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REVIEW

Quinoa in pre-Hispanic central Chile: contributions from archaeology and cultural processes.

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Abstract

M.T. Planella. 2019. Quinoa in pre-Hispanic central Chile: contributions from archaeology and cultural processes. Cien. Inv. Agr. 46(2): 69-81. This paper provides findings from archaeological, archaeobotanical, ethnographic and morphometric investigations regarding the ancient presence of *Chenopodium* and the use of quinoa (*Chenopodium quinoa* Willd.) in central Chile from before the Christian era up to the present times, and discusses the importance of this crop for the economic and social development of the various pre-Hispanic indigenous cultural groups who inhabited the different areas and ecosystems of the region. This background knowledge allows us to assess the beginning and unfolding of this crop's long history, which shows how quinoa accompanied our predecessors, their descendants and the groups resulting from Hispanic-indigenous interbreeding in this territory, and how its cultivation and use remain current in different social events inside rural communities in Chile today.

Keywords: Central Chile, cultural groups, quinoa.

Introduction

The cultural processes occurring in central Chile have had a long and significant history. Our study draws on many socioeconomic milestones and material expressions that are rich and important for understanding our indigenous peoples and their legacies, many of which still persist today. One of these is the ability to recognize the potential resources in nature that have been gradually incorporated over time as foodstuffs and that have influenced and modified the basic sustenance and social order of pre-Hispanic social groups. Quinoa rightly represents one of the vegetal resources

that has led our main current focus, because of its early use in gathering processes and prolonged initial stages of human manipulation prior to the introduction of maize (*Zea mays* L.) and beans (*Phaseolus* sp.) in central Chile, which have no known local wild ancestors.

The objective of this article is to report and highlight, through a retrospective study of archaeological and chronological information, how the presence of *Chenopodium* in nature, first through its availability for the hunter-gatherer groups who inhabited central Chilean territory and then through the presence of its seeds among the cultigens and wild flora record from the settlements of various ceramic-using local groups, up to the time of the contact with the Inka and Hispanic invasions

affected the local groups' way of life, and their options for incorporating new possibilities and varied products into their daily subsistence; and also how *Chenopodium quinoa* became a part of their social gatherings and other events with ritual connotations. Besides, the survival and continued use of quinoa in actual rural communities of central Chile is remarkable. These communities, year after year, revive the syncretic conditions that arise from sowing and harvesting, the use of both ancestral and modern tools, the systems of exchange, such as barter and trading, and the specific religious and social ceremonials that identifies each location and whose origins go back hundred of years in the past.

Materials and Methods

Previously published information was used, principally the 2018 'Boletín del Museo Nacional de Historia Natural' 67(1): 113–142, "Tiempo, cultura y significado en los modos de uso de *Chenopodium quinoa*" [Time, culture and meaning in the uses of *Chenopodium quinoa*], by M. Teresa Planella, Victoria Castro, Alejandra Vidal and M. Blanca Tagle, an extract of which refers to central Chile.

To obtain evidence of quinoa at the sites mentioned in this article, we used the flotation method on sediments extracted from sample columns and selected sectors of specific interest (hearths, middens, stores); the macroremains recovered were then analyzed and identified. Furthermore, multiple analyses of residues adhering to the sides and other parts of ceramic pots, bedrock mortars, etc. (microremains) were performed, prioritizing the recovery of the full set of microfossils (Coil *et al.*, 2003).

Pre-Hispanic data on quinoa in central Chile

Central Chile is considered the territory extending from the Choapa River in the north (31° 50'S) to the Maule River in the south (35° 40'S). Records

from different paleoecological systems indicate that this territory has been populated for the last 12,000–13,000 years. Archaeological investigations, together with paleoclimatic, geomorphological, pollen, paleofauna and archaeobotanical studies, have made it possible to determine the coexistence of human groups with extinct species of fauna, especially herbivores, from the end of the Pleistocene (Núñez *et al.*, 1994; Jackson *et al.*, 2007) and with plant species from different local environments that show signs of human activity (Heusser, 1990; Gajardo, 1994; Valero-Garcés *et al.*, 2005; Maldonado, 2007; Planella and McRostie, 2008; Maldonado, 2010). The presence of *Chenopodiaceae* in plant contexts deposited during warm, dry climatic episodes is also evident in sediment samples from pollen columns in strata from the early, middle and late Holocene, dating from 11,000-9000 years BP onwards (Heusser, 1983; Villagrán and Varela, 1990; Rojas, 1991; Villa-Martínez *et al.*, 2003; Maldonado and Villagrán, 2002, 2006). Climate fluctuations allowed the development of *Chenopodiaceae-Amaranthaceae*; this finding suggests that they were available in the herbaceous flora for gathering by human groups in the region. One example of this is the high proportion of halophytes in pollen samples from the Ñague site (32° S). Together with the first development phase of the forest in this part of the semiarid north (4400–1800 years BP), this result coincides with the period of more permanent human settlements in the area (Maldonado and Villagrán, 2002).

Hunter-gatherer groups from 3000 to 300 BC can also be linked to the use of *Chenopodiaceae* in more ways than gathering from the natural environment. Evidence of this has been recovered through archaeobotanical work with the finding of a set of carbonized seeds of the genus *Chenopodium* with morphological attributes indicating incipient human intervention, in the middens and hearths of two sites in the Andes Mountain Range. The sites, at altitudes of 2450 and 2070 masl, were occupied at the end of the Archaic period (Archaic IV *sensu* Cornejo *et al.*, 1998),

with datings of 3250 to 2980 cal BP (1250 to 980 BC) in Las Morrenas 1 and 3460–3340 BP (1460 to 1340 BC) in El Plomo (Cornejo *et al.*, 1998; Planella *et al.*, 2005; Planella *et al.*, 2011; Planella *et al.*, 2014a). These findings have enabled us to identify the presence of the first cultigens associated with hunter-gatherers in central Chile and to verify, through the large number of carbonized caryopses, the availability of *Poaceae* used by these groups in the high Andean ecosystem as well as woody resources such as *Discaria chacaye* (G. Don) Tortosa, which provides excellent prolonged combustion.

The proximity to the plant world of these hunter groups along their movement routes in search of animals (*Camelidae* and others) and raw materials for their tools, must necessarily have translated into a profound knowledge of plant life cycles, their virtues, their use for different purposes and in various aspects of daily life, and the content of any dangerous substances that lead to toxicity. The availability of a variety of species provided food resources that complemented the hunter groups' access to the meat of guanaco or other wild fauna. At the same time, conditions of a social, ritual or symbolic order may have stimulated knowledge and the incorporation and/or management of other species with greater nutritional value. This is the case for a variety of early handled quinoa (*Chenopodium* sp. aff. *Chenopodium quinoa*) (Planella *et al.*, 2014a; Planella *et al.*, 2014b; López *et al.*, 2015). This evidence comes from sites located in the upper Maipo valley (Las Morrenas 1 and El Plomo), close to a mountain pass that would allow integration between the eastern and western slopes of the Andes within mobility circuits in which whole family groups might participate (Cornejo and Sanhueza, 2011) in the spring/summer thaw periods. Above an altitude of 2000 m in the Andes mountains, there are prolonged and abundant snowfalls and frosts from autumn to spring with subzero temperatures, hindering access from the valleys to these sites and over to the eastern slope. These conditions also limit the possibility of crop cultivation in this

environment, where the natural vegetation is of the “Andean floor” type, with a predominance of long-lived woody or cushion plants (Gajardo, 1994). Nevertheless, it is important to note that the El Plomo site is located on a broad area of a high-Andean marsh (UTM 401000 N 6227000 E), offering favourable conditions for the preservation of organic material in a peat-like black sediment, where the findings were made. Included in this sediment, similar number of carbonized and dry specimens of *Chenopodium* sp. aff. *Chenopodium quinoa* were found, allowing us to consider the possibility of incipient attempts at cultivation (Planella *et al.*, 2011), which is favored by the characteristics of the soil type. In the absence of ceramic pots, archaic hunters had to consume the fruits or other organs of *Chenopodium* after toasting them on hot stones, ashes or leather; the small size of the grains and low weight of a significant quantity of them would have made them easy to transport from place to place in bags made of leather or plant material, while the saponin content in the pericarp would have helped prevent rodent attacks in possible storage spaces (Planella *et al.*, 2005). The carbonized fruits present diameters of up to 1.4 mm on both sites and have a perimeter strip with a truncated/rounded edge. Unlike Las Morrenas 1, where all the fruits are carbonized (n=290), there are similar quantities of carbonized (n=110) and dried specimens (n=99) in El Plomo. The dried fruits (Figure 1), which are exceptional in the region, present no radicles and are no larger than 0.8 to 1 mm in diameter (Planella *et al.*, 2011). Under sweep electron microscopy (SEM), all these specimens present a marked prominence or “beak” on the embryo. This morphological feature, not previously noted in our studies, is discussed in Planella *et al.* (2011). The repeated appearance of a pronounced beak in this case must be treated with caution, as the seed pericarp is absent, which may affect the observation made (Bruno, 2006). On charred specimens of *Chenopodium* sp. aff. *Ch. quinoa*, the beak is difficult to distinguish, since in most of these specimens, the radicle has become detached from the rest of the seed or the

end of the seed is swollen or protrudes, presumably due to carbonization.

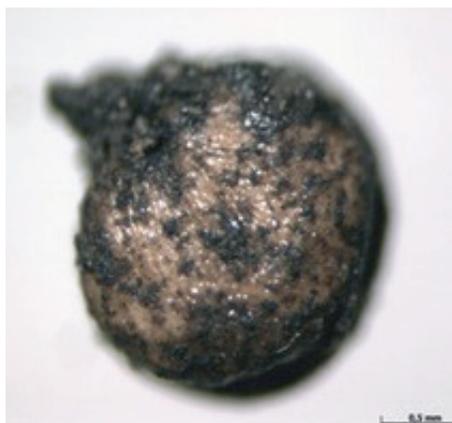


Figure 1. Specimen of dried Ch. quinoa seed from the El Plomo site.

In the central valley and coastal sites, among the Initial Ceramic-Using Communities (300 BC - 200 AD) the presence of Chenopodiaceae has also been revealed through archaeobotany in analyses of macro and microremains. Although few of these sites have been investigated, vestiges have been recorded in the Lenka Franulic site among residues (microfossils) adhering to a stone mortar; in the lower stratigraphic layer of the Lonquén site (85 ± 200 BC, 105 ± 200 AD) (Sanhueza *et al.*, 2003); in occupations associated with bedrock mortars (Los Valles stream, 150 to 60 BC) (Planella *et al.*, 2017, 2018a); in human burials from Phase 1 of the El Mercurio site (120 ± 180 AD, 150 ± 150 AD) (Falabella, 2000a); in the oldest levels of the La Granja site (110 to 550 cal. AD) (Planella and Tagle, 2004); and in somewhat later dates in the Estación Quinta Normal site (Belmar *et al.*, 2010). Quinoa may have contributed to the achievement of a balanced nutrition by a population that was changing its eating habits. The mean $\delta^{15}\text{N}$ value (4.5‰) obtained from seven individuals indicates a low consumption of meat, an important protein source for hunter-gatherers of the Archaic period. This more “vegetarian” diet in these communities may have been favored by the high protein contribution and diversity of high-quality essential amino acids found in quinoa as a foodstuff. The

values for stable carbon isotopes (mean $\delta^{13}\text{C}_{\text{col}}$ -20.1‰ and $\delta^{13}\text{C}_{\text{ap}}$ -12.2‰) are consistent with a diet based on C3 resources, which include quinoa and wild fruits (Falabella *et al.*, 2007).

From *ca.* 200 AD, the so-called Bato groups are also present in central Chile. Their early dates overlap with those of the Initial Ceramic-Using Communities, with whom they share some cultural similarities (*e.g.*, use of *tembetá* and lug handles), and their presence extends to the end of the Early Ceramic period (1200 AD). They continued their hunting and gathering activities and the lithic traditions of the Archaic period and a high mobility within their territories, both along the coast and in the inland valleys (Sanhueza *et al.*, 2003). Quinoa is recorded in coastal sites from the south bank of the Aconcagua River, *e.g.*, El Membrillar 2 and ENAP 3 (140 to 540 AD) (Belmar and Quiroz, 2009; Venegas *et al.*, 2011) to the south bank of the Maipo River, at Las Brisas 3 (Rivas and González, 2008). The archaeobotanical records of the sites studied show that the diet of these groups was largely based on wild resources with seasonal variations in availability, while cultivated products formed just one more ingredient in the diet. Quinoa is without a doubt the most widespread of these products. *Lagenaria* sp. are represented in their pottery (Stehberg, 1976), and maize (*Zea mays* L.) appears for the first time, although it is still very scarce (Planella *et al.*, 2014b; Planella and Falabella, 2015) and not of substantial importance in the diet. The isotope values obtained from Bato individuals, both from the coast and inland areas, suggest that consumption of this resource was still scarce and irregular. In coastal areas (9 individuals), considering that part of the food came from marine resources, the $\delta^{13}\text{C}_{\text{col}}$ -18.0‰ \pm 1.0 and $\delta^{13}\text{C}_{\text{ap}}$ -10.9‰ \pm 1.5 values reflect the practically zero contribution of C4 plants (Falabella *et al.*, 2007, 2008).

The Llolleo groups (400 AD to 1200 AD), partially contemporary with the Bato and interspersed in the same spaces in central Chile, present cultural

characteristics that differ in various aspects (body ornaments, funerary practices, efficient lithic tool strategies) and in the forms and decorations used in their pottery, including anthropomorphic, zoomorphic and even phytomorphic modeled figures—in the latter case, these look like some species of gourd or *Cucurbita* sp. (Falabella and Sanhueza, 2005-2006). An important change that took place in these groups is that they clearly practiced horticulture. Archaeobotanical analyses have revealed the use of a set of cultigens, which included *Zea mays* L. (*mazorca* or *marlo* 3 to 5 cm long with eight rows of grains), *Phaseolus* sp., *Lagenaria* sp. and *Cucurbita* sp. as well as *Chenopodium quinoa* (Planella and Tagle, 2004); the latter is more ubiquitous than in the sites of the groups Bato mentioned above. The carbonization state of the archaeological quinoa grains does not allow us to assess whether the perisperm is translucent, as in the “sea level” ecotype (Tapia, 1979) or coastal quinoa (*quinwa* or *dahue* in the Mapuche language), which is still cultivated in the valleys of the Coastal Range in the O’Higgins and El Maule Regions south of Santiago, between 34° and 40°S. The perisperm of the quinoa cultivated in the Altiplano is opaque (Tagle and Planella, 2002). The maximum diameter of these grains is no more than 1.5 to 1.8 mm in records from different sites in central Chile (Belmar *et al.*, 2010; Planella *et al.*, 2014b) (Figure 2a).

The isotope signals in the individuals analyzed, from the coast and inland, confirm maize consumption (Falabella *et al.*, 2008). Exploitation

of this greater diversity, complemented by wild species and possibly the manipulation of *Madia* sp. and *Poaceae*, as suggested by the attributes of the macroremains of these taxa, enables us to recognize, first of all, that the use of pots for cooking made it possible to sufficiently cook leguminous plant products and other foodstuffs to facilitate digestion and avoid toxicity (Falabella and Planella, 1988–89), and second, that value was attached to the occupation of spaces with a larger water supply and to establishing more permanent settlement systems driven by the need to look after the sown crops and harvest the produce (Falabella *et al.*, 2016). In this context, events for social congregation—and the use of pipes in smoking—assume a great importance (Falabella *et al.*, 2001; Planella *et al.*, 2018b). This practice had been started by the earlier communities mentioned, revealing the availability of *Nicotiana* sp. and other plants with psychoactive properties present in the region’s ecosystems (Planella *et al.*, 2012) and their important role in activities of ritual or other significance (Planella, 2005; Belmar *et al.*, 2016; Planella *et al.*, 2016).

In the so-called Aconcagua culture, established between the Aconcagua and Cachapoal rivers (32° 20’ to 34° 50’S) in the Late Intermediate period (1000/1200 to 1450 AD), we find profound cultural and social changes manifested in different aspects of the Aconcagua groups customs, from the types of ceramic pots that they produced to the locations and mortuary particularities of their cemeteries, which were located away from dwelling



Figure 2. a) Carbonized *Ch. quinoa* seed from the La Granja site (diameter 1.8 mm); and b) Llolleo jar with anthropomorphic modeled figures, central Chile.



Figure 3. a) Dishes or pucos of the Aconcagua culture (Source: Pavlovic et al., 2003); and b) *Ch. quinoa* with a diameter of 2 mm.

areas (Massone *et al.* 1998). It is of interest that in general, the Aconcagua groups continued to use many sites that had been occupied by previous populations, perhaps because of the strategic efficiency of these sites for increasing the scale of their horticultural activities. We also note some modifications in their diet, in the elements used in commensalism such as plates or dishes for handing around food, in the storage of the excess harvest in large jars such as at the Ruinas de Chada site (Planella and Stehberg, 1997), and in the differential characteristics presented by certain cultigens, specifically in maize and quinoa. The morphometric study of carbonized quinoa grains ($n=88$) from the Tejas Verdes 1 site, for example, which were recovered from an Aconcagua settlement at the mouth of the Maipo River, reflects an increase in size to 2 mm (Figure 3), contrasting with findings from the Archaic and Early Ceramic periods when quinoa grains in this region grew no larger than 1.5 to 1.8 mm in mean diameter (Planella, 2005). It may be that these people started to experiment with new management stages or degrees and/or to use other varieties of *Ch. quinoa*, which we also find in the case of maize (Planella *et al.*, 2014) and *Phaseolus* sp. at the Las Pataguas site in Valdivia de Paine (Belmar and Quiroz, 2003) and Cueva Cerrillos in the precordillera of El Pangal (Falabella *et al.*, 2010). Grinding stones or mortars show very large active surfaces to help with the trituration or processing of products, such as maize and quinoa, in larger quantities for consumption, either as flour or as beverage (*chicha*). Aconcagua jars also have

a larger capacity (Falabella, 2000b). Stable isotope analysis confirms the increased consumption of C4 plants such as maize, and it is interesting to note that the mean carbon isotope values are found to be more positive in male individuals, suggesting that they in particular had a higher intake of *chicha* (Falabella *et al.*, 2008). Quinoa is more ubiquitous in the sites of this period and is associated with maize, beans and wild flora, suggesting a fairly generalized consumption in the population.

Around 1440-1450 AD, the territories of central Chile started to be occupied and administered by foreign intruders, the Inkas, who brought with them the stamp of the Tawantinsuyu in a series of innovations from cultural, social and ritual aspects and in economic organization and architecture. Agricultural tasks and irrigation canals were reoriented and expanded using the local workforce (Stehberg, 1976), and the storage of produce was systematized in response to the new administration and feeding needs (Planella and Stehberg, 1997; Rossen *et al.*, 2010). Archaeological investigations have shown the presence of quinoa in the residual contents of aríbalo jars and pucos (Belmar and Quiroz, 2007) and in different types of contexts: settlements, fortresses, *kollcas* or stores (Planella *et al.*, 1993; Rossen *et al.*, 2010) (Figure 4a), ritual sites (Pavlovic *et al.*, 2012; Quiroz and Belmar, 2013), and tambos (Garceau *et al.*, 2010). Introduced products were also found, such as aji (*Capsicum* sp.), some tubers (*e.g.*, *Helianthus* sp.) and chuño (potato flour);

these products form a sphere of syncretism in the diet of the population, which reflects the flexibility of the domination mechanisms exercised by the Inkas in frontier situations (Rossen *et al.*, 2010). At the same time, Quechua linguistic terms were incorporated into the local ethno-taxonomic nomenclature, including plants and crops such as *quinua*, although in rural parts of the regions of central and southern Chile, the Mapuche word *dahue* or *dawe* is still used to this day (Mösbach, 1992; Planella *et al.*, 2010), with modifications such as *quinhua* or *quinwa* in valleys and coastal locations (Tagle and Planella, 2002).

Results

Quinoa, apart from the high protein content of its grains, presents great adaptability to different environments and soil types and requires low investment in maintenance; these characteristics would have been advantageous from an early stage and during a long experimentation period as a diet option for groups characterized by high mobility for the purposes of hunting, gathering and searching for raw stone materials for tools and other artifacts. Given the available data, we propose that by the end of the Archaic period (3000 to 300 BC), these hunter-gatherers groups were among those who started the manipulation/domestication of *Chenopodiaceae* in central Chile. The example of the central region suggests that this process was not inhibited by the gradual adoption of maize and other crops by pottery-

users groups; these crops required greater access to water, seasonal rains, and a longer stay in the settlements by the incipient and later consolidated horticultural communities of the Early Ceramic period like Llolleo groups. The crops must be cared for and subsequently harvested and stored for consumption, retaining seeds for sowing to start the productive cycle afresh each year. In the Bato and Llolleo groups, we initially find a great dispersion of the dwelling sites, representing—with different degrees of formalization—this economic and social change (Sanhueza *et al.*, 2007). The incorporation of a set of crop species, combined with the continued consumption of quinoa and terrestrial animals and marine fauna, adds up to an efficient nutritional balance that supported population growth. Moreover, the variability of everyday and/or ritual materials found for the Bato and Llolleo groups, and their modes of social organization indicate increasing levels of complexity, which is distinct from that of their predecessors of the Archaic period.

Among the Aconcagua groups, a new aspect of quinoa use appears: the attempt to obtain an improved phenotype with larger grains in the panicle, with some samples presenting mean grain diameters of 2 mm. This progress is also reflected in the incorporation of new varieties of maize. Quinoa also becomes more ubiquitous, with larger quantities found in archaeological sites, reflecting its more constant, generalized use by the population. Nevertheless, its economic and social impact was smaller than that of maize,



Figure 4. a) *Kollca* (storage system) of the Late period (Inka); and b) an aribalo jar (Source: MCHAP 2009-2010).

according to the isotope studies of human bones, since we find differentiated access to consumption of *Zea mays* between males and females. The diversity of food resources increases with the introduction of other species and products of plant origin brought to the region by the Inkas. This foreign invasion is a time of syncretisms in which both local and introduced products are used, reflecting flexible mechanisms in the process of territorial domination; it is also another step in the intensification of production and reflects the need to store produce in large jars or inside *kollcas*, in which the remains of quinoa are also clearly present.

Conclusions

From the earliest datings of the hunter-gatherer sites of the Archaic IV period (3000 to 300 BC) in central Chile in the high Andes section of the Maipo valley and of the Early Pottery sites in the central valley, coast and precordillera, *Chenopodium* sp. aff. *Ch. quinoa* presents the common feature of a grain size smaller than that of Altiplano quinoa. A majority of the pre-Hispanic records of the south-central region show the same findings, except for a few specimens recovered from sites ascribed to human occupations by later groups at El Vergel in southern Chile (Massone *et al.*, 2007; Roa *et al.*, 2015) and from Aconcagua group sites in central Chile (1000–1440 AD), where some diameters of 2 mm are recorded. A discussion of other attributes, such as surface color, presence of a translucent or opaque perisperm, type of ornamentation and thickness of the testa, and the presence of a radicle, is limited by the state of carbonization in which the specimens recovered from archaeological digs are generally found. One exception is the case of the grains found at the El Plomo site in the Andes of central Chile, which were preserved in a dried state that allowed the observation of their ivory color (thus excluding assignation to the black-seeded variety) and their truncated-rounded margin (which distinguishes them from the biconvex margin in wild species);

however, the thickness of the seed testa could not be determined in the series analyzed. Despite these limitations, we propose with certainty that quinoa of irregular sizes, ranging between 1 mm and 1.5 to 1.8 mm in diameter (i.e., smaller than 2 mm), was widely dispersed throughout the territory in question, along the sites occupied by pre-Hispanic inhabitants, prior to the introduction of new varieties or the probable local manipulation processes.

The archaeological and archaeobotanical data presented in this work were unknown when Wilson (1988) suggested that *quinwa* or *dahue*, considered the “sea level” ecotype (Tapia, 1979; Bertero, 2007) that still exists today in south-central Chile, constituted an archaic form of quinoa derived in earlier periods from ancestors that had been subjected to significant differentiation in the Andean highlands. This ecotype presents relictual attributes or archaic features associated with wild varieties, such as the glomerulate inflorescence of its panicles and the translucent perisperm of the fruits, which distinguish it from high Andean quinoa (Wilson, 1988) (Figure 5). Furthermore, it is particularly adapted to low altitudes between the sea level and 300 masl, and these characteristics, together with molecular studies of the germplasm, show that these sea level materials form a separate group from the high Andean specimens (Bertero, 2007). As mentioned above, the great antiquity of the availability of *Chenopodiaceae/Amaranthaceae*, their wide distribution in different ecosystems in central Chile, and their proven use among early hunter-gatherer groups and later horticultural communities, support the possibility of an independent local manipulation/domestication process in south-central Chile. The substrate for this process was therefore an important plant resource in periods before maize was known and cultivated in this region and further south. More research is required in this area, in particular to obtain better results from DNA analyses of ancient specimens, which are to this date inadequate.

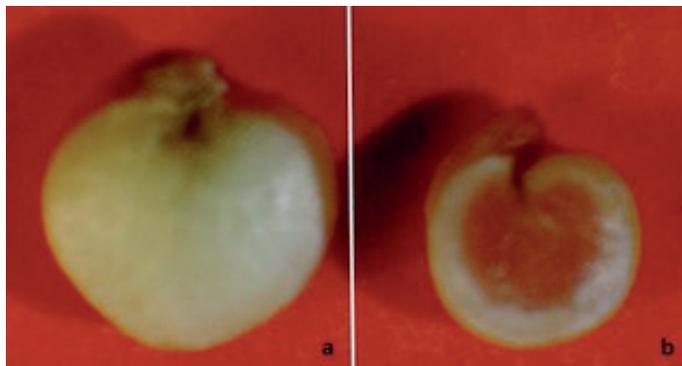


Figure 5. a). Altiplano quinoa with opaque perisperm; and b) “sea level” ecotype of quinoa with translucent perisperm.

The ubiquity of quinoa follows from its polysemous nature, since its presence forms a part of different use contexts, both in pre-Hispanic groups and contemporary communities. This ubiquity gives it added value, with wide variations in the economic, social and ritual significance that can be expressed by a society. Ethnographic studies in rural communities of northern and central Chile also attest to the continuity of its use and the variety of cultiva-

tion and consumption systems that have been handed down over generations but are open to adopting changes that will guarantee its survival. This continuity is shown by the festive and ritual manifestations that accompany the sowing and harvesting of quinoa; these manifestations remain an important element in the religious/folk syncretism that varies by region and locality, particularly in the communities of northern, and central-south of Chile.

Resumen

M.T. Planella. 2019. La quinua en Chile central prehispánico: aportes de la arqueología y los procesos culturales. Cien. Inv. Agr. 46(2): 69-81. Este artículo proporciona datos arqueológicos, arqueobotánicos, etnográficos y morfométricos relacionados a la presencia de *Chenopodium* y el uso de quinua en Chile central desde fechas anteriores a la era Cristiana hasta el presente, y discute la importancia de este cultígeno en el desarrollo económico y social de los distintos grupos culturales pre-Hispanos que habitaron las diferentes áreas y ecosistemas de la región. Estos antecedentes permiten acceder a los inicios y desarrollo de una larga historia de la quinua acompañando a los pueblos originarios, sus descendientes y grupos resultantes del mestizaje Hispano-indígena y que su cultivo, consumo y participación en prácticas sociales de distinta connotación, continúan vigentes en distintas comunidades rurales del Chile actual.

Palabras clave: Chile central, grupos culturales, quinua.

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