the markets and gain confidence to engage in the collective activity. Although the Slow Food Foundation for Biodiversity decided to work with a small group of farmers and traders in Ihsangazi initially, many more farmers became interested in cultivating *siyez* (Atalan-Helicke, 2018)

The national context also affected farmers' willingness to work together to establish a livelihood from *siyez* and to collaborate with established organizations. Many farmers in Kastamonu grew sugar beets as a cash crop for markets. However, after 2001 Turkey's financial crisis and the World Bank funded agricultural sector structural reform project, many farmers phased out of sugar beet production: The state-owned Sugar Beet Growers Association closed down its center in Kastamonu, and the state reduced subsidies for fertilizer and price support. Although farmers in Ihsangazi were eligible for state subsidies for growing animal feed after 2000, and animal husbandry after 2006, several farmers complained about the effects of vetch and sainfoin on the digestive health of their livestock and kept feeding *siyez* to their cows. The regulations associated with harmonization of European Union standards, including 2004 regulations for hygienic milk production and 2007 regulations for registry of all food producers, brought more standards for dairy farmers. Small producers had to become part of milk cooperatives to market their milk in national markets (Açık Toplum Vakfı, 2010). These changes positively affected *siyez* cultivation. However, the story unfolded differently for *zerun* farmers in Sivas.

6.3. *Zerun and Marketing Challenges of Zerun*

Studies confirm the existence and widespread cultivation in central Turkey, Sivas, of Anatolian hard wheat variety *zerun* (*T. aestivum*), a wheat variety preferred for its bread making qualities (Meng, et al., 1998). Sivas has been connected to the national markets since the 1930s through major railroads (Özbek, 2003). However, small farmers could not enjoy retail markets because *zerun* had generally been marketed in bread flour blends. Moreover, the emigration dynamics changes seasonal demographics in the villages: Sivas has been one of the ten cities sending the most number of migrants to Istanbul. Many of those who left their villages and became “guest workers” in Germany, Netherlands and France since the 1960s. While they return to their villages only in the summer, several villages lack a year-long population to sustain wheat cultivation.

The Turkish Grain Board, an autonomous state economic enterprise that regulates the wheat industry, imports and exports it, purchases *zerun* bread wheat. It has paid a premium for it, and since its establishment in 1938, it classified *zerun* as the highest quality bread wheat (ZMO, 1970; TMO, 2016). The Turkish Grain Board standardized its purchase catalogues in 2002 due to harmonization with the European Union standards, but *zerun* has still been on its purchase catalogues (TMO, 2014). Sivas also hosts one of the state agricultural research centers that has successfully developed and commercialized hybrid wheat varieties. Farmers in Sivas have increasingly adopted hybrid wheat varieties in the last forty decades. Farmers follow a crop rotation of grains, chickpeas, animal fodder, followed by a fallow period to maintain soil fertility and a portfolio of traditional and hybrid wheat varieties for markets. *Zerun* is the preferred variety of farmers at higher altitudes, 1300 to 1640 meters due to its resilience to winter conditions and dry agriculture (Karagöz and Zencirci, 2005).

Zerun flour has been sold to mainly the Mediterranean region bakeries due to its bread making qualities. Both Ulaş or Gürün have an agriculture chamber but neither has a farmer cooperative. The villages are geographically distant from each other and maintain relationships only among kin for the exchange of labor. Farmers purchase seeds—for hybrid and traditional varieties rather than exchanging seeds. Those farmers who have quality seeds do not “exchange with everyone” or “sell them.” Producing quality seeds is labor intensive, and requires traditional knowledge. Some farmers believe that they should be compensated for producing high quality seeds. A 47-year-old male farmer said he “separated the sections in the field to save seeds, and worked hard to clean them. Why [would he] give them away?”

Marketing challenges of *zerun* also include lack of guaranteed markets, particularly by the private sector, low prices or delayed payments, and problems with quality. For many years, farmers sold their *zerun* to the Turkish Grain Board. However, transportation costs and delays in payments by the Turkish Grain Board have discouraged farmers from growing *zerun*. Many farmers started to sell their *zerun* to local traders who would purchase it below state-defined prices but transport and store it themselves. Later, problems associated with quality control affected marketing *zerun*. Standards established by the Turkish Grain Board in 2002 reduced prices paid for *zerun*. Unpredictable weather, such as drought in 2007 and excessive humidity in 2011, affected the quality of *zerun*, and farmers had difficulty selling *zerun*. The local economic context also affected the farmers’ decisions. A local entrepreneur in Gürün established a bulgur factory in 2001 to process a folk variety, which was in part improved from *zerun* as a commercial hybrid variety before it was discontinued by the state agriculture research station. The entrepreneur contracted some farmers to produce the seeds of the folk variety, sold the seeds, and made advance payments for their harvest. He paid about ten to fifteen percent above market prices and

transported the grain. These factors encouraged many Gürün farmers to expand their cultivation of the folk variety, and quit *zerun*. For Ulaş farmers, lack of sustained volume for the markets in their geographical proximity meant loss of connections to private flour factories in other cities, particularly Malatya, Diyarbakır and Konya. Loss of markets for *zerun* made many small farmers in Gürün and Ulaş to switch to other hybrid wheat varieties.

6.4. Bonding, bridging and linking social capital for *Zerun* markets

Several public and private entities acted as drivers for collective action to overcome marketing challenges of *zerun*. The first was establishing guaranteed markets with price premiums. This was overcome through contract farming with a private company, the Istanbul Halk Ekmek (Istanbul Public Bread Company - Bread Company from now on) from 2005 till 2010. The Bread Company started contracting organic wheat farming in Sivas with the financial support of the European Commission. The Bread Company was primarily interested in slowing or reversing migration to Istanbul from ten cities sending the highest number of immigrants to Istanbul, one of which was Sivas. The Bread Company had no previous experience in rural development or migration projects (Kentleşme Şurası, 2009). The Bread Company did not specify the wheat variety it would procure. Farmers in Ulaş started organic *zerun* farming under a contract with the Bread Company in 2005 and received 20 to 40 percent above market prices for organic *zerun*. (Table 2)

Table 2: Price change for conventional and organic Anatolian hard white bread wheat

Year	Conventional Turkish Grain Board	Organic farming	USD	
			Turkish Grain Board purchase price	Organic farming
2007	458,000 TL / ton	595,000 TL/ ton (Organic contract farming, DAPHAN Ltd.)	35 cents/ton	46 cents (sales price)
2009	500-530 TL/ton	20 TL state subsidy/per decare	32-34 cents/ton	1 cent per decare/ subsidy
2015	960-1,260 TL/ton	10 TL state subsidy/ per decare	35-46 cents/ton	^{3/10} of a cent/per decare/ subsidy

Prices are calculated based on 1 ton of Anatolian hard white bread based on ethnographic data and Turkish Grain Board annual purchase statements. The price fluctuations are based on the time of the sales: The low rates tend to increase from June to November. The Turkish Lira (TL) conversion to USD are based on Turkish Central Bank's monthly exchange announcements, and uses June and November rates.

Farmers were already familiar with *zerun* cultivation. The national context and the intervention of other external actors increased their willingness to start organic farming. These also helped Ulaş farmers to waive the waiting period and the costly fees for organic certification. The farmers who received state subsidies for animal feed since 2000 did not use agricultural chemicals to grow animal feed and they could immediately receive organic certification when the Bread Company contract farming started in 2005. The Bread Company also covered costly organic certification fees for the contract farmers. Farmers had already received training on organic farming through a rural development project of the Sustainable Rural and Urban Development Association (SURKAL) after 2003. SURKAL received funding from the Baku-Tbilisi-Ceyhan Operating Company (BTC Co) to improve livelihoods in rural Sivas along the Baku-Tbilisi-Ceyhan pipeline⁶. Between 2003 and 2005, BTC Co. invested 9 million USD along the BTC pipeline in

Turkey, which covered Ulaş but not Gürün. SURKAL worked closely with Ulaş farmers and implemented projects such as greenhouse development for high value fruit (e.g., strawberries) and improvement of livestock breeds and animal feed crops. It also provided training for capacity building for community organizations. Another regional nonprofit, the Eastern Anatolia Agricultural Producers and Livestock Breeders Association Organic Agriculture Limited (DAPHAN), was working with farmers in a nearby city, Erzurum, northeast Turkey, to support the transition to organic agriculture and to revive traditional wheat varieties. Its funding also came from the European Commission. It provided training to Ulaş *zerun* farmers. Although the projects of external actors, the Bread Company, SURKAL and DAPHAN, were disconnected from each other, they provided technical expertise, funding and markets for Ulaş *zerun* farmers. However, there was not too much time overlap between these external interventions, and *zerun* producers engaged with them separately, and implemented their programs with varying degrees of success.

To ensure the sustainability of rural development, SURKAL worked with the Ulaş community to establish a local nonprofit organization *Ulaş Kalkınma Derneği* (Ulaş Development Association). This association had farmer and non-farmer members to pursue broader goals of rural development. Its president was a male retired primary school teacher, who returned to his village after several years away from Ulaş. The Ulaş Development Association organized farmers at the village level to participate in organic contract wheat farming and the rural development project. In 2007, there were twelve farmers in three villages cultivating organic *zerun* in an area of 692 decares. Some farmers expressed concerns about the decrease in yields with switch to organic farming, but as a 55 year old male farmer stated, farmers were happy about “increased premiums for *zerun*.”

7. Discussion

Market forces can facilitate the cultivation of underutilized or neglected crops and sustain rural livelihoods. However, overcoming marketing challenges is not easy, and relies on collective action, as well as bonding, bridging and linking social capital with external actors. Farmers may learn to build social ties to govern common norms for their coexistence and collaborative marketing initiatives through external interventions that establish and strengthen markets. As a result of interventions, both *siyez* and *zerun* farmers organized institutionally to coordinate their production and marketing strategies. However, farmers’ previous experiences with collective action affect their knowledge exchange and capacity to overcome internal social dilemmas and discouragement when faced with marketing challenges.

In Kastamonu, farmers were producing *siyez* bulgur individually without an infrastructure or common facility to produce and market bulgur. However, the existence of multiple farmer organizations at village and district levels enabled an inclusive structure for the participation of *siyez* farmers in the market chain, regardless of their age, income, and production capacity. Several traders were well connected to the markets, but they were small or medium scale, and did not dominate the market in a manner that would exclude new farmers and traders from entering the market. Previous training as a group and cooperative experiences helped bond social capital among *siyez* farmers. The small group of farmers that Slow Food Foundation worked with were able to organize themselves as Ihsangazi *Siyez* Farmers Association after 2012. This association has started to organize annual *siyez* festivals in Ihsangazi, collaborate with Kastamonu traders to organize food festivals in other cities, and participate in panels and meetings about *siyez* organized by national stakeholders. Many farmer traders emphasized the importance of protecting “the Ihsangazi *siyez* bulgur brand” because *siyez* has maintained its significance as part of cultural identity. A woman farmer, aged 65, stated

that even if niche consumer markets disappear one day, they would still continue to cultivate *siyez*: “Like my parents grew *siyez* for animals, my children would grow it for their animals. It is because *siyez* sustains us and our livelihoods, the animals.” Thus, by 2015, the number of farmers cultivating *siyez* has increased to about 900 farmers in Ihsangazi (Anadolu Ajansı, 2015). The members of the Ihsangazi *Siyez* Farmers Association are mainly male farmers, but women farmers also maintain their informal market ties by participating in Kastamonu markets. Despite a high turnover rate, local state officials at the district and city scale have always welcomed visitors, researchers, and businesses interested in *siyez*. Many farmers emphasized the knowledge exchange with state officials, and their support for *siyez* cultivation. Over the years, they also emphasized how much they “trust them” and follow their “advice to cultivate more *siyez*.”

While collective action enabled market chain coordination and led to the revival of *siyez* in Ihsangazi, Kastamonu, market mechanisms could not avoid the abandonment of the traditional variety *zerun* in Gürün and Ulaş in Sivas. The economic effects of market chain coordination for *zerun* were immediate in Ulaş. However, development mechanisms did not have specific conservation goals for the bread wheat variety, *zerun*. Farmers in Ulaş and Gürün were not connected to each other, to the Ulaş Development Association or the external actors. Without prior experience of collective action, such as seed exchange networks, farmers could not exchange information, establish a common vision or norms to sustain markets.

Farmers were interested in organic *zerun* production because of state subsidies for organic agriculture. As additional farmers, who did not have contracts with the Bread Company in Istanbul, joined the Ulaş Development Association, organic *zerun* farming expanded in Ulaş. When asked why they cultivate organic *zerun*, a 51-year-old farmer complained about the increase in input prices for grains and said he hoped “the state subsidy and price premiums for organic agriculture would sustain [his] livelihood.” By 2010, the area under certified organic cultivation in Ulaş increased from 692 decares to 5,500 decares, but only a small percentage of it was dedicated to organic *zerun*. Designing policies and marketing strategies that support the promotion of agrobiodiversity requires an understanding of the economic and political forces at a national scale, such as incentives. It is also important to assess the dependence of farmers to these incentives relative to their interest in market-oriented conservation.

Despite initial success, problems with marketing *zerun* surfaced over time. The Bread Company faced difficulties selling organic bread in Istanbul, which is more expensive than regular bread. Thus, the Bread Company did not expand the number of contract farmers it has worked with. When Ulaş farmers had an additional 150 tons of organic *zerun* due to addition of new organic *zerun* farmers by 2009, they contacted private flour companies in Ankara and Istanbul. Ulaş Development Association was able to maintain its relationship with these private flour companies for two years that purchased the organic *zerun* flour, paid a premium and transported it. However, the association’s membership was not inclusive and some farmers were always concerned about benefits of *zerun* cultivation. A 61-year-old male farmer shared his openness toward organic agriculture, but not *zerun* cultivation. He said “It is difficult to get quality seeds for *zerun*.” The failure of a collective action may lead to discouragement, desperation or turning away from collective activity, and in the end, loss of social capital (Michellini 2013). Thus, when the Bread Company contract farming ended, farmers did not have incentives to continue organic *zerun* farming. By 2012, only three farmers maintained organic *zerun* farming. The economies of scale, achieved through contract farming and expansion of organic agriculture, which had allowed farmers to address a marketing challenge was lost.

The group size of organic *zerun* farmers was small and did not expand. The participation in organic certification was limited to those with personal connections to the Ulaş Development Association president. This prevented the formation of a collective cognition, entry of new farmers into the Ulaş Development Association and participation in organic *zerun* farming initiatives. Farmers did not have informal groups or meetings to facilitate knowledge exchange, and farmers relied on their personal ties to make farming decisions. Moreover, the insider-outsider tension prevented developing common values and shared interests among *zerun* farmers. A 50-year-old male farmer talked about “several guests in the village,” to refer to those farmers who live in other cities and abroad and come to the village in summer for the wheat harvest. The same farmer’s father, who was also present during the interview quickly corrected him by saying “they are also from this village.” Nonetheless, farmers could not develop a collective cognition to overcome their marketing challenges.

Limited social connections in Gürün and Ulaş also affected the vibrancy of seed exchange networks. Reduction in *zerun* production in the last decades has disrupted seed saving, and the culture of purchasing seeds has dominated farmers’ interactions. A 42-year-old male farmer said that when the number of contract farmers cultivating *zerun* has increased, saved seeds among farmers were not adequate and they “bought seeds from a nearby village.” However, because those farmers also quit growing *zerun* over the years, they did not have sources to sustain *zerun* seeds. There were not any local traders who were well-connected to the organic flour markets, and the challenge of connecting to traders in Ankara and Istanbul overburdened local farmers and the Ulaş Development Association. Moreover, unlike the farmers in Ihsangazi, the farmers in Ulaş could not extend their network to new organizations after the external interventions ended.

8. Conclusion

Farmers in Kastamonu and Sivas have been cultivating traditional wheat varieties alongside modern varieties. These practices reflect their capacity to maintain traditional wheat varieties under constant pressure from the markets for high-yielding modern varieties, and their capacity to revive them when opportunities provide price premiums ensured through market interventions. However, different factors affect the success of collective action in the long run.

In Ihsangazi, Kastamonu, farmers have been able to overcome marketing challenges for *siyez* at local and national scales both as a result of their sustained interest, and interventions of external actors. However, these challenges were not overcome quickly and the effects of marketing were gradual. The combined efforts to coordinate markets and create niche markets for *siyez* have increased marketing opportunities, and the collective action has been crucial to creating economies of scale in marketing and ensuring the quality demanded by markets. Local farmers have long been concerned about quality attributes of *siyez* bulgur, and the Presidium recognition has created confidence to protect their brand, production process, and quality. Whereas the sustained interest of Kastamonu traders helped to brand the local product as part of their cultural and culinary identity, the initiatives of local politicians, rural development officials and researchers have also shaped the development and conservation outcomes.

The outcomes of *zerun* cultivation in Ulaş also demonstrate the complex effects of internationally funded conservation and development projects. Multiple development and conservation interventions overlapped in Ulaş that initially led to an institutional structure to build social capital. However, lack of community empowerment to overcome social and cultural problems in communication among farmer groups undermined the effectiveness of collective action and long-term sustainability of conservation and development outcomes. Farmers perceived the role of the

Ulaş Development Association to secure state subsidies and other forms of project funding from international organizations. Problems with membership in Ulaş Development Association also demonstrate that individual farmers cannot maintain the processes that support agrobiodiversity in isolation from other farmers.

Farmers negotiate multiple and often conflicting concerns regarding yield, risk, quality and resilience (e.g., drought tolerance, resistance against pests and diseases). Market premiums can provide opportunities for farmers to choose an underutilized or neglected variety. The two cases demonstrate the importance of the existence of a small, but dedicated group of farmers for traditional variety production over the years to sustain the continuity of seed exchange, and sustain traditional knowledge of seed saving and processing. Similarly, without addressing power relations, market mechanisms and collective action may fail. Participation problems may undermine access of farmers to the collective action and markets. Previous experiences of farmers with cooperatives and collaborative work as well as the inclusiveness of the new organizations and initiatives farmers set up are crucial in the sustainability of markets for traditional wheat varieties. Farmers' crop choices are not permanent and shift across time. Following farmers' cultivation of agrobiodiversity over time helps to assess the changes that affect the effectiveness of market interventions and collective action, and help to design follow up events in development and conservation initiatives that promote agrobiodiversity.

Grant Support: The author received no financial support for this work.

Notes

¹The author attended two workshops organized by civil society organizations in 2007 and 2009 and was a member of an online national seed network from November 2007 to September 2010. The author also participated in two local festivals, one of which was named after the traditional wheat variety ("Siyez Festival"), during which local food with the wheat variety was served and cooking contests were organized. The author also visited coffee houses, animal markets, farmers markets and fields to observe the relations of farmers with other stakeholders (e.g., traders, mill owners, seed company representatives, state officials).

²In the case of another underutilized and neglected crop, quinoa, while high prices at export markets increased incomes of quinoa producers, surging prices also undermined the food security of urban poor in Andean cities (McDonnell 2015; Parker-Gibson 2015).

³There are different data about arable land, area sown with wheat and total wheat harvest of Turkey. Here, the author used statistics of USDA, after comparing them with Turkish State Statistics Institution and Turkish Grain Board figures.

⁴A group of farmers and dairy cooperative leaders also received training through the Kastamonu Cooperative Association and Agriculture Chamber, and visited Germany with funding from an international organization in 2005.

⁵The 1995 Wholesale Markets Law that entered into force in 2012 has affected the consolidation of supermarkets in Turkey, and brought disadvantages for small farmers to enter markets, including matching and quality upgrading. (Atasoy, 2013).

⁶During the construction of the Baku-Tbilisi-Ceyhan pipeline that connected three countries from the Caspian Sea to the Mediterranean through a buried oil pipeline, the BTC Co. started a community investment initiative that aimed to provide broader forms of support through community-specific projects along the pipeline (BTC, 2003).

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