

# Plants and the Political Economy of Chavin de Huantar

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## 5. Plants and the Political Economy of Chavín de Huántar

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### 1. Introduction

The emergence of the Formative Period coincides with a moment of economic change in the ancient Andes. At this point agriculture is well established across the region and maize is a common component in food and drink traditions (Burger and van der Merwe 1990; Staller et al. 2006). However, there is incomplete evidence for staple good exchange or extensive political authority. Interregional interaction was an entrenched activity by Formative times and people were exchanging a wide variety of products (Contreras 2011; Sayre and López Aldave 2009; Sayre et al. 2015). Much of the evidence for trade comes in the form of exotic materials, which were predominately light and easy to transport. There are connections between wealth, status, and food supply for people both at the individual and group level and the agricultural, economic, and pastoral practices of the peoples of Chavín are subjects of debate (Burger and van der Merwe 1990; Lathrap 1973; Miller and Burger 1995; Rosenfeld and Sayre 2016; Sayre 2010; Stahl 1999; Valdez 2000). This is one reason why the agricultural and wealth production strategies of the people of Chavín are worth investigating.

There is specific evidence for particular economic activities. One example of a trade good is the find of bones from a cetacean or a large pinniped that were carved into ornamental pieces, presumably for priests in the temple to wear (Sayre et al. 2015). These bone pieces were stripped of all significant taxonomic or anatomic features and were carved to such a narrow width that the pieces would have looked like something constructed from wood. Yet, the bone material itself was clearly important and powerful, so much so that it was carried across the Andes to the site to be carved. This is just one case that demonstrates that the movement of these exotic goods is clear which prompts the question of whether there is evidence for the exchange of staple goods. Within this question is the issue of whether perishable goods, such as food, were being transported across great distances at this point in time.

There have been comparatively few attempts to discuss how the changing nature of food production could be brought into broader discussions of the evolution of political economies (although see Hastorf 1993). Early discussions of plant use at Chavín de Huántar tended to focus on the use of sacred plants and other plants visible in the site's iconography but there were few attempts to postulate what foods may have been staples

at the site (Lathrap 1973). This early discussion laid out one of the paradoxes of Chavín art: why is it that so much of the art depicts Amazonian plants and animals, not highland Andean flora and fauna? This question leads to questions about the trade networks of the people of ancient Chavín and to related issues about the political organization of these communities.

This aspect of the past has not been the center of much research and it has rarely been included in discussions of what cultural material or political traits mark the Early Horizon. Further, many archaeologists have turned away from the term Early Horizon and begun to consider how Chavín can be considered in the wider world of the Formative period (Sayre 2018). The Early Horizon, or Chavín Horizon, was an earlier chronological term that placed the site of Chavín de Huántar in a direct relationship with the other Horizon cultures (Rowe 1962). The Middle Horizon (Wari and Tiwanaku) and the Late Horizon (Inka) were state powers that had access to both wealth and staple finance (Costin 2016; D'Altroy et al. 1985; Earle 1997; Isbell and Schreiber 1978; Kolata and Ponce Sanginés 1992). In the Middle Horizon there is evidence that Tiwanaku imported maize from lower settlements and outposts (Hastorf et al. 2006; Wright et al. 2003). The site of Wari is situated in a maize-producing region but there is evidence that Wari sites built large storehouses to support state projects (Sillar et al. 2013) as well as cultivating state level culinary practices (Sayre et al. 2012). There is ample evidence that the Inka Empire taxed people both for their labor as well as for a portion of their agricultural products (D'Altroy and Earle 1985). The storage *qollqas* present at many Inka sites are evidence of the importance of this practice (D'Altroy 2002: 280–285). The similarities and differences in the political economies of these distinct sites and empires allow insights into life in these different time periods

There are broader debates about whether the pre-colonial Andes were ever the home of people who practiced market exchange of everyday goods (Garraty and Stark 2010; Hirth and Pillsbury 2013). This issue does recall the formalist versus substantivist debate (Chayanov 1966; Sahlins 1974; Schneider 1974) about the place of economics and domestic organization in ancient societies. There are also questions about the role that John Murra (1980) played in shaping Andeanists' perspectives on the past economic practices of people in the region. One area of agreement amongst Andeanists is that different pre-colonial economies practiced wealth or staple finance. The Inkas were known for their redistribution of staple goods and their storage of surplus foodstuffs (D'Altroy 2002). This later example is not only attested for by the historical record but is also archaeologically visible in the architectural, paleoethnobotanical, and broader archaeological record (D'Altroy and Hastorf 2001). This example of an Andean economy that stored and redistributed staple goods can serve as a model to discuss the past political economy of Chavín de Huántar.

In this discussion I am primarily interested in the role that plants played in the past economy of Chavín de Huántar. In order to consider the botanical evidence from Chavín it is also necessary to examine the architectural evidence to determine whether or not there is support for the presence of storage of staple trade goods. Macrobotanical data from various sectors of the site are examined here in conjunction with discussions of

their architecture and the chronologies of these different sectors. The primary focus here is on the botanical evidence gathered from across the site.

Early researchers at the site did not significantly evaluate the hypothesis that the agricultural system of Chavín may have included lowland plants. This project was the first to systematically analyze plant remains from across the site. The macrobotanical remains are presented from all the sectors of the site. The different sectors of the site are contextually defined below but there are a wide variety of archaeological contexts analyzed. I include samples from the ceremonial center, from outside of the monument, and from domestic areas across the Mosna Rover from the monument. There is a focus on La Banda domestic sector as that is where I conducted most of my fieldwork. This is also the region that would most likely contain architectural and plant evidence for surplus production or storage facilities as it is located outside of the ceremonial center, and it is also the sector with the most evidence for extensive domestic settlements. The lack of overt storage facilities, in conjunction with evidence for the trade of exotic goods and the production of ceremonial material leads to valuable insights into the nature of Chavín's political economy in the Formative Period.

## **2. Chavín Site Sectors**

The long history of excavations at the site of Chavín de Huántar, Peru is well documented (Burger 1992; Contreras 2007; Lumbreras 1989; Tello 1960). Daniel Contreras (2007: 14) documented the precise locations of previous excavations at Chavín. Much of the previous research focused on the ceremonial core of the monument (Lumbreras 1970; Rowe 1962). The other foci of research were the west field (Contreras 2007), the area underneath the modern town to the north of the monument (Burger 1992), and the settlements of Pojoc and Waman Wain located on rocky outcrops away from the masking effects of colluvial soil flow (Burger 1992).

The different research projects at Chavín have focused on different theoretical interests, ranging from the role of religion in temple life to the nature of political authority at the site. The majority of these early projects focused on the monumental center of the site, but the work conducted over the past decade has begun to formally engage in comparative analysis of life during Chavín times across a variety of site sectors. Thus, this article presents evidence from excavations that were conducted in a wide variety of site sectors. Here I analyze data from the Area Sur, Wacheqsa sector, the Plaza Mayor, the East Atrium, the Rocas Gallery (to a limited extent), the West Field, and La Banda sector (Figure 5-1). The architecture and temporality of these sectors are explained prior to the presentation of the data from these sectors. The research projects that I have led in La Banda sector of the site focus on daily life and production during temple times and thus they are the focus of more detailed discussion.

### **2.1 Sediment Collection Strategy for Flotation Samples**

In the 2005 Chavín field season I collected a sediment sample from every level of every unit excavated. This procedure is known as blanket sampling (Hastorf and Popper 1988).

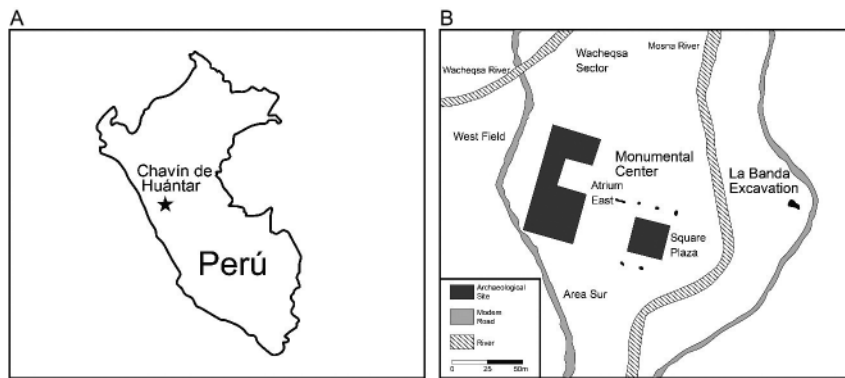


Figure 5-1 Map of Chavín de Huántar in Peru (A) and site sectors (B) (produced by Matthew Sayre)

This was done to ensure that we obtained an accurate representation of botanical deposition events.

All paleoethnobotanical analysis of the 216 macrobotanical samples was conducted at the UC Berkeley Paleoethnobotanical Laboratory. A dozen undergraduate research assistants assisted me in the laboratory. Undergraduate students assisted in the sorting of samples, but the author completed all final identifications with occasional input by Bill Whitehead, Alexandre Chevalier, and Maria Bruno. Specimens were identified using a Leica Wild M-11 Stereoscopic Microscope with a 6–50x magnification range. Fiber optic illuminators provided illumination. The following is a description of the process used in the laboratory to separate and quantify the macrobotanical remains present in the samples.

## 2.2 Qualitative and Quantitative Analysis

The macrobotanical data from collected flotation samples are presented below. While the data are not robust (there were not enough finds per sample) enough for multivariate analysis it is appropriate to analyze the samples using more straightforward methods such as density, ubiquity, and relative taxa percentages. Additionally, there are clear examples of outlying samples, and these samples are analyzed in conjunction with other lines of data to ascertain the possible reasons for sharply differential patterning in samples. One of the clearest instances of outliers is in the presence/absence of large quantities of wood in samples. There are orders of magnitude differences between different samples in the distinct sectors of the site.

There were 216 macrobotanical samples analyzed in this analysis. They come from six distinct sectors of the site (Figure 5-2). The number and quality of the samples varied greatly across the sectors. There were more samples analyzed from La Banda sector as this was the central focus of my excavations. All the other samples come from sectors excavated under the lead of other archeologists. The West Field and Area Sur were excavated under the direction of Dr. Daniel Contreras (2007). Dr. Christian Mesía Montenegro's (2007) team excavated the Wacheqsa sector. All the other sectors were

excavated under the umbrella of the Stanford Archaeology Project at Chavín under the direction of Dr. John Rick.

The samples were greatly impacted by differing taphonomic factors as well as by cultural and natural transforms (Schiffer 1987) and the samples from later periods were generally better preserved (Tables 1 and 2). The Atrium samples came from a more recent period, Huaraz and Recuay, and had notably better preservation. The macrobotanical samples analyzed here come from six sectors of the site. Each sectors' results will be presented following their order in Table 2, the singular sample from the Rocas Gallery was not included in the table but it will be briefly discussed below. Finally, I will compare the sectors across the site to place La Banda in context.

### 2.3 Wacheqsa

The Wacheqsa sector is located outside of the main temple area, but it is not separated from the temple by any of the dividing rivers. It does not appear to be a locus of monumental construction, yet it was presumably a sector where large amounts of material were deposited during temple times (Mesía Montenegro 2014). The macrobotanical record is 96% wood, which is a similar pattern to that encountered in other sectors. The sector is currently the site of many Eucalyptus plantings, which would not have been present in temple times but may be emblematic of the fact that this riverside location is a natural area for tree production. Most probably the wood brought into this portion of the site came from upslope areas.

The samples from this sector were selectively collected (Figures 5-2 and 5-3). There were few samples from this sector, so all of the samples were floated. The floated samples had an average volume of 5L. The total density with wood reveals several patterns. The remains from the Wacheqsa sector are over three times as dense as the

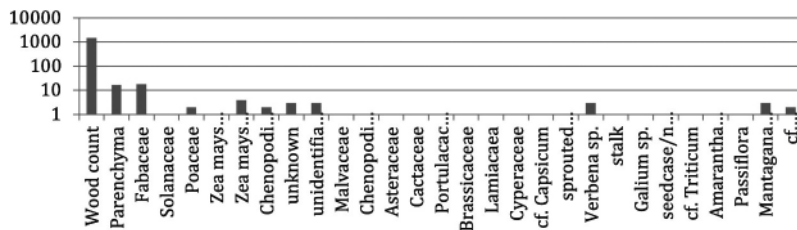


Figure 5-2 Wacheqsa macrobotanical remains with wood (N=7) (produced by Matthew Sayre)

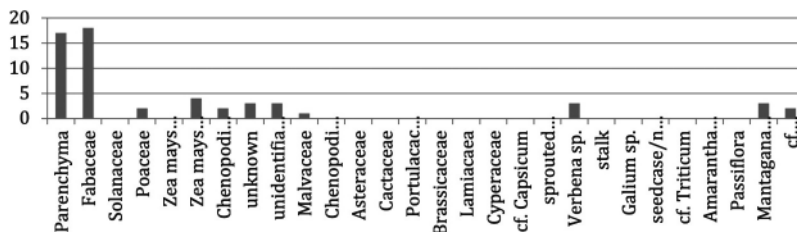


Figure 5-3 Wacheqsa macrobotanical remains without wood (N=7) (produced by Matthew Sayre)

remains recovered from the second densest sector, the Atrium East. The selective collection of these samples makes it difficult to compare these samples to those gathered in other sectors, but it does lead to the conclusion that it would be worth performing greater Paleoethnobotanical research in the Wacheqsa sector as it is possible that this is a sector where a great deal of remains from activities in the main temple were deposited.

The seeds recovered in these samples are more diverse than seeds recovered in other sectors of the site. The large number of beans found could indicate that this sector exhibited different food preparation or storage practices than those encountered in other sectors of the site. In addition, the possible recovery of squash seeds revealed that this portion of the site contained preserved remains of larger seed remains. These larger seeds may not have been preserved in more domestic areas of the site where there would have presumably been greater movement of people and animals throughout the day.

### 2.4 Atrium East

The material recovered in the atrium sector is from samples that date almost entirely to post-temple periods. This area is in the approach to the circular plaza, and it was also occupied in post-temple times. These settlements are less formal than the earlier constructions that occurred during temple times. The depositional history is the most likely reason that the samples recovered in this sector exhibit greater diversity and greater numbers of recovered remains. However, it should be noted that the relative percentage of non-wood remains does not significantly deviate from the patterns found in other sectors of the site.

The samples from the Atrium are 94% wood (Figures 5-4 and 5-5). This result

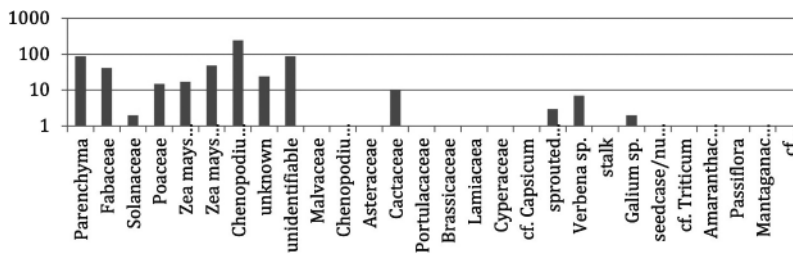


Figure 5-4 Atrium East macrobotanical remains without wood (N=57) (produced by Matthew Sayre)

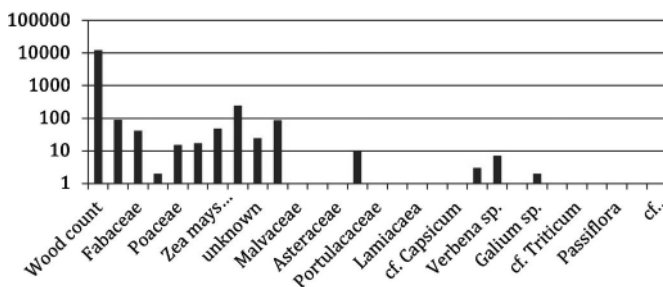


Figure 5-5 Atrium East macrobotanical remains with wood (N=57) (produced by Matthew Sayre)

indicates that there was no significant deforestation that occurred during and after the Chavín times. While the temple period was presumably a time of increased resource use, as compared to post-temple times, it does not appear that the constructors of the temple harvested all the easily accessible wood. Further refinement of the chronology of this portion of the site would enable us to further analyze the transition from temple to post-temple occupations not only in terms of resource use but also in terms of food production and practice.

## 2.5 Area Sur

There were four samples collected from this sector (Figures 5-6 and 5-7). The small sample size in this sector limits the possibility for solid quantitative analysis. This sector appears to date to the Black and White Period of temple development. As such, the results are informative for analyzing general questions about subsistence and agricultural practice during temple times. The presence of a bean in these samples is interesting as they rarely preserve in macrobotanical samples, presumably because their relatively large size would make them easier to notice if they came within reach of a fire and a person or animal would have retrieved them.

In this instance we can also see that wood dominates the samples, although by a lesser overall percentage (62%) than in other sectors. The sample size from this sector is too small to make implications for the entire sector. The results from this sector further refine the contention that wood was prevalent across the site and was the primary means of providing warmth and cooking heat.

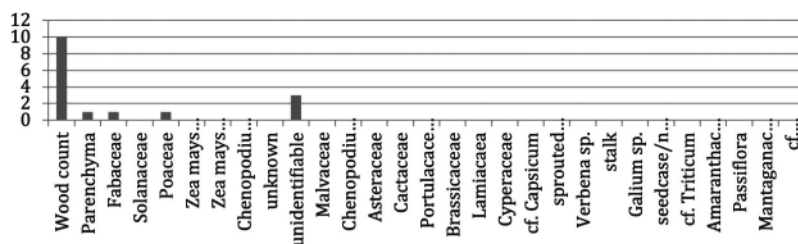


Figure 5-6 Area Sur macrobotanical remains with wood (N=4) (produced by Matthew Sayre)

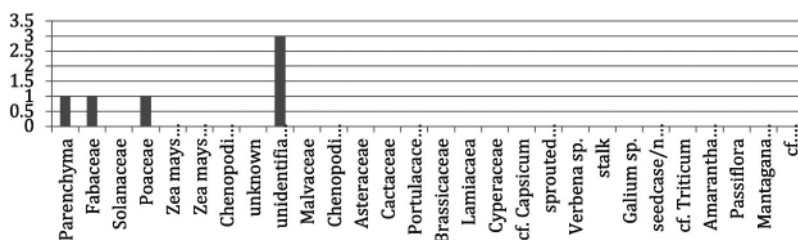


Figure 5-7 Area Sur macrobotanical remains without wood (N=4) (produced by Matthew Sayre)



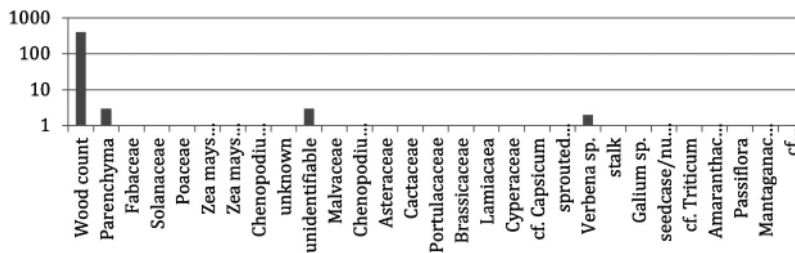


Figure 5-8 Plaza Mayor macrobotanical remains with wood (N=6) (produced by Matthew Sayre)

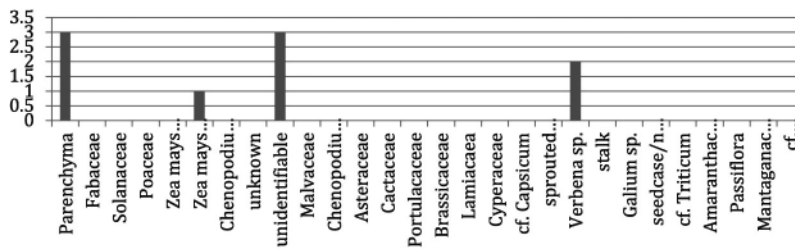


Figure 5-9 Plaza Mayor macrobotanical remains without wood (N=6) (produced by Matthew Sayre)

## 2.6 Plaza Mayor

The Plaza Mayor samples were the most problematic samples to analyze in terms of their archaeological history. This sector has undergone significant architectural transformations both during and after temple times. While taphonomic factors make interpretation more challenging the samples from this sector still fit into the broader patterns that exist across the site. In this instance 98% of the macrobotanical remains are wood and the remaining materials recovered are typical botanical remains for the site (Figures 5-8 and 5-9). The maize cupule does indicate that food may have been consumed in the temple area while building the main temple, but there is some variability in the dating of this sector, so it is possible that this remain dates to a post-temple period. Direct dating of this macroremain would resolve this issue, however it is known that the Plaza Mayor was in use during temple and post-temple times. The parenchyma remains may also indicate that food was consumed on site during construction events, however further dating of these samples is needed to ascertain whether this claim is valid.

## 2.7 Rocas

This area was only lightly excavated as the central goal of this research was to define the extent of the canal and determine the stability of the roof. There were remains washed into the canal so the presence of chenopodium here may not be indicative of food directly consumed in the canal (Figure 5-10).

## 2.8 West Field

The West Field is a sector that primarily dates to the Black and White Period of the

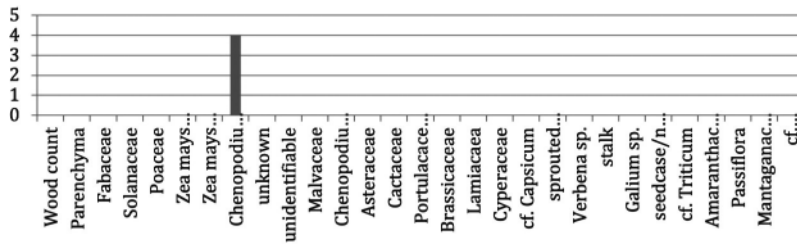


Figure 5-10 Rocas Gallery macrobotanical remains (N = 1) (produced by Matthew Sayre)

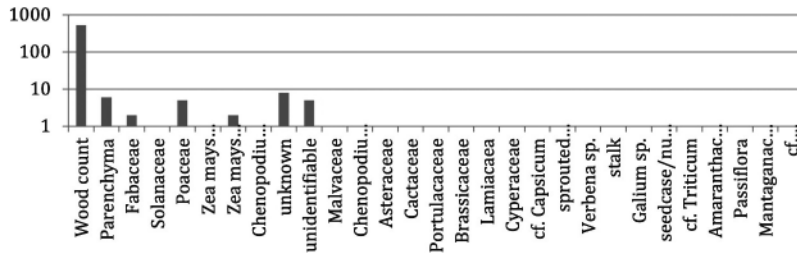


Figure 5-11 West Field macrobotanical remains with wood (N = 33) (produced by Matthew Sayre)

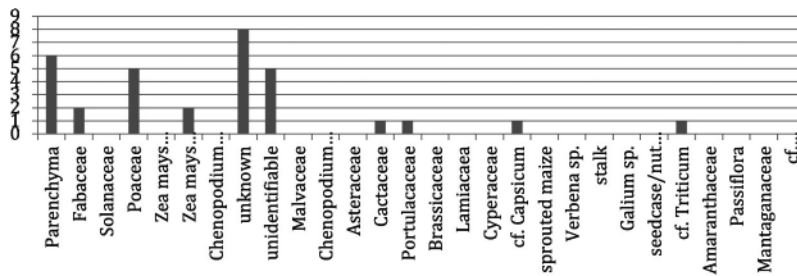


Figure 5-12 West Field macrobotanical remains without wood (N = 33) (produced by Matthew Sayre)

temple dating to approximately 800–500/400 BCE (Rick et al. 2010: 116). The samples from this sector are 94% wood and reinforce the defining pattern of samples from the site. After removing wood from the samples, the most prominent remains are parenchyma, grass seeds, and unknown/unidentifiable.

The samples from this sector produced two maize cupules, a possible indicator of differential patterning across the site (Figures 5-11 and 5-12). After removing the wood samples from the analysis cupules end up representing 6% of the samples, a large size for Chavín excavations where macrobotanical remains of maize are rare. The cactus present in this sample does not appear to be from the San Pedro cactus.

## 2.9 La Banda

In La Banda sector 97% of the recovered remains are wood (Figures 5-13 and 5-14). Many of the samples did not contain any identifiable remains other than wood. As shown

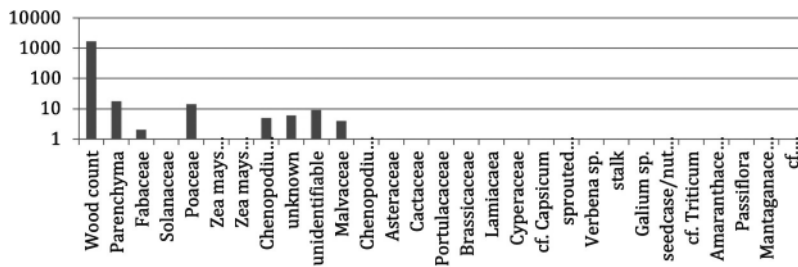


Figure 5-13 La Banda macrobotanical remains with wood (N=106) (produced by Matthew Sayre)

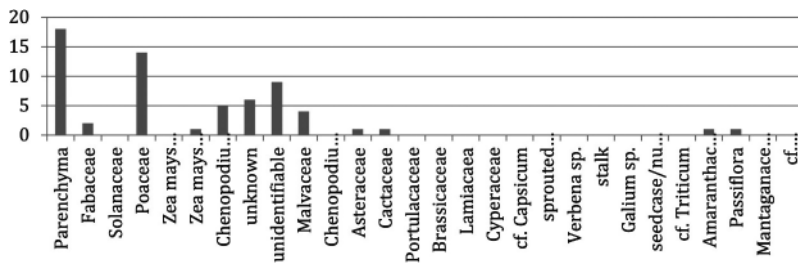


Figure 5-14 La Banda macrobotanical remains without wood (N=106) (produced by Matthew Sayre)

above, this dominance of wood in the material record is mirrored across the entire site. What does stand out from the non-wood remains is that this sector of the site had a typical highland diet, most likely produced in the fields that surround the settlement. The quinoa, parenchyma, and other remains are all from local plants. There is very limited evidence for *tarwi* (*Lupinus mutabilis*), *oca* (*Oxalis tuberosa*), *ullucu* (*Ullucus tuberosus*), *mashua* (*Tropaeolum tuberosum*), and *yuca* (*Manihot esculenta*). These plants will likely be detected in starch grain records. The lone representation of a maize cupule is corroborated by the macrobotanical record from other sectors, which indicates that maize was consumed at the site.

These remains of locally grown crops reinforce the interpretation that this sector was part of a domestic settlement. However, it was not a uniform domestic sector but an area with varying purposes. The sector maps are divided into major categories of ADs (Architectural Division) and ASDs (Architectural Sub-Division). There were portions of the sector excavated in 2005 that appeared to be dedicated to ritual goods production, such as ASD 7.

The range and variability of plant taxa recovered in La Banda were small (Figure 5-14). The two most common non-wood taxa were parenchyma and Poaceae (Grass Family). Parenchyma is the storage tissue from the interior of a tuber or another underground storage organ. In the central Andes these remains are most likely from potatoes (*Solanum* sp.) or *oca* (*Oxalis tuberosa*). The grass seeds could have arrived at the site as food or as weeds. The remains recovered here were like those found in the West Field, but it is different from the samples from Atrium East and sectors with small numbers of samples analyzed.

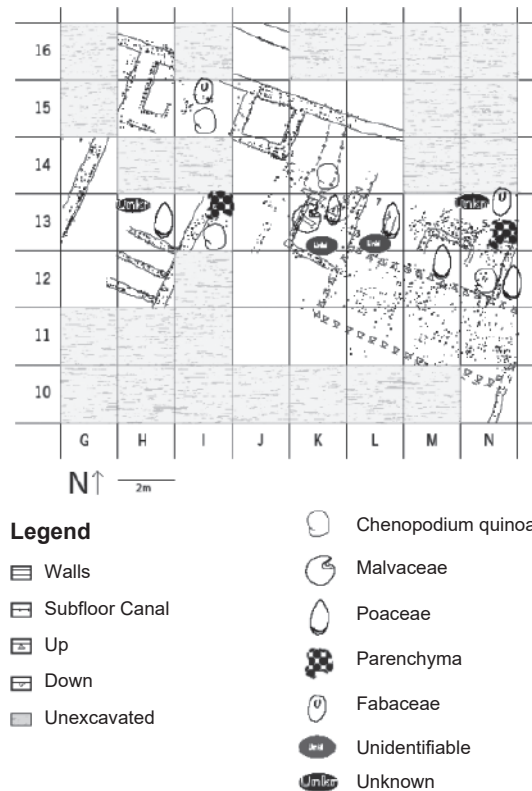
Each sample was analyzed to see variability across the site. In the following section I will compare the patio area to the pathway to distinct rooms. Finally, there were many samples with no remains in them. This is in contrast to the patterns found in many other Andean archaeological projects where the ubiquity of wood is 99% (Bruno 2008: 261).

### 2.10 Analysis of La Banda Macrobotanical Remains

The wood remains varied significantly by level. This variability provides useful insights into use areas across the sector. The excavations document four major ADs in the sector and the wood remains allowed for further analysis of these spatial divisions. Level VI was lightly occupied and there were only large amounts of wood found in the pathway, AD C, and in unit I15, which contained a hearth. The large quantities of charcoal found in the pathway indicate that remains from inside houses were likely dumped here, as there was no evidence of burning features found in the pathway. Level V had dense samples from units J14 and H15 but other levels had greater amounts of dense samples. There were samples with less dense remains from the living areas around the patio. The highest number of samples with wood in them came from Level IV. These samples varied significantly across units and the large number of samples from the level allow for the discussion of use areas. Units J15, K14, and K15 had the densest samples, and they were located near hearths. The pathway, AD C, had moderate levels of wood but an average density higher than other ADs. There are lower levels of wood in ASD 10–12 in AD B but these areas had higher densities of wood than ASD 9. AD A contained relatively consistent density levels of wood, and these were indicative of more intense occupation in this AD during this level. Level III's densest sample was from G14 in AD D. The other ADs had some dense remains but in general this level had many samples with low densities of wood, which is indicative of living level above the major occupation level.

The non-wood macrobotanical remains from La Banda were sparse but the remains were generally recovered from areas considered to be living spaces. The portion of the sector with the largest number of recovered remains was AD B, followed by AD A, AD C, and AD D. Level VI had few non-wood remains and these were recovered from units I15 and H16. The parenchyma found in I15 could be from a tuber cooked in the hearth found in that unit. Level V had many more samples with non-wood remains. These remains were found in ASDs 1, 2, 8, and 11. These were not found in the more formal spaces of ASDs 3, 4, 5, 7, and 9. The main living occupation was Level IV (Figure 5-15) and there were relatively more non-wood remains recovered from this level. The remains were concentrated in ASDs 2, 7, 10, and 12. ASDs 10 and 12 were the spaces north of the patio, ASD 9. These appear to be living spaces and had large numbers of seeds found in them. The finds in ASD 7 were not all food species but they do indicate that items other than wood and ceremonial goods were placed into the *mito* type hearth in the area. Food may have been consumed as people labored in this workshop area. Level III had fewer remains than other levels and they were also concentrated in ASD 12.

The wood and non-wood macrobotanical remains were patterned distinctly across the architectural space as well as over temporal levels. The patio, ASD 9, was generally



**Figure 5-15** Level IV, food macrobotanical remains (produced by Matthew Sayre)

kept clean although the wood found there indicates that some domestic activities may have occurred there. The channels were found to be mostly free of non-wood macrobotanical remains, as would be expected of space that may have had water moving through it. The pathway did contain evidence that people left trash and swept out some of their hearths into this space, but it did not contain large amounts of non-wood remains perhaps because it is likely that dogs would have frequented this area. The structures of ASDs 10 and 12 contained the greatest evidence for people living and eating in them. These may have been the living spaces of the people who labored to produce ritual goods in ASD 7. While AD B had more dense wood and non-wood remains than AD A there were still many areas in AD A with evidence for domestic use, such as in ASDs 1 and 2. ASDs 3–5 appear to have been more formal spaces where fewer non-wood remains were recovered. Finally, areas around hearths did contain evidence for the cooking of food and the burning of other botanical materials.

The macrobotanical remains reinforce the interpretation that level IV was the main living surface of the sector. This level had the highest number of dense wood and non-wood remains. This level also contained most of the finds related to ritual good production as well as including high densities of the material remains of daily life, such

as ceramics, faunal remains, and lithic pieces (Sayre 2010; Sayre et al. 2015).

### **2.11 Food Production and Resource Management in La Banda**

The evidence for food use predominately comes from the macrobotanical and faunal remains. However, there was other evidence for these practices. Out of the three hearths uncovered in La Banda excavations two appear to have been used for everyday cooking and food processing. The third, in ASD 7, was more formal and may have been used for food processing but was more likely employed in the production of ritual goods. The wood densities show that wood was used at a similar rate throughout different time periods and that the people of Chavín did not overharvest the forest. A pollen study of nearby lakes would be a valuable addition to this dataset and would also add to our knowledge of the ancient environmental change.

The sparse non-wood macrobotanical remains provide evidence for the differential use of architectural spaces. Across different levels the patio, ASD 9, was generally kept clear of food and wood. This was not a space where food was cooked or commonly consumed. Rather these practices predominately occurred in the spaces north of the patio, ASDs 10 and 12, as well as in ASDs 1 and 2, the area north of the colored clay floors of AD A. There was not much evidence for food deposition in the pathway, AD C, or in the fill of AD D. Rather, food was cooked and consumed in the areas away from the formal spaces and close to the ritual good production area of ASD 7.

The ceramics do not provide overt evidence of large-scale food consumption rather it appears that there was household-based consumption and that communal eating events may have occurred elsewhere, perhaps in areas in the monumental center. The faunal remains, mostly camelids, show evidence of cut marks and processing to remove marrow. This indicates that the meat supply was locally raised and almost every edible portion of meat was consumed (Rosenfeld and Sayre 2016).

The macrobotanical data from La Banda is the primary basis for the following discussion of plant food production and ecological management in La Banda sector of Chavín. While non-wood macrobotanical remains were recovered in the sector these remains were sparse. It is evident that many of the plants consumed in La Banda sector were highland plants native to the sector. It appears that many of the foods produced in La Banda were produced in the fields on the slopes to the east of the settlement but there is limited evidence that the inhabitants of the portion of La Banda excavated spent most of their time working in these fields. These fields would have been accessed by various members of the community, and most likely by people of all ages. Farming implements of the sector may have been removed by La Banda inhabitants, and post-temple occupants of the sector, because these tools would have been useful for any highland farmer. There have been stone clodbusters found in the sector but outside of there were no faunal materials, such as camelid scapula, recovered that could have served such a purpose (Sayre 2010).

The residents of La Banda and greater Chavín were able to manage their fuel use over time. One striking find from this project was the lack of dung in the macrobotanical samples. While some dung may have been used in fires and later destroyed by

taphonomic factors in other areas of the Andes, such as Xauxa, and the Bolivian altiplano, dung is commonly identified in the archaeobotanical samples (Bruno 2008; Hastorf 1993; Whitehead 2007). At Chavín, wood appears to have been plentiful and well managed, presumably in an ecological strategy like those discussed in field rotation and fallow systems. The dung from camelids and other animals was likely used as a fertilizer in fields with wood being the preferred fuel item. The long-term management of forest resources is not only evidence for successful ecological practices but also means that further work is needed into the political and social processes that led to the rise and decline of the main temple.

### 3. Comparison across Sectors

An analysis of different patterns of plant use across site sectors is difficult. The various site sectors not only vary in their architecture and function but there is also the added difficulty that many of them contain remains from different time periods. The macrobotanical remains from post-temple time periods cannot be compared to those of the Black and White Stage. Additionally, they are also more abundant if they come from more recent deposits. That being said, it is important to discuss some of the differences that exist between domestic, ritual, and mixed contexts.

The remains from the various sectors share important patterns with some notable differences. While all samples were dominated by wood there were more economic plants overall recovered outside of the main temple sectors. The Atrium East and Plaza Mayor both have evidence for post-temple occupations. They did vary in the number of macrobotanical remains recovered. Later excavations have further defined the Atrium East and revealed structures that date to the Black and White Period, these samples are not from that time. The Area Sur and Rocas Gallery did not have substantial numbers of samples analyzed but they do reveal that all areas did have small amounts of food remains recovered. This is likely due to minor variations in use or depositional patterns. The West Field has evidence of smaller scale ritual activities but is also likely that some domestic activities took place there. Thus, there is slightly more variation in these remains. The sector with the most evidence for production activities is the Wacheqsa (Mesía Montenegro 2007). Here there were bean and squash remains that show larger plant seeds were consumed here.

This analysis of distinct sectors of Chavín exists to provide a baseline for future analysis. Further work will deepen our understanding of plant use at this site. There are some broad patterns that emerged, such as greater diversity of finds in sectors outside of the main temple area, and fewer economic plants recovered in main temple sectors from samples dating to the Black and White Period. These finds reinforce the initial divide outlined by John Rowe (1963).

### 4. Conclusion

Lathrap (1973) postulated that the origins of the Chavín food production system lay in

the eastern jungle lowlands. The macrobotanical remains recovered and analyzed here do not support this conclusion. The agriculture practiced at Chavín was a typical highland practice of tuber, quinoa, and maize production that was combined with local camelid husbandry.

The evidence for long distance trade at Chavín has been amply discussed in previous publications (Burger 1984; Contreras 2011; Sayre et al. 2015). This evidence predominately consists of material remains of relatively light and transportable exotic goods. The trade of seashells, obsidian, marine animal bone and other goods could have been down the line trade, or it may be an example of pilgrims bringing material goods bringing to the site as a form of offering.

What is not present at the site is abundant evidence for the trade of staple goods. The large-scale movement of food goods is not visible in the faunal record or in the botanical record (Rosenfeld and Sayre 2016). While microbotanical analysis, such as starch grains, will likely reveal whether the remains of lowland plants are present at the site there is unlikely to be evidence for large quantities of trade goods. The initial phytolith analysis that I conducted at the site did recover limited evidence for bottle gourd (*Lagenaria* sp.) and it seems likely that yucca remains will be present but the sporadic presence of plants that could have been grown down the valley is not indicative of intensive movement and trade of staple goods.

The lack of evidence for staple good storage and the remains of local food plants is material to support the argument that the domestic economy of Chavín was centered around the consumption of highland plants and animals. There are examples for later time periods that monumental centers did store large amounts of food for exchange and later use (D'Altroy and Hastorf 2001; Sillar et al. 2013)

The macrobotanical data from various sectors of Chavín de Huántar reveal that there is limited evidence for food consumption but there is very little evidence for surplus storage or the transportation of outside/exotic foods. There are an abundant number of crops and plants that can be grown better at lower elevations and transported to the site of Chavín, such as peanuts (*Arachis hypogea*), chilies (*Capsicum* sp.), and bottle gourd (*Lagenaria* sp.). Yet, these plants do not appear to have been the focus of exchange. It is possible that greater evidence for these remains will be recovered later.

The data from the different site sectors, that date to temple times, leave evidence for certain types of limited trade but not for substantial staple good trade. The local production of food is visible in the macrobotanical record, as well as in the faunal record (Rosenfeld and Sayre 2016). These records leave us with a sense of a profoundly local production strategy with differing evidence visible in the exotic good record. The evidence for marine goods, obsidian, and rare minerals is a clear record of long-distance trade (Burger and Matos 2002; Contreras 2011; Sayre et al. 2015). These lines of evidence demonstrate that the political economy of Chavín was still focused on importing high prestige goods, not on the management of populations through the accumulation and distribution of staple goods.



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