

Dynamics of *in situ* maintenance and loss of Jala corn race

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Abstract

Although for decades efforts have been made for the *in situ* conservation of native corns in Mexico, their promotion and protection continue to present challenges and opportunities. In this paper, we explore these challenges and opportunities through the case of the Jala corn race from a historical, systemic, and inclusive perspective that allowed us to describe the dynamics of loss and maintenance that have prevailed in recent decades. Through a study that compares data collected almost 20 years apart on the Jala corn race, the dynamics that this corn has experienced in three aspects: its production, its utilization, and its valuation, are documented. The results highlight how maintenance and loss factors have changed and how new challenges and opportunities have appeared. Challenges associated with processes of loss of productivity and adaptation have become relevant, while opportunities to diversify its use have appeared. Challenges in integrating young people to ensure generational replacement have become more critical. Likewise, the opportunity to involve more women who promote local consumption and take advantage of the potential of markets specialized in native corns. Finally, the development of comprehensive strategies involving informal (such as the family) and formal (different levels of government) social institutions, under a national, state, and local legal framework of corn as cultural heritage, becomes critical for the *in situ* conservation of the Jala corn race and other corn races in Mexico.

Keywords:

in situ conservation, native corn, production, utilization and valuation.



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Introduction

The *in situ* conservation of native corns has been an issue that has been addressed for decades in Mexico from different sectors of society. Actions from academia and research have studied it from biological, agronomic, socioeconomic, and cultural perspectives, reflecting the different dimensions of corn in Mexico (Chávez *et al.*, 2004). Likewise, social organizations have carried out activities to promote participatory improvement, agroecological practices and the cultural revaluation of native corns to achieve food and seed sovereignty (Álvarez *et al.*, 2011).

For their part, government agencies in the agricultural and environmental sectors have addressed the issue of native corns through various programs and public policies such as: the Program of Payments for Conservation Services to Custodians of the National System of Plant Genetic Resources for Agriculture and Food (SINAREFI-SAGARPA, for its acronym in Spanish) (Hernández *et al.*, 2015), the native corn program of the National Commission of National Protected Areas (CONANP, 2016) and CONABIO's Global Native Corn Project. <https://www.biodiversidad.gob.mx/diversidad/proyectoMaices>. It is worth highlighting the different efforts promoted by cultural government agencies to promote corn as cultural heritage.

The recent example of these efforts is the Federal Law for the Promotion and Protection of Native Corn published in the Official Gazette of the Federation on April 13, 2020, which defines that the State will guarantee the *in situ* conservation of the different races of native corn that exist in Mexico (DOF, 2020). These efforts reflect the varied perspectives of the *in situ* conservation of cultivated plants (Graddy, 2013; Jarvis *et al.*, 2016).

The utilitarian perspective considers native corns as plant genetic resources that are conserved for their current and future utilization. The ecological perspective considers native corns as an expression of biodiversity and their conservation is relevant to evolutionary processes and ecosystem services.

The heritage perspective considers native corns as belonging to local communities and indigenous peoples and their conservation is part of demands for food sovereignty (Graddy, 2013). These three circumstances are reflected in the dynamics of loss and maintenance of traditional crops within contexts of conservation and development. The perspective of plant genetic resources focuses on plants and their management with respect to their diversity and evolution (Brookfield, 2002).

Finally, cultural heritage is linked to an approach to agrifood systems that address not only aspects or processes of production but also utilization and valuation. As a whole, these different perspectives and approaches allow us to have a broader vision of the dynamics of maintenance and loss experienced by native corns.

Likewise, valuation processes refer to the entire social fabric through formal/informal institutions such as the family, the community and government bodies in which environments conducive or not to traditional cultivars are created (McLean-Rodríguez *et al.*, 2019). It is through these three processes, partially referred to in the *in situ* conservation literature (Jarvis *et al.*, 2016), in which this paper discusses the dynamics of loss and maintenance of the Jala corn race in the Jala Valley.

The Jala corn race was made internationally known by Kempton (1924) as a giant variety of corn from the Jala Valley in Nayarit. In this document, he makes general descriptions about the fertile valley at the foot of a volcano, El Ceboruco, the management practices of what is locally called 'wet corn' and the characteristics of plants and matures ears of corn with which he defines it as a giant corn due to both environmental and genetic conditions.

This description has been followed by more detailed studies on corn diversity in Mexico, such as (Wellhausen *et al.*, 1951) and CONABIO. <https://www.biodiversidad.gob.mx/diversidad/alimentos/maices/razas-de-maiz>, which identify it as the race with large plants and ears. Likewise, there are genetic studies for genetic improvement processes and to understand evolutionary processes (Aguilar *et al.*, 2006; Valdivia *et al.*, 2010; Montes *et al.*, 2014).

Of special attention are the studies for its *in situ* conservation by identifying factors that affect it (Rice, 2007) and the determination of its geographical coverage (Ramírez, 2014). The efforts for its conservation date back to 1981 when the Municipal Government of Jala created the contest of the largest tender ear of corn in the world as part of the week of celebrations of the patronal feast of the municipal seat, which continues to be carried out to this day.

Since the late 90s, research and educational institutions such as the College of Postgraduates (CP), the National Institute of Forestry, Agricultural and Livestock Research (INIFAP, for its acronym in Spanish), the Autonomous University of Nayarit (UAN, for its acronym in Spanish), Cornell University (CU) and the International Maize and Wheat Improvement Center (CIMMYT, for its acronym in Spanish) have carried out various activities such as collections, diversity studies, genetic improvement and agronomic management.

For its part, in 2002-2003, a limited production company was formed with farmers who grew this corn, who received machinery, inputs and technical support to produce it organically. SINAREFI has supported *in situ* conservation efforts through its programs of guardians in 2008 and custodians programs from 2010 to 2014, which provided incentives for farmers from communities located in the Jala Valley (Jala, Jomulco, and Coapán) (Hernández *et al.*, 2015).

Similarly, in 2008, the Produce Nayarit Foundation supported a project that promoted a regional seed sample, the first contest of the largest mature ear of corn and the delivery of seeds of an improved composite of that race (Hernández *et al.*, 2015). Finally, during 2017-2018, INIFAP, Cornell University and CIMMYT carried out joint actions leading to its conservation through the 'Jala corn race Rematriation' project. This project was funded by the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA, for its acronym in Spanish) through the initiative for the modernization of traditional agriculture (MasAgro) and by the CGIAR CRP-Maize through the USAID Linkage Grant with Cornell University (Ocampo *et al.*, 2020), from which the results presented in this paper are derived. This project promoted in 2018 the contest of the largest mature ear of corn that takes place in December in the community of Coapan during the harvest season.

Unlike the contest of tender ears of corn where the physiological maturity required to obtain seed has not yet been reached, the contest of mature ears of corn allows the obtaining of seeds for future sowings and the genetic conservation of their agronomic and nutritional attributes. Subsequent contests of the largest mature ear of corn have occurred in Coapán during 2019, 2021 and 2022.

Even with these efforts, the perception of several authors Aguilar *et al.* (2006); Rice (2007) is that the area devoted to the cultivation of the Jala race continues to decrease in the Jala Valley and some authors as Montes *et al.* (2014) assert that it occupies less than 5% of the area devoted to corn cultivation.

The conservation of the Jala corn race has become a relevant issue for the state of Nayarit since, in November 2020, the State Congress declared the Jala corn race as cultural and material heritage of Nayarit (POF, 2020). The appointment seeks to safeguard, promote, maintain, and encourage the development of this corn, in addition to boosting the tourism offer of the municipality through collaboration between state and municipal authorities, research institutions, farmers, business and cultural sectors.

The foregoing creates a legal framework that favors the *in situ* conservation of this race, which will necessarily have to land in concrete actions. For its implementation, there is the need for a broad vision that addresses in a dynamic way both the challenges and the opportunities created by the factors that affect the maintenance or loss of said race since these change over time.

This manuscript sought to contribute to conservation efforts. It aims to describe the dynamics of loss and maintenance of the Jala corn race through a historical, systemic, and inclusive approach. It presented a systemic approach to the dynamics of native corns that recognizes the importance of other actors in value chains for the creation of favorable environments to maintain

these corns. It also incorporates a perspective of social inclusion that opens the door to integrate key actors for conservation, such as women and young people (Vizcarra *et al.*, 2015).

Materials and methods

The results presented in this paper come from information generated through three studies that were carried out during 2017 and 2018 as part of the Jala corn race Rematriation Project co-implemented by INIFAP, Cornell University and CIMMYT. It is also complemented by secondary information generated in the previous study carried out by Rice (2004).

The studies had a qualitative approach in which key informants were interviewed to document the maintenance and conservation processes of Jala corn in a snowball scheme (Cadena *et al.*, 2017). Regarding primary information, the first study was carried out in 2017 and consisted of a comparison on the *in situ* conservation status of the Jala corn race with what was reported in Rice (2007).

This analysis was possible because the author facilitated access to the database of the 79 farmers interviewed in her formal survey and a similar survey could be applied to 67 original farmers and their relatives.

The second study was carried out in 2018 and was based on aspects of the production, transformation, and commercialization of the Jala corn race through interviews using a semi-structured questionnaire that was applied to 29 women and men who precisely served as producers, processors, buyers, and consumers of this corn both in the municipality of Jala and in other surrounding municipalities such as Ixtlán del Río.

The interviewees were identified as key informants due to their knowledge and experience in the production, processing, and commercialization of this corn. The latter study was part of the research action to form the Group of Young Guardians of the Jala corn race that took place in 2018. During this research, open invitations to participate were made in high schools and universities in the municipality and through ejido assemblies (the parents of young people) and various activities such as meetings, field visits and workshops.

The information reported in this manuscript was collected in four workshops, where a total of 34 young women and men participated. The workshops involved focus groups and plenary discussions on topics relevant to the consolidation of such a group. Most of the young people who participated were high school students aged 16-24. Participants are the children or grandchildren of farmers who have been involved in agricultural activities since childhood, who wish to conserve family corn and who see an opportunity to conserve this corn through its involvement in tourism, cooking, and commercialization issues.

The information collected was analyzed through mixed methods as both qualitative and quantitative data were generated. Qualitative data were analyzed through content analysis. On the other hand, descriptive statistics were applied in the quantitative analysis. The data were grouped into three broad categories representing production, utilization, and valuation processes.

Results and discussion

Over the years, the Jala corn race has suffered dynamics of *in situ* maintenance and loss in its production, utilization, and valuation processes. There is a widespread perception that fewer farmers cultivate less land with this race in the Jala Valley. This perception presents evidence when comparing the data from the study by Rice (2007) with the results of studies conducted in 2017 and 2018. The author, Rice (2001), interviewed 78 farmers from the localities of Jomulco and Jala that served as a base sample for the first study in 2017.

That is, the same interviewees or family members were sought; however, 10 of them could not be located. Of the 68 located, the questionnaire could only be applied to 50 people, 20 were the original interviewees and 30 were relatives who succeeded them in the agricultural activity. The average age of these people is 64 years. It was not possible to apply the questionnaire to 18

people because 50% of them or their relatives emigrated (to large cities in Mexico or the United States of America), 22% sold or rented their land, 17% had no successors (had no children) and 11% were engaged in non-agricultural activities (local merchants or professionals).

Of the total number of people surveyed in 2001, half are still alive and the other half died within 16 years. The aging process, identified by Rice (2007) as one of the factors affecting *in situ* conservation, reappears as a challenge that expands because there are no successors in agricultural activity. The results that explain the dynamics of maintenance and loss of the Jala corn race in the spaces of production, utilization, and valuation are presented and discussed below.

Maintenance and loss in production spaces

The production spaces refer to the agricultural systems and the phenotypic characteristics of this type of corn that are mostly expressed in the plots or agricultural lands. Rice (2007) refers to them when explaining the abandonment of Jala corn due to unfavorable characteristics of this material compared to improved materials, especially hybrid corns. These unfavorable attributes for management are related to the height of the plant and the impacts of lodging, the weight of the grain, the susceptibility to pests and low germination.

The 2017 study identified other unfavorable characteristics such as problems of genetic pollution, previously reported by Aguilar *et al.* (2006), poor ear of corn cover, rot, and postharvest damages. The wet corn production system, which, as its name implies, is a system that uses the residual moisture of soils that in many cases have a lacustrine or volcanic origin, also appears as an unfavorable attribute (Rice, 2007).

This system in Jala is characterized by very long cycles with early sowings and topological arrangements of lower plant density. Nevertheless, another attribute of these systems that explains the loss of the Jala corn race was also observed, such as the fact that they are mostly manual and with animal traction since they require a sowing depth that is not reached with mechanical seeders (25 to 30 cm). This implies an investment of labor in the preparation of the land and sowing greater than doing it mechanically.

The attributes that have favored the maintenance of this type of corn also refer to characteristics of the Jala corn race and its production system. With respect to the characteristics of the material, the length of its ear of corn and the height of its plant are still two great attractions to continue its cultivation.

For its part, it is the residual moisture cultivation system itself the one that privileges the use of this material in some areas, due to the presence of volcanic foam known as jal, pumice or liparite in their soils, which retains the moisture of the previous rainy season, in the valleys of Jala, Jomulco and Coapán.

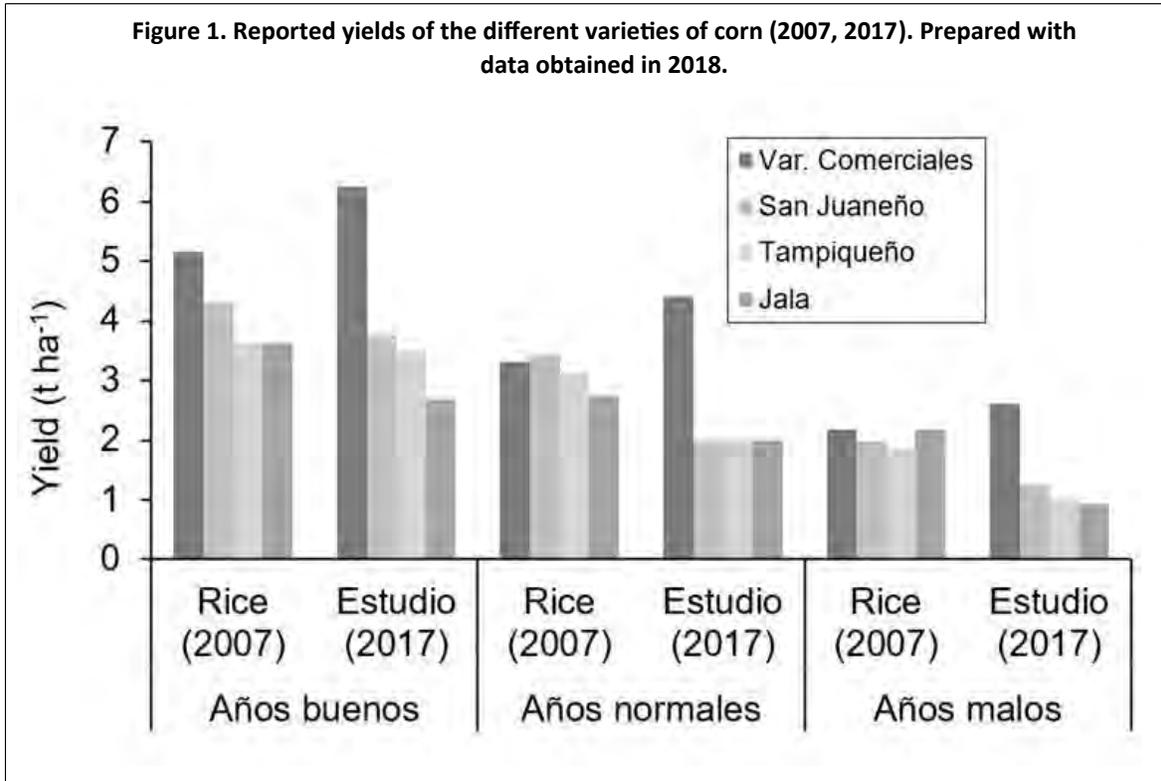
This system of wet sowings in which the Jala corn race is sown is also practiced in the small valleys and plateaus of the high zone (above 1 500 masl) of the municipality of Jala, between the localities of Los Aguajes, Rosa Blanca, Cofradía de Juanacatlán, San Miguel, Francisco I. Madero, and their surroundings (Ramírez, 2014), because there is also the presence of pumice in their soils.

Generally speaking, both the wet system and the Jala corn race have been relegated from agricultural modernization but have been taken up by organic agriculture and agroecology. We identify two processes that are relevant to explore in this production space for the conservation of the Jala corn race. The first of them is the loss of productivity of this race and other native varieties compared to commercial materials (especially hybrids).

As shown by the Figure 1, the yield in good, regular, and bad years of commercial varieties has increased. In contrast, that of traditional varieties such as Jala, Tampiqueño and San Juaneño has been decreasing. The most affected has been the Jala corn race, which has decreased almost one tonne in good years (3.63 to 2.68 t ha⁻¹), 750 kg in normal years (2.57 to 2 t ha⁻¹), and



more than one tonne in bad years (2.19 to 0.3 t ha⁻¹) over a period of 16 years. This productive behavior is due to climate change with unpredictable rainy seasons in terms of quantity and distribution of rainfall.



Nonetheless, it should be emphasized that in the production of commercial varieties (hybrids), due to their lack of adaptation in 'wet' sowings, they are sown at the formal beginning of the rainy season in July, while Jala corn, like other late or very late cycle landraces, are sown 'wet' in the months of March and April in the Jala Valleys and in April and May in the high areas of the municipality of Jala.

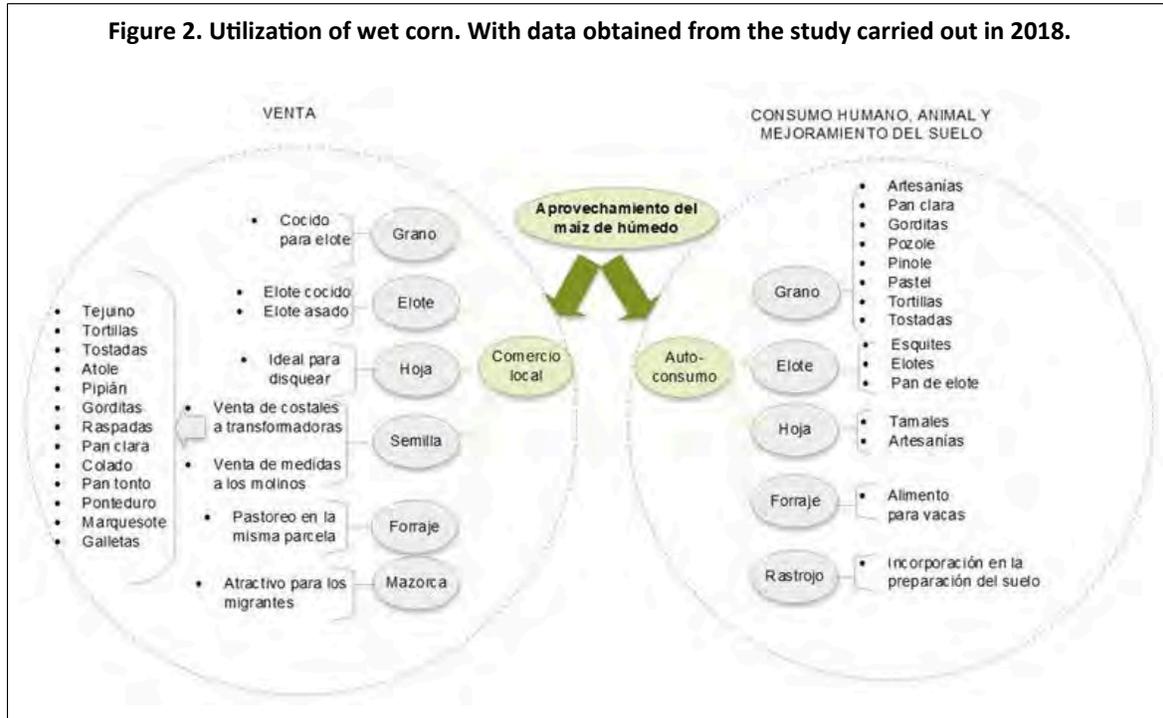
In addition, hybrid corns obtain high grain yields because they are genetically improved to achieve these yields and to support higher population densities (70 to 80 thousand plants ha⁻¹). Conversely, landrace corns, such as Jala, due to their very late vegetative cycle and very high size, are sown at a population of no more than 25 000 plants ha⁻¹.

Additionally, its grain type, which is large with mealy, and semi-mealy endosperm, does not produce high grain yields. That is the reason it is still sold in volume through the use of 'measures' of wood. The other important process, especially at present, is the decrease of the productive space as a result of transformations in the landscape of the valley in the last 16 years, such as the construction of the Guadalajara-Tepic toll road on the Jala Valley, which involved the diversion of the natural runoff that deposited itself in the valley, affecting the retention of moisture in the soil necessary for the sowing of native corn of the Jala race. The other was the construction of the Technological Institute of Nayarit on what some considered the best land to grow wet corn. This ended up reducing the availability of land for cultivation.

Maintenance and loss in utilization spaces

The utilization spaces contemplate the purposes, uses and processes of commercialization and transformation that the Jala corn race experiences. Due to the different dynamics that are created when corn is used for self-consumption *versus* for sale, a first classification was made contemplating these two purposes. The results show that the Jala corn race, to a greater extent,

is consumed locally. In the home, this corn is used to prepare a great diversity of foods such as corn on the cob, tortillas, gorditas, sopes, dry tostadas, pozole, tamales, atole and pinole (Figure 2).



It is also used as forage since the height of the plant produces a lot of biomass. A new use identified was the use of this corn residues to improve agricultural soils by incorporating them during soil preparation. On the other hand, in its utilization for local markets, there are several uses; some cited by Rice (2007) as: forage, tender ear of corn, seed and grain. In the 2017 study, the following was found: the sale of mature ears of corn as an ornament due to their attractiveness for migrants and tourists during the festivities of the Fair of the Tender Ear of Corn and husks to disc (since they become smaller) or produced in wet land (since they are the best paid).

With respect to its use as tender ear of corn, Rice (2007) refers to the Tender Ear of Corn Fair as the event that allows a good sale of this type of tender ear of corn. The contest has become, for some, the opportunity to market a little of what they sow either as grain or any of their processed products. However, only producers who have experience with wet corn are the ones who manage to sell some seed.

It is important to note that the decrease in the production of wet corn has brought with it important alterations in family dynamics since the members saw, in this practice, a means to obtain income that served them to buy their children's school supplies. Over the years, the fair has been flooded by foreign tender ears of corn and by the local preference for the tender ear of corn of the yellow variety, which is sweeter. With regard to the sale of forage, it is done by renting plots of corn for grazing.

The grain, on the other hand, is sold without undergoing any transformation or some farmers process it and sell it already cooked for pozole. There is also the sale to local processors, who process the grain to prepare foods such as tejuino, tortillas, tostadas, pipián, gorditas, raspadas, pan clara, colado, tonto, ponteduro, marquesote. Finally, the sale to local mills was identified even though most of the tortilla consumed is through corn meal.

The sale of the Jala corn race to national and international markets is limited as it is not competitive in the grain and husk markets. Rice (2007) identifies that this race lost importance

with the transition from artisanal tortilla to industrial tortilla due to grain attributes such as low weight, mealy material, and creamy color. This process occurred with other corn races in other parts of Mexico, as reported by McLean-Rodríguez *et al.* (2019) for the case of the Pepitilla corn race in Morelos.

The Jala corn race also lost regional prominence when corn farmers in Jala switched from selling grain to corn husk for export and preferred other varieties for their thickness and greater resistance (Rice, 2007). In the 2017 study, other barriers that hinder external commercialization were identified, such as phytosanitary standards, which, when not met, force the producer to sell their products locally at lower prices. Another aspect that has hindered the foreign commercialization of the Jala corn race is its small-scale production.

Despite these obstacles, in recent years more commercialization channels of this race of corn have been opened. Products made using the Jala corn race have been valued by foreigners. Also, in Mexico, the efforts to recover the quality of the Mexican tortilla made from native corn dough and by hand, of those who have appeared in tortillerías in large cities, such as Mexico City and Guadalajara, which, in recent years, have bought Jala corn race grain to make tortillas in a scheme similar to gourmet.

Other important factors of constant loss over the years are the decline in grain and seed sales prices and low crop profitability, which explains why corn crops have become unattractive and farmers have replaced them with other crops such as sugarcane, peanut, roselle, lemon, avocado, sorghum, nopal and, recently, the tequila agave.

As a whole, the challenges and opportunities for the Jala corn race in the utilization spaces revolve around two elements: its use and profitability. The plasticity in uses and purposes of this material presents itself as a great opportunity to take advantage of through projects that increase and give the added value that a native corn, for its nutritional benefits, must have, both for its transformation and utilization processes, as well as for alternative commercialization channels. A broader vision in these value-added processes is required in the present in a decisive way, especially because actors that were not previously relevant for the conservation of native corns are now playing a key role.

Such is the case of women who transform it into antojitos (Mexican street food) and foods that will have to be included in conservation actions by strengthening local consumption. On the other hand, niche markets and the Mexican gastronomic community have become buyers of native corns. We must not forget key actors, such as those of the supply chain, who transport or approve the health of products. Other opportunities appear with the tourism sector and the environmental sector with payments for ecosystem services.

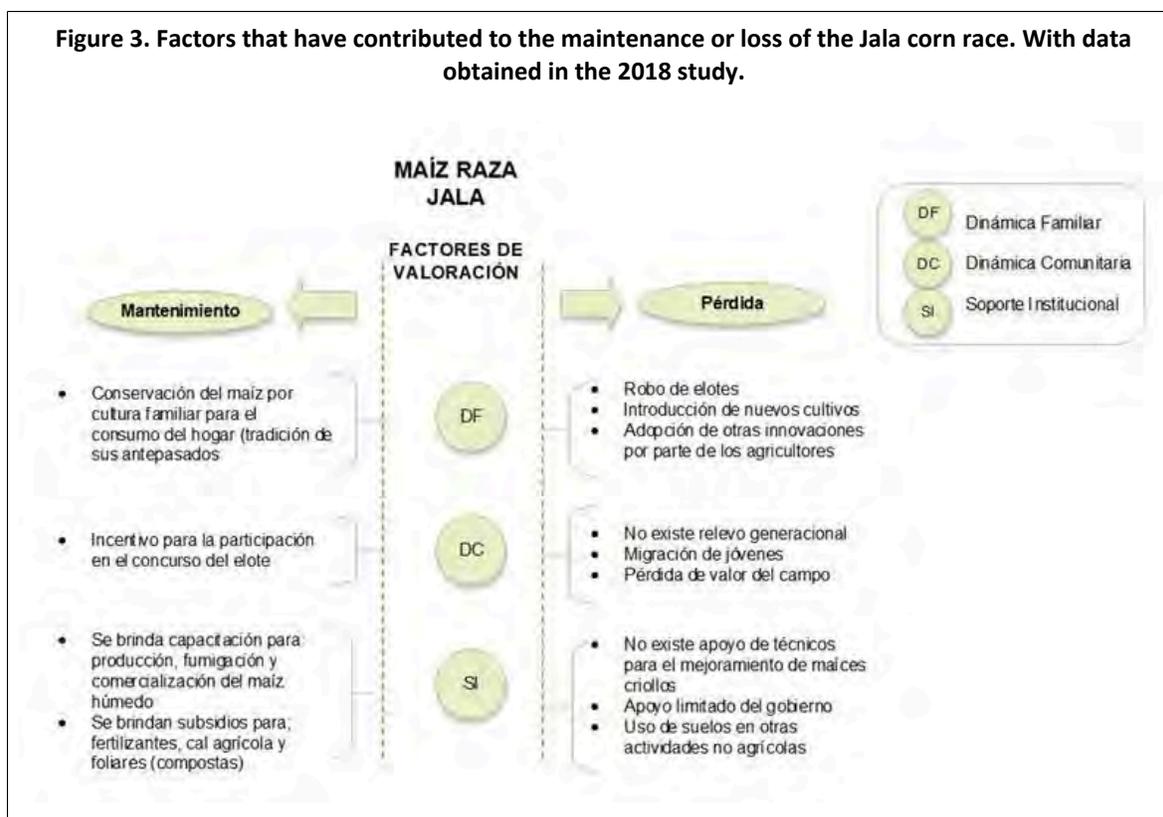
Maintenance and loss in valuation spaces

The valuation spaces refer to the importance and support that different informal and formal social institutions, such as the family, the community, and others such as government bodies, generate around the Jala corn race to create favorable environments. They are spaces linked to social and cultural aspects of corn, so they are usually associated with tradition, customs, but also contemplate governance instruments such as organizations and public policies.

Rice (2007) refers to them when considering the tradition and the contest of the tender ear of corn as factors that facilitated the maintenance of wet corn. She identifies the aging of agriculture, the conversion of crops, the policies of subsidy not only to agriculture but to food and the tender ear of corn contest itself as factors of loss. For many, this reflects the social fabric that develops at the family, community and institutional support levels as shown in Figure 3.



Figure 3. Factors that have contributed to the maintenance or loss of the Jala corn race. With data obtained in the 2018 study.



In family dynamics, tradition and family consumption of grain in dishes have been presented as the main reasons why the Jala corn race continues to be grown. On the other hand, the loss of the value of agricultural activity and migration, not only geographical but also economic, are what together hinder generational replacement in this activity.

In addition to this, it was found that the tastes and preferences of young people have been changing since now those who consume the most products obtained from wet corn are mainly adults. Nevertheless, in some cases, young people who emigrate continue to support their parents in the fields, especially when the latter are elderly and can no longer carry out the work of the fields. During weekends and holiday periods, these young people become involved both in agricultural work and in the commercialization of harvested products.

Their contribution is not recognized, as a young undergraduate student comments, 'I as a woman have already worked the field with my dad and I have had to do hard work. Take out the crop, preserve the seed, make it known, market it. I would like recognition, the tools, and the bases to move corn forward.' Although young people are currently decision-makers, there is agreement with Vizcarra *et al.* (2015) that this depends on the influence of their parents and teachers.

Due to the above, young people become reluctant to continue as farmers and are looking for better job opportunities that can generate a higher income than the agricultural income, they also look for a source of work where they do not have to work so hard, can be cleaner and take less time to do it. That is why it is important to consider the challenges and needs that young generations identify to keep wet corn.

Some of the challenges that young people identify are: a) problems of access to land in terms of ownership or tenure or lack of economic resources to rent it; b) lack of adaptability of corn in the area in relation to climate change and soil degradation; c) loss of mature ear of corn size as a result, in the last years, of the annual tender ear of corn contest since the largest ears of corn are cut for it and used to compete to win the economic and in-kind prizes; and d) finally, young people highlight, as a challenge, not having the time and resources available to participate as guardians.

On the other hand, the young people themselves express the following needs: i) requirement of economic support to grow wet corn; ii) approval and support from their parents and teachers; c) agronomic training to solve problems in wet corn crops; and iii) recognition of their effort and dedication.

Tradition is an element that plays a critical role in the conservation of the Jala corn race. In fact, comparing the results of Rice (2007) on the reasons farmers have for keeping the Jala corn race, in the 2017 results, they indicate that tradition has become the main reason over consumption. The tender ear of corn contest is an example of a tradition recently built at the community level since for many it is the main incentive to continue growing wet corn. However, others identify negative impacts of the contest for the conservation of this corn.

Some interviewees felt that the contest has caused the Jala corn race to only be sown for this event, sometimes in the backyard or pots, and only by a few families, and that the competition has limited seed exchange. On the other hand, formal institutions such as the National Company of Popular Subsistence (CONASUPO, for its acronym in Spanish) discouraged the cultivation of the Jala corn race in the 70s by not accepting it due to its low weight (Rice, 2007).

In the present study, it was found that the presence of other supports or incentives that farmers receive for productive reconversion (Figure 4), do not concur towards native corns, whose support is occasional, limited and promoted by conservation programs such as SINAREFI-SAGARPA, which included training in the production and commercialization of this wet corn and subsidies for the purchase of inputs (agricultural lime, composts, and foliar fertilizers) and machinery (Hernández *et al.*, 2015).

Figure 4. Support provided to farmers for the different crops sown. With data obtained from the study carried out in 2018.



Valuation presents challenges and opportunities at the family, community, and institutional governmental levels. The process of generational replacement presents itself as a great challenge that not only affects corn in Jala, but also world agriculture. An indispensable action is to make young people interested from an early age with the support of parents and their teachers. This involves bringing together young people to listen and resolve their concerns and defining joint actions with them to ensure their involvement not only as producers but as actors in production chains.

On the other hand, the contests of tender and mature ears of corn contribute to the tradition by building identity at the community level in the communities of Jala and Coapán. However, efforts to strengthen this tradition and identity at the municipal level will ensure the social fabric required for the conservation of Jala corn.

Conclusions

In production spaces, it is important to address both the challenges and attributes associated with its favorable and unfavorable agronomic characteristics. Its cultivation under conditions of residual moisture also privileges its use. In addition, the presence and development of research and technology transfer projects (ie. participatory genetic improvement, seed production, community banks and comprehensive agronomic management) are currently necessary for an optimal *in situ* conservation of Jala corn.

The challenges and opportunities in the spaces of utilization revolve around its use, mainly as food, and the profitability of the processed food products. Due to its nutritional qualities, it is important to give its products a commercial added value. The current feasible existence of local, regional, national, and international commercial demand for landrace corn grain, such as the Jala race, is an opportunity for the permanent maintenance and utilization of this race of corn. The contests of tender and mature ears of corn are an opportunity to commercialize its processed products and genetic conservation of its main agronomic and food attributes.

In the spaces of valuation, the community and government bodies are of importance and support to create favorable environments around the Jala corn race. Because of their link with social and cultural aspects of corn, they are associated with traditions, customs, and instruments of governance. The assessment externalized by the young generations through their challenges and needs is worthy of considering for a promising generational replacement in the production of this landrace corn. The lack of young successors in production, due to the inexorable advance of the age of the producers, is a permanent challenge for the *in situ* conservation of Jala corn. As a whole, the dynamics of loss and maintenance of the Jala corn race must be inclusive and systematic in order to respond to the challenges and, at the same time, take advantage of the opportunities that contribute to the conservation of native Mexican corns.

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Dynamics of *in situ* maintenance and loss of Jala corn race

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| Journal Information |
| Journal ID (publisher-id): remexca |
| Title: Revista mexicana de ciencias agrícolas |
| Abbreviated Title: Rev. Mex. Cienc. Agríc |
| ISSN (print): 2007-0934 |
| Publisher: Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias |

| |
|---------------------------------------|
| Article/Issue Information |
| Date received: 01 December 2023 |
| Date accepted: 01 January 2024 |
| Publication date: 12 January 2024 |
| Publication date: January 2024 |
| Volume: 15 |
| Issue: 1 |
| Electronic Location Identifier: e3247 |
| DOI: 10.29312/remexca.v15i1.3247 |

Categories

Subject: Articles

Keywords:

Keywords:

in situ conservation
native corn
production
utilization and valuation

Counts

Figures: 4

Tables: 0

Equations: 0

References: 21

Pages: 0