INFORME: CHIJI JAWIRA

by M. Wright, H. Lennstrom and C. Hastorf
University of Minnesota Archaeobotany Laboratory Report #24
May 1991

Introduction

The strategy selected for our first phase of paleoethnobotanical analysis has been to analyze 1) at least some samples from all areas, 2) to focus on domestic areas of the site, and 3) work only with samples where information concerning cultural contexts, field notes, etc., were available. The samples selected from Chiji Jawira were completed during the academic year 1990/91, when the lab plan was to sort approximately 30-40% of all samples from usable contexts (ie not mixed, disturbed, or undocumented). However, since we had all of the completed collection forms for this excavation area (unlike most others) we elected to sort all of the samples for which we had both light and heavy botanical fractions. Although 31 samples from Chiji Jawira were floated, only 14 of these had their heavy fractions sorted and the heavy fraction botanical remains sent to our lab by the end of the 1990 field season. Consequently, all 14 of these were sorted.

Ordinarily, samples were selected so that the subsample reflected the contextual range of each individual excavation location, and that some of each context type would be analyzed (ie a stratified random sample, stratified by cultural context). With Chiji Jawira, the samples for which we had both light and heavy fractions were not quite as representative as we would have liked of the cultural contexts from the area as a whole, and several promising contexts were unable to be analyzed altogether (ie those more clearly associated with the area's only architectural feature, an abode wall).

Sample sizes for the fourteen Chiji Jawira samples ranged from 1.0 to 8.0 liters (target value for a "full" sample was 8.0 liters), with a median of 6.0 liters and a mean of 5.4 liters. These make them somewhat smaller on average than samples from the other domestic areas of Tiwanaku. Accordingly, comparative measures such as ubiquity and diversity, which are highly correlated with sample size, must be used with greater than usual caution.

Methods

Field methods

Botanical samples were processed using a motorized flotation system, modified from the SMAP machine design first published by Watson in 1976. Because the charred materials have a lower specific gravity than water, they float on the water's surface and can pour off. Our machine is built from a a 55 gallon oil drum as a water container, that is used to separate charred plant remains from the site matrix. Water is pumped into the system from below, and is
INTERPRETATION OF CHIJI JAWIRA PLANT REMAINS

Since the area of Chiji Jawira was initially expected to be a ceramic production zone, we were somewhat surprised to find that this sector contained some of the highest densities and ubiquities of domesticates of any of the excavation areas. Chiji Jawira also displayed a much higher density of dung than any other area analyzed (87.75 fragments per liter of floated site matrix as opposed to 12.51 for AKE2, 2.51 for Kk'ara$a, and 12.19 for AKE 1988-89 samples), an interesting finding since in some parts of the Andes today dung is the preferred fuel for pottery manufacture (Mohr-Chavez 1984-85). Given the generally high density of carbonized remains, however, it is possible that the source of this dung is general occupational refuse rather than being specifically tied to ceramic production.

Despite a high density and widespread occurrence (high ubiquity) of large domesticates (ie those other than Chenopodium) relative to other parts of Tiwanaku, the Chiji Jawira samples were nonetheless dominated primarily by small grass seeds and Chenopodium. The densities of the large domesticates at Chiji Jawira (0.34 fragments per liter of floated site matrix for maize, 0.03 for tubers) and their ubiquities (maize present in 71% of the samples, tubers present in 14%) are comparable to the two domestic areas east of the Akapana -- AKE (1988-89 samples) with a density of 0.29 fragments per liter and ubiquity of 26% for maize and density of 0.02 and ubiquity of 6% for tubers, and AKE2 with a density of 1.10 and ubiquity of 40% for maize and a density of 0.02 and ubiquity of 5% for tubers.

Within Chiji Jawira, the domesticates do appear to be denser in the trash pits as opposed to the other cultural contexts there, but these pits are also denser in all botanical remains. In terms of all taxa present (domesticates, wild species, wood, dung and lumps), samples from the different cultural contexts within Chiji Jawira seem to be roughly comparable to one another with no striking differences (see attached pie charts). The fill contexts have perhaps less dung and lumps than the other contexts. Dung makes up less than 5% of the fill, where it makes up around 20-30% of the other contexts. Lumps also make up less than 5% of the fill, where it is 5-10% of the other samples (except for the pit samples [<5%] and the nearly empty hearth).

The presence of a large number of ceramic wasters in the surface survey and in excavation led the excavators to believe that Chiji Jawira was some sort of ceramic production zone. The results of our analyses suggest otherwise. The kinds of taxa present in the samples, their similarity across contexts, their high densities and widespread spatial distribution -- particularly of food remains as compared to the other parts of the Tiwanaku core -- all make us suspect that Chiji Jawira, or at least the sectors of it we analyzed, was some kind of dumping ground for occupation debris, perhaps even for garbage brought in from other areas of Tiwanaku. Since we did not have the completed forms to guide our selection of
samples for flotation while in the field, we have not yet floated some of the more interesting-sounding contexts (ie those associated with a presumed adobe wall) so we could not analyze them. Hopefully those samples would give more information about other activities occurring at Chiji Jawira besides garbage dumping. The one sample analyzed from a hearth context proved to be quite sparse, containing only 14 seeds. The relative frequencies of the taxa in the sample are not wildly different from the other contexts. The proportion of Chenopodium is perhaps greater in the hearth sample than in the other samples, but the numbers here are so small that it is difficult to draw meaningful conclusions.

When looking at the data at the level of the cultural contexts, as opposed to the samples taken one by one, there appears to be as much within-context as between-context variability. This might suggest that this dumping ground is not a uniform deposit but may represent different, discrete episodes. It might be useful to plot the individual samples spatially across the excavation area to see if any spatial or stratigraphic patterns can be determined. Particularly interesting might be a spatial analysis of the co-occurrence of dung and ceramic wasters, given the possible use of dung as a preferred ceramic firing fuel (Mohr-Chavez 1984-85).
INFORME: CHIJI JAWIRA
by M. Wright, H. Lennstrom and C. Hastorf
University of Minnesota Archaeobotany Laboratory Report #24
May 1991

Introduction

The strategy selected for our first phase of paleoethnobotanical analysis has been to analyze 1) at least some samples from all areas, 2) to focus on domestic areas of the site, and 3) work only with samples where information concerning cultural contexts, field notes, etc., were available. The samples selected from Chiji Jawira were completed during the academic year 1990/91, when the lab plan was to sort approximately 30-40% of all samples from usable contexts (i.e. not mixed, disturbed, or undocumented). However, since we had all of the completed collection forms for this excavation area (unlike most others) we elected to sort all of the samples for which we had both light and heavy botanical fractions. Although 31 samples from Chiji Jawira were floated, only 14 of these had their heavy fractions sorted and the heavy fraction botanical remains sent to our lab by the end of the 1990 field season. Consequently, all 14 of these were sorted.

Ordinarily, samples were selected so that the subsample reflected the contextual range of each individual excavation location, and that some of each context type would be analyzed (ie a stratified random sample, stratified by cultural context). With Chiji Jawira, the samples for which we had both light and heavy fractions were not quite as representative as we would have liked of the cultural contexts from the area as a whole, and several promising contexts were unable to be analyzed altogether (i.e. those more clearly associated with the area’s only architectural feature, an abode wall).

Sample sizes for the fourteen Chiji Jawira samples ranged from 1.0 to 8.0 liters (target value for a "full" sample was 8.0 liters), with a median of 6.0 liters and a mean of 5.4 liters. These make them somewhat smaller on average than samples from the other domestic areas of Tiwanaku. Accordingly, comparative measures such as ubiquity and diversity, which are highly correlated with sample size, must be used with greater than usual caution.

Methods

Field methods

Botanical samples were processed using a motorized flotation system, modified from the SMAP machine design first published by Watson in 1976. Because the charred materials have a lower specific gravity than water, they float on the water’s surface and can pour off. Our machine is built from a a 55 gallon oil drum as a water container, that is used to separate charred plant remains from the site matrix. Water is pumped into the system from below, and is
INTERPRETATION OF CHIJI JAWIRA PLANT REMAINS

Since the area of Chiji Jawira was initially expected to be a ceramic production zone, we were somewhat surprised to find that this sector contained some of the highest densities and ubiquities of domesticates of any of the excavation areas. Chiji Jawira also displayed a much higher density of dung than any other area analyzed (87.75 fragments per liter of floated site matrix as opposed to 12.51 for AKE2, 2.51 for K'araa, and 12.19 for AKE 1986-87 samples), an interesting finding since in some parts of the Andes today dung is the preferred fuel for pottery manufacture (Mohr-Chavez 1984-85). Given the generally high density of carbonized remains, however, it is possible that the source of this dung is general occupational refuse rather than being specifically tied to ceramic production.

Despite a high density and widespread occurrence (high ubiquity) of large domesticates (i.e., those other than Chenopodium) relative to other parts of Tiwanaku, the Chiji Jawira samples were nonetheless dominated primarily by small grass seeds and Chenopodium. The densities of the large domesticates at Chiji Jawira (0.34 fragments per liter of floated site matrix for maize, 0.03 for tubers) and their ubiquities (maize present in 71% of the samples, tubers present in 14%) are comparable to the two domestic areas east of the Akapana -- AKE (1986-87 samples) with a density of 0.29 fragments per liter and ubiquity of 25% for maize and density of 0.02 and ubiquity of 6% for tubers, and AKE2 with a density of 1.10 and ubiquity of 40% for maize and a density of 0.02 and ubiquity of 5% for tubers.

Within Chiji Jawira, the domesticates do appear to be denser in the trash pits as opposed to the other cultural contexts there, but these pits are also denser in all botanical remains. In terms of all taxa present (domesticates, wild species, wood, dung and lumps), samples from the different cultural contexts within Chiji Jawira seem to be roughly comparable to one another with no striking differences (see attached pie charts). The fill contexts have perhaps less dung and lumps than the other contexts. Dung makes up less than 5% of the fill, where it makes up around 20-30% of the other contexts. Lumps also make up less than 5% of the fill, where it is 5-10% of the other samples (except for the pit samples [(5%] and the nearly empty hearth).

The presence of a large number of ceramic wasters in the surface survey and in excavation led the excavators to believe that Chiji Jawira was some sort of ceramic production zone. The results of our analyses suggest otherwise. The kinds of taxa present in the samples, their similarity across contexts, their high densities and widespread spatial distribution -- particularly of food remains as compared to the other parts of the Tiwanaku core -- all make us suspect that Chiji Jawira, or at least the sectors of it we analyzed, was some kind of dumping ground for occupation debris, perhaps even for garbage brought in from other areas of Tiwanaku. Since we did not have the completed forms to guide our selection of
samples for flotation while in the field, we have not yet floated some of the more interesting-sounding contexts (ie those associated with a presumed adobe wall) so we could not analyze them. Hopefully those samples would give more information about other activities occurring at Chiji Jawira besides garbage dumping. The one sample analyzed from a hearth context proved to be quite sparse, containing only 14 seeds. The relative frequencies of the taxa in the sample are not wildly different from the other contexts. The proportion of Chenopodium is perhaps greater in the hearth sample than in the other samples, but the numbers here are so small that it is difficult to draw meaningful conclusions.

When looking at the data at the level of the cultural contexts, as opposed to the samples taken one by one, there appears to be as much within-context as between-context variability. This might suggest that this dumping ground is not a uniform deposit but may represent different, discrete episodes. It might be useful to plot the individual samples spatially across the excavation area to see if any spatial or stratigraphic patterns can be determined. Particularly interesting might be a spatial analysis of the co-occurrence of dung and ceramic wasters, given the possible use of dung as a preferred ceramic firing fuel (Mohr-Chavez 1984-85).
INFORME: CHIJI JAWIRA
by M. Wright, H. Lennstrom and C. Hastorf
University of Minnesota Archaeobotany Laboratory Report #24
May 1991

Introduction

The strategy selected for our first phase of paleoethnobotanical analysis has been to analyze 1) at least some samples from all areas, 2) to focus on domestic areas of the site, and 3) work only with samples where information concerning cultural contexts, field notes, etc., were available. The samples selected from Chiji Jawira were completed during the academic year 1990/91, when the lab plan was to sort approximately 30-40% of all samples from usable contexts (ie not mixed, disturbed, or undocumented). However, since we had all of the completed collection forms for this excavation area (unlike most others) we elected to sort all of the samples for which we had both light and heavy botanical fractions. Although 31 samples from Chiji Jawira were floated, only 14 of these had their heavy fractions sorted and the heavy fraction botanical remains sent to our lab by the end of the 1990 field season. Consequently, all 14 of these were sorted.

Ordinarily, samples were selected so that the subsample reflected the contextual range of each individual excavation location, and that some of each context type would be analyzed (is a stratified random sample, stratified by cultural context). With Chiji Jawira, the samples for which we had both light and heavy fractions were not quite as representative as we would have liked of the cultural contexts from the area as a whole, and several promising contexts were unable to be analyzed altogether (ie those more clearly associated with the area's only architectural feature, an abode wall).

Sample sizes for the fourteen Chiji Jawira samples ranged from 1.0 to 8.0 liters (target value for a "full" sample was 8.0 liters), with a median of 6.0 liters and a mean of 5.4 liters. These make them somewhat smaller on average than samples from the other domestic areas of Tiwanaku. Accordingly, comparative measures such as ubiquity and diversity, which are highly correlated with sample size, must be used with greater than usual caution.

Methods

Field methods

Botanical samples were processed using a motorized flotation system, modified from the SMAP machine design first published by Watson in 1976. Because the charred materials have a lower specific gravity than water, they float on the water's surface and can pour off. Our machine is built from a a 55 gallon oil drum as a water container, that is used to separate charred plant remains from the site matrix. Water is pumped into the system from below, and is
INTERPRETATION OF CHIJI JAWIRA PLANT REMAINS

Since the area of Chiji Jawira was initially expected to be a ceramic production zone, we were somewhat surprised to find that this sector contained some of the highest densities and ubiquities of domesticates of any of the excavation areas. Chiji Jawira also displayed a much higher density of dung than any other area analyzed (87.75 fragments per liter of floated site matrix as opposed to 12.51 for AKE2, 2.51 for K'ara#s, and 12.19 for AKE 1988-89 samples), an interesting finding since in some parts of the Andes today dung is the preferred fuel for pottery manufacture (Mohr-Chavez 1984-85). Given the generally high density of carbonized remains, however, it is possible that the source of this dung is general occupational refuse rather than being specifically tied to ceramic production.

Despite a high density and widespread occurrence (high ubiquity) of large domesticates (ie those other than Chenopodium) relative to other parts of Tiwanaku, the Chiji Jawira samples were nonetheless dominated primarily by small grass seeds and Chenopodium. The densities of the large domesticates at Chiji Jawira (0.34 fragments per liter of floated site matrix for maize, 0.03 for tubers) and their ubiquities (maize present in 71% of the samples, tubers present in 14%) are comparable to the two domestic areas east of the Akapana -- AKE (1988-89 samples) with a density of 0.29 fragments per liter and ubiquity of 25% for maize and density of 0.02 and ubiquity of 6% for tubers, and AKE2 with a density of 1.10 and ubiquity of 40% for maize and a density of 0.02 and ubiquity of 5% for tubers.

Within Chiji Jawira, the domesticates do appear to be denser in the trash pits as opposed to the other cultural contexts there, but these pits are also denser in all botanical remains. In terms of all taxa present (domesticates, wild species, wood, dung and lumps), samples from the different cultural contexts within Chiji Jawira seem to be roughly comparable to one another with no striking differences (see attached pie charts). The fill contexts have perhaps less dung and lumps than the other contexts. Dung makes up less than 5% of the fill, where it makes up around 20-30% of the other contexts. Lumps also make up less than 5% of the fill, where it is 5-10% of the other samples (except for the pit samples [5%] and the nearly empty hearth).

The presence of a large number of ceramic wasters in the surface survey and in excavation led the excavators to believe that Chiji Jawira was some sort of ceramic production zone. The results of our analyses suggest otherwise. The kinds of taxa present in the samples, their similarity across contexts, their high densities and widespread spatial distribution -- particularly of food remains as compared to the other parts of the Tiwanaku core -- all make us suspect that Chiji Jawira, or at least the sectors of it we analyzed, was some kind of dumping ground for occupation debris, perhaps even for garbage brought in from other areas of Tiwanaku. Since we did not have the completed forms to guide our selection of
samples for flotation while in the field, we have not yet floated some of the more interesting-sounding contexts (ie those associated with a presumed adobe wall) so we could not analyze them. Hopefully those samples would give more information about other activities occurring at Chiji Jawira besides garbage dumping. The one sample analyzed from a hearth context proved to be quite sparse, containing only 14 seeds. The relative frequencies of the taxa in the sample are not wildly different from the other contexts. The proportion of Chenopodium is perhaps greater in the hearth sample than in the other samples, but the numbers here are so small that it is difficult to draw meaningful conclusions.

When looking at the data at the level of the cultural contexts, as opposed to the samples taken one by one, there appears to be as much within-context as between-context variability. This might suggest that this dumping ground is not a uniform deposit but may represent different, discrete episodes. It might be useful to plot the individual samples spatially across the excavation area to see if any spatial or stratigraphic patterns can be determined. Particularly interesting might be a spatial analysis of the co-occurrence of dung and ceramic wasters, given the possible use of dung as a preferred ceramic firing fuel (Mohr-Chavez 1984-85).
INFORME: CHIJI JAWIRA
by M. Wright, H. Lennstrom and C. Hastorf
University of Minnesota Archaeobotany Laboratory Report #24
May 1991

Introduction

The strategy selected for our first phase of paleoethnobotanical analysis has been to analyze 1) at least some samples from all areas, 2) to focus on domestic areas of the site, and 3) work only with samples where information concerning cultural contexts, field notes, etc., were available. The samples selected from Chiji Jawira were completed during the academic year 1990/91, when the lab plan was to sort approximately 30-40% of all samples from usable contexts (ie not mixed, disturbed, or undocumented). However, since we had all of the completed collection forms for this excavation area (unlike most others) we elected to sort all of the samples for which we had both light and heavy botanical fractions. Although 31 samples from Chiji Jawira were floated, only 14 of these had their heavy fractions sorted and the heavy fraction botanical remains sent to our lab by the end of the 1990 field season. Consequently, all 14 of these were sorted.

Ordinarily, samples were selected so that the subsample reflected the contextual range of each individual excavation location, and that some of each context type would be analyzed (ie a stratified random sample, stratified by cultural context). With Chiji Jawira, the samples for which we had both light and heavy fractions were not quite as representative as we would have liked of the cultural contexts from the area as a whole, and several promising contexts were unable to be analyzed altogether (ie those more clearly associated with the area’s only architectural feature, an abode wall).

Sample sizes for the fourteen Chiji Jawira samples ranged from 1.0 to 8.0 liters (target value for a “full” sample was 8.0 liters), with a median of 6.0 liters and a mean of 5.4 liters. These make them somewhat smaller on average than samples from the other domestic areas of Tiwanaku. Accordingly, comparative measures such as ubiquity and diversity, which are highly correlated with sample size, must be used with greater than usual caution.

Methods

Field methods

Botanical samples were processed using a motorized flotation system, modified from the SMAP machine design first published by Watson in 1976. Because the charred materials have a lower specific gravity than water, they float on the water’s surface and can pour off. Our machine is built from a a 55 gallon oil drum as a water container, that is used to separate charred plant remains from the site matrix. Water is pumped into the system from below, and is
INTERPRETATION OF CHIJI JAWIRA PLANT REMAINS

Since the area of Chiji Jawira was initially expected to be a ceramic production zone, we were somewhat surprised to find that this sector contained some of the highest densities and ubiquities of domesticates of any of the excavation areas. Chiji Jawira also displayed a much higher density of dung than any other area analyzed (87.75 fragments per liter of floated site matrix as opposed to 12.51 for AKE2, 2.51 for K'ara$a, and 12.19 for AKE 1988-89 samples), an interesting finding since in some parts of the Andes today dung is the preferred fuel for pottery manufacture (Mohr-Chavez 1984-85). Given the generally high density of carbonized remains, however, it is possible that the source of this dung is general occupational refuse rather than being specifically tied to ceramic production.

Despite a high density and widespread occurrence (high ubiquity) of large domesticates (ie those other than Chenopodium) relative to other parts of Tiwanaku, the Chiji Jawira samples were nonetheless dominated primarily by small grass seeds and Chenopodium. The densities of the large domesticates at Chiji Jawira (0.54 fragments per liter of floated site matrix for maize, 0.03 for tubers) and their ubiquities (maize present in 71% of the samples, tubers present in 14%) are comparable to the two domestic areas east of the Akapana -- AKE (1988-89 samples) with a density of 0.29 fragments per liter and ubiquity of 25% for maize and density of 0.02 and ubiquity of 6% for tubers, and AKE2 with a density of 1.10 and ubiquity of 40% for maize and a density of 0.02 and ubiquity of 5% for tubers.

Within Chiji Jawira, the domesticates do appear to be denser in the trash pits as opposed to the other cultural contexts there, but these pits are also denser in all botanical remains. In terms of all taxa present (domesticates, wild species, wood, dung and lumps), samples from the different cultural contexts within Chiji Jawira seem to be roughly comparable to one another with no striking differences (see attached pie charts). The fill contexts have perhaps less dung and lumps than the other contexts. Dung makes up less than 5% of the fill, where it makes up around 20-30% of the other contexts. Lumps also make up less than 5% of the fill, where it is 5-10% of the other samples (except for the pit samples [(5%) and the nearly empty hearth).

The presence of a large number of ceramic wasters in the surface survey and in excavation led the excavators to believe that Chiji Jawira was some sort of ceramic production zone. The results of our analyses suggest otherwise. The kinds of taxa present in the samples, their similarity across contexts, their high densities and widespread spatial distribution -- particularly of food remains as compared to the other parts of the Tiwanaku core -- all make us suspect that Chiji Jawira, or at least the sectors of it we analyzed, was some kind of dumping ground for occupation debris, perhaps even for garbage brought in from other areas of Tiwanaku. Since we did not have the completed forms to guide our selection of
samples for flotation while in the field, we have not yet floated some of the more interesting-sounding contexts (i.e., those associated with a presumed adobe wall) so we could not analyze them. Hopefully those samples would give more information about other activities occurring at Chiji Jawira besides garbage dumping. The one sample analyzed from a hearth context proved to be quite sparse, containing only 14 seeds. The relative frequencies of the taxa in the sample are not wildly different from the other contexts. The proportion of Chenopodium is perhaps greater in the hearth sample than in the other samples, but the numbers here are so small that it is difficult to draw meaningful conclusions.

When looking at the data at the level of the cultural contexts, as opposed to the samples taken one by one, there appears to be as much within-context as between-context variability. This might suggest that this dumping ground is not a uniform deposit but may represent different, discrete episodes. It might be useful to plot the individual samples spatially across the excavation area to see if any spatial or stratigraphic patterns can be determined. Particularly interesting might be a spatial analysis of the co-occurrence of dung and ceramic wasters, given the possible use of dung as a preferred ceramic firing fuel (Mohr-Chavez 1984-85).
INFORME: CHIJI JAWIRA

by M. Wright, H. Lennstrom and C. Hastorf
University of Minnesota Archaeobotany Laboratory Report #24
May 1991

Introduction

The strategy selected for our first phase of paleoethnobotanical analysis has been to analyze 1) at least some samples from all areas, 2) to focus on domestic areas of the site, and 3) work only with samples where information concerning cultural contexts, field notes, etc., were available. The samples selected from Chiji Jawira were completed during the academic year 1990/91, when the lab plan was to sort approximately 30-40% of all samples from usable contexts (ie not mixed, disturbed, or undocumented). However, since we had all of the completed collection forms for this excavation area (unlike most others) we elected to sort all of the samples for which we had both light and heavy botanical fractions. Although 31 samples from Chiji Jawira were floated, only 14 of these had their heavy fractions sorted and the heavy fraction botanical remains sent to our lab by the end of the 1990 field season. Consequently, all 14 of these were sorted.

Ordinarily, samples were selected so that the subsample reflected the contextual range of each individual excavation location, and that some of each context type would be analyzed (ie a stratified random sample, stratified by cultural context). With Chiji Jawira, the samples for which we had both light and heavy fractions were not quite as representative as we would have liked of the cultural contexts from the area as a whole, and several promising contexts were unable to be analyzed altogether (ie those more clearly associated with the area's only architectural feature, an abode wall).

Sample sizes for the fourteen Chiji Jawira samples ranged from 1.0 to 8.0 liters (target value for a "full" sample was 8.0 liters), with a median of 6.0 liters and a mean of 5.4 liters. These make them somewhat smaller on average than samples from the other domestic areas of Tiwanaku. Accordingly, comparative measures such as ubiquity and diversity, which are highly correlated with sample size, must be used with greater than usual caution.

Methods

Field methods

Botanical samples were processed using a motorized flotation system, modified from the SMAP machine design first published by Watson in 1976. Because the charred materials have a lower specific gravity than water, they float on the water's surface and can pour off. Our machine is built from a 55 gallon oil drum as a water container, that is used to separate charred plant remains from the site matrix. Water is pumped into the system from below, and is
INTERPRETATION OF CHIJI JAWIRA PLANT REMAINS

Since the area of Chiji Jawira was initially expected to be a ceramic production zone, we were somewhat surprised to find that this sector contained some of the highest densities and ubiquitous of domesticates of any of the excavation areas. Chiji Jawira also displayed a much higher density of dung than any other area analyzed (87.75 fragments per liter of floated site matrix as opposed to 12.51 for AKE2, 2.51 for Kk'araqa, and 12.19 for AKE 1988-89 samples), an interesting finding since in some parts of the Andes today dung is the preferred fuel for pottery manufacture (Mohr-Chavez 1984-85). Given the generally high density of carbonized remains, however, it is possible that the source of this dung is general occupational refuse rather than being specifically tied to ceramic production.

Despite a high density and widespread occurrence (high ubiquity) of large domesticates (i.e., those other than Chenopodium) relative to other parts of Tiwanaku, the Chiji Jawira samples were nonetheless dominated primarily by small grass seeds and Chenopodium. The densities of the large domesticates at Chiji Jawira (0.34 fragments per liter of floated site matrix for maize, 0.03 for tubers) and their ubiquitous (maize present in 71% of the samples, tubers present in 14%) are comparable to the two domestic areas east of the Akapana — AKE (1988-89 samples) with a density of 0.29 fragments per liter and ubiquity of 25% for maize and density of 0.02 and ubiquity of 6% for tubers, and AKE2 with a density of 1.10 and ubiquity of 40% for maize and a density of 0.02 and ubiquity of 5% for tubers.

Within Chiji Jawira, the domesticates do appear to be denser in the trash pits as opposed to the other cultural contexts there, but these pits are also denser in all botanical remains. In terms of all taxa present (domesticates, wild species, wood, dung and lumps), samples from the different cultural contexts within Chiji Jawira seem to be roughly comparable to one another with no striking differences (see attached pie charts). The fill contexts have perhaps less dung and lumps than the other contexts. Dung makes up less than 5% of the fill, where it makes up around 20-30% of the other contexts. Lumps also make up less than 5% of the fill, where it is 5-10% of the other samples (except for the pit samples [<5%] and the nearly empty hearth).

The presence of a large number of ceramic wasters in the surface survey and in excavation led the excavators to believe that Chiji Jawira was some sort of ceramic production zone. The results of our analyses suggest otherwise. The kinds of taxa present in the samples, their similarity across contexts, their high densities and widespread spatial distribution -- particularly of food remains as compared to the other parts of the Tiwanaku core -- all make us suspect that Chiji Jawira, or at least the sectors of it we analyzed, was some kind of dumping ground for occupation debris, perhaps even for garbage brought in from other areas of Tiwanaku. Since we did not have the completed forms to guide our selection of
samples for flotation while in the field, we have not yet floated some of the more interesting-sounding contexts (i.e., those associated with a presumed adobe wall) so we could not analyze them. Hopefully those samples would give more information about other activities occurring at Chiji Jawira besides garbage dumping. The one sample analyzed from a hearth context proved to be quite sparse, containing only 14 seeds. The relative frequencies of the taxa in the sample are not wildly different from the other contexts. The proportion of Chenopodium is perhaps greater in the hearth sample than in the other samples, but the numbers here are so small that it is difficult to draw meaningful conclusions.

When looking at the data at the level of the cultural contexts, as opposed to the samples taken one by one, there appears to be as much within-context as between-context variability. This might suggest that this dumping ground is not a uniform deposit but may represent different, discrete episodes. It might be useful to plot the individual samples spatially across the excavation area to see if any spatial or stratigraphic patterns can be determined. Particularly interesting might be a spatial analysis of the co-occurrence of dung and ceramic wasters, given the possible use of dung as a preferred ceramic firing fuel (Mohr-Chavez 1984-85).
WILAJAWIRA 1990 FORMA DE COLECCIONES BOTANICAS

Fecha 11/11/90 Excavador A.H.
Sitio 110 Cuad. KUKARANA Unidad NRS65 E/4936
Nivel S Rasgo, Especimen # 14Y12

FLOT# 5609

Punto de Origen de la Muestra: 42 cm del lado N. 155 cm del lado E.
52.0 cm elev. desde PR hasta PS de la mues. 10 cm profun. de mues.
Unidad/Rasgo está: Abajo de 01 al lado de N514E4926 Arriba de N514E4926
(Marca # de R, # de U, y/o # de Nivel)

Contexto Cultural

Descripción Cultural

Descripción del Suelo SYR 5/3 - _
(color de Munsell, composición, etc.)

Otros

Ceramicas Litos Litos Huesos Botanicos Otros
Artefactos 1BAG 1BAG 1BAG --- ---
(de la maya)

Observaciones y Interpretaciones: (Describe la unidad y/o rasgo, lo que piensas que es, áreas de actividades, artefactos asociados, contexto cultural, asociación con otros rasgos, etc.)

10 cm level through fill - later continued an additional 1cm to level of NRS65 E/4936; as measured at the western end (i.e., NOT to depth at eastern end). Containing removal was solid.

DIBUJO

Escala

Trazo el lugar de la muestra con la profundidad del punto superior del nivel a la base de la muestra. Incluye rasgos (si los hay) como paredes, pozos, tumbas, etc. Marca donde está el norte.