

Squash & Pumpkins



F L O W E R S and F R U I T S

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Squash & Pumpkins Flowers and Fruits

in Diet & Ballgame Iconography of the Maya & Mesoamerica

The Halloween Pumpkin is a squash. Pumpkin pie of course is made from edible squash. Dried squash seeds are tasty in soup. I like squash so much I prefer one hotel in Johannesburg since they have the best squash soup (though the ingredients are probably Mesoamerican heritage). I lecture in South Africa or otherwise provide consulting services on advanced digital printing once a year and look forward to squash soup there.

We at FLAAR are interested in squash because it is a healthy alternative to junk food and to packaged foods. I am not a fanatic. I love Coca-Cola to stay awake when driving (since I don't drink coffee). I love potato chips and granola bars to keep me going on field trips in remote areas, but when near my kitchen I prefer natural grains, vegetables and fruits, and reasonable amount of non-fatty meat.

An additional reason for interest in squash is because many iconographers and archaeologists have listed this in the art of the Olmec, Bilbao (Cotzumalhuapa), and Chichen Itza sculptures.

Plus squash is part of the trinity created by early scholars of major Maya food plants: Maize, Beans, and Squash. One goal is to bring some reality checks to traditional iconography and agricultural studies. The full impact of recognizing misleading aspects of what is in the decades of traditional literature will come when a capable student does a PhD dissertation on squash, gourds, and pumpkins.



The present report on squash is to suggest some directions and themes for further research. And especially to point out that an identification of a "squash" in Mesoamerican art is not acceptable unless the article or monograph or dissertation shows an actual real squash vine, leaf, or fruit which is comparable. There are at least four cultivated species of squash in the Maya areas, plus many wild species, so not all leaves are the same size or shape.

J. Eric S. Thompson was a pleasant individual (I met him twice) and he sure worked for decades to learn, and then teach the world, about the Maya. But his concepts on some plants were a scholarly embarrassment (that the Sun glyph is based on *Plumeria* flower). I estimate that 80% of Lacandon monographs, theses, articles, and dissertations have comparable major misidentifications on key sacred flowers. The one dissertation on the Lacandon (ethnobotany) which stands out as more realistic is that of Suzanne Cook.

The present treatise is to suggest that although bibliographic research is clearly necessary, but just as most modern web sites simply copy-and-paste from other web sites, too many articles copy what others have suggested long long ago. The best example of an inaccurate "identification" is all the web pages which call the tree on the Museo Popol Vuh vase a cacao tree simply because the fruit grows from the trunk. There are many Mesoamerican fruits which grow directly from the trunk. I gave a lecture at Tulane University a few years ago which took most of the major "identifications" of cacao pods (on vases and scenes other than that of that one vase) and showed that there were several other fruit pods in Mesoamerica which are the same size and shape as a generic cacao pod.

And some of the "cacao" pods in Maya art or figurines, even if they are cacao-related, they could be from *Theobroma bicolor* (pataxte) or *Theobroma angustifolium* (a rare third species of cacao, claimed to be from Costa Rica, but I would gladly wager that these trees were all over the Maya areas long before the Spanish obliterated native agricultural practices). I just spent a month, driving back and forth over 1000 kilometers, to finally find three remaining trees of *Theobroma angustifolium* in Costa Sur and Boca Costa areas of Guatemala. This tree is almost exterminated; another reason why getting out into the forests with a camera is so helpful.

Watermelons and cucumbers are cucurbits of other countries (thus outside our coverage). So now let's look at squash, pumpkins, and gourds, several of which are also known in Italy as zucchini.

Iconography of squash vines

Although I have worked on iconography for over five decades (starting with discovering the Tomb of the Jade Jaguar in Tikal), this particular report is on squash as a plant. The goal is to provide a photographic reference archive so that students and scholars can compare pre-Columbian renditions of squash vines and flowers with the actual plants.

Squash vines are pictured in Olmec Art at Chalcatzingo, Mexico. Squash vines are associated with ballgame iconography in the Bilbao area of Guatemala. And squash vines and flowers are associated with ballgame art at Chichen Itza. Plus, a squash was used as the head of the Hero Twins in the ballgame played in Xibalba (which is may be the reason why squash vines are so often pictured in art of Mesoamerican ballcourts).

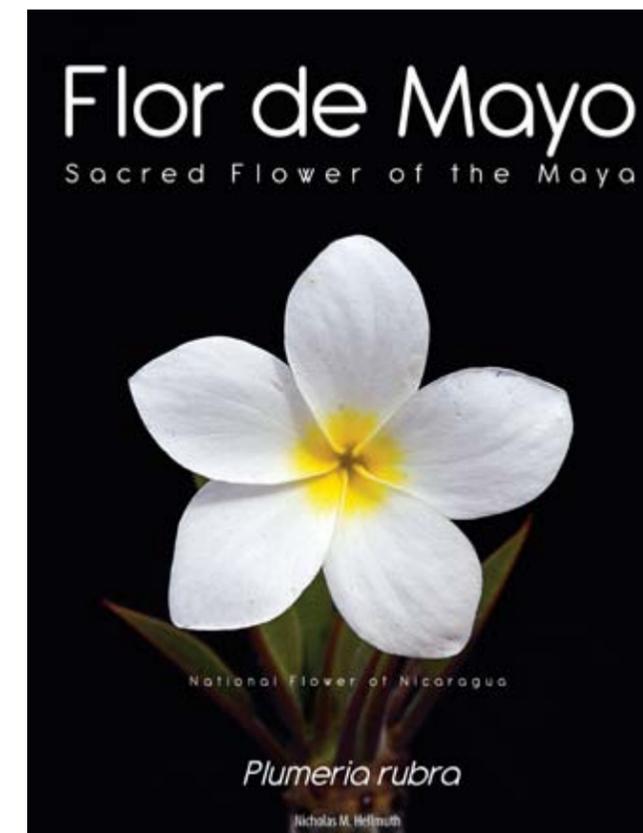
So let's look at actual squash flowers and actual squash vines and fruits. Of course there are many different species two thousand years ago. But although the leaves and fruits do vary between species, most squash and pumpkin flowers and vines are relatively similar. However it would be helpful if a student did a thesis on squash iconography to figure out whether the Olmec and Maya and Cotzumalhuapa cultures showed the same identical species or variety.

The minute you look at real squash flowers, and then look at the Chichen Itza ballcourt sculptures, it is embarrassing to recognize that the flowers there are nothing like most squash flowers whatsoever. So this is now another reason why a thesis or dissertation on squash (flowers and fruits, iconography and diet) is essential.

It will be worth checking to see whether Linda Schele and co-authors labeled these as squash also. It is normal in Maya studies for plant and animal (mis)identifications to be repeated over and over (since few scholars get out into the milpas, swamps, and forests to study the actual flowers). This is why our ethnobotanical project raises squash, so we can study the flowers in-person. We have a veritable milpa plus kitchen-garden around our building (albeit in the middle of Guatemala City).

It would also be crucial to double-check the Cotzumalhuapa vines and flowers. Of course there is always the possibility of deliberate mixture by the Maya artists: a squash vine, squash leaves, but another flower species. After all, you get feathered serpents in many different arrangements (the artist combining a bird with a crocodilian). Other Maya cosmology had snake-like creatures but with fish fins added. Indeed, the vines of Bilbao have a diverse variety of fruits hanging from them, of which only a few even come close to being vaguely squash-like. However where are the squash flowers? Where are the squash leaves?

This is why we have prepared this new FLAAR Report: to show actual squash flowers and actual squash leaves.



The same kind of repeated mis-identification happens with *Plumeria* flowers, by epigraphers, iconographers, and almost every ethnographer who has worked with the Lacandon Maya. This error started with J. Eric S. Thompson and not enough people took the time to look at a real *Plumeria* tree or flower. So we raise flor de mayo plus every year we go out to the forests and desert-like areas where these flowers grow naturally (since the ones we see in Dubai last week and Singapore a year ago often are hybrids, rarely the same variety as native to Guatemala). Though the ones in Dubai were very close to the colors of the *Plumeria* which grow in the dry desert-like area of the Rio Motagua, km. 70 through km. 90, CA-9, Carretera al Atlantico (towards Puerto Barrios).

The "identifications" of plants, animals, insects, and recently centipedes, varies from misunderstanding this flora and fauna to totally inaccurate. It is essential to get away from the library, away from the iPad, and out into the fields, forests, milpas, and swamps of Mesoamerica. Or, at least to have a substantial data base of helpful photographs as reference. Since it is not cost-effective for every student and scholar to get to remote areas of Mexico or Central America, we have been working for years to harvest enough photographs to assist rewriting the iconography (and to some degree epigraphy) of plants and animals.

We currently have about 89,000 high-resolution full-color photographs of flora and fauna from the last four years, and as soon as grants or private donations are available to recuperate the field trip costs of past and present, we would like to turn this entire archive over to a university, research institute, or other entity which could make the entire archive available on-line. In the meantime, we are working at providing at least a sample of some of the species we have photographed.



Plumeria rubra, Flor de Mayo



Cucurbita, squash flower, Pinares, Cahabon Dec 2014



Cucurbita, squash flower, Rio Dulce, Aug 2013



Cucurbita ficifolia squash flower FLAAR garden Aug 2013



Cucurbita ficifolia squash flower FLAAR garden Aug 2013



Cucurbita ficifolia squash flower, San Lorenzo El Tejar, Sep 2013



Cucurbita ficifolia squash flower, San Lorenzo El Tejar, Sep 2013



Cucurbita ficifolia squash flower, San Lorenzo El Tejar, Sep 2013



Cucurbita ficifolia squash flower, Chelmha lodge, Jul 2013



Cucurbita ficifolia squash flower, Chelmha lodge, Jul 2013



Cucurbita ficifolia squash flower, FLAAR garden, Jan 2013



Cucurbita ficifolia squash flower, FLAAR garden, Jan 2013



Cucurbita ficifolia squash flower, FLAAR garden, Jan 2013



Cucurbita ficifolia squash flower, FLAAR garden, Jan 2013



Cucurbita ficifolia squash flower, FLAAR garden, May 2013



Cucurbita ficifolia squash flower, FLAAR garden, May 2013



Some “squash” related plants are not native

When you are driving to Monterrico (on the Pacific coast) you see lots of the dried things that many people used to scrub their bodies with. These squash vines have flowers similar to native Mesoamerican species, but these scrubbies are not native. Luffa can be found on both sides of the highway leading out of Monterrico.

We have a long way to go to learn more about squash and gourds

Would be good to look at Aztec and Mixtec codices and the art of other cultures of Mesoamerica to learn more about how squash fits into their diet or religious systems.

It would be helpful for a student or ethnobotanist to make lists of what foods they find in Mayan huts in rural areas today. I bet over 75% there are storage places for maize (could be 90% or more). I bet more than half have beans in storage. But I would be surprised if more than 20% had any kind of squash except during a squash species harvest season.

But these estimates will vary by eco-system, and by closeness or distance from modern grocery stores.

It would be helpful to have an inventory of leaf sizes and shapes, to compare with images from the Olmec, Cotzumalhuapa, and Maya sculptures.

Also needed is an inventory of good photographs or professional line drawings of all flower sizes and especially incipient fruits with the flowers still on one end of the fruit. We can only identify the “fruits” hanging from vines on Cotzumalhuapa sculptures if such a reference archive is available. There are many kinds of seed pods which sprout from vines, including one vine (Cuchampera. *Gonolobus lasiostemma*) which produces a pod the size and shape of a stylized cacao pod.

I would never have known about this Cuchampera plant from library research. Does any peer reviewed article relate this Cuchampera to Maya iconography? One of our student assistants had this vine in her yard and we brought seeds to our research garden and now I can see the size and shape of this pod up close and in person. Sorry, but this helps more than hours on the Internet and weeks in an ivory tower library (having a Harvard and Yale background I am a tad familiar with strict scholarly research). Probably the best approach is to use all three resources: traditional library research, Internet, but more field studies would be helpful, out in the milpas and villages of the people of Mesoamerica.

For example, while having lunch in Sayaxche, El Peten, in the restaurant patio, there was a healthy sized tree (Cuajilote or Caiba, *Parmentiera aculeata*) with fruit growing everywhere from the trunk... just like on a cacao tree. Plus (more notable for iconographers) was that this fruit was of the size, and close to ridged shape of a cacao pod. This is a native plant, the fruit is edible. Plus... this tree is a very close relative of morro and jicaro (calabash tree, the tree from which the father’s skull of the Hero Twins is hung). I would be very pleasantly surprised so see if this *Parmentiera aculeata* is mentioned in monographs, peer reviewed journals, and other discussions of cacao, much less Maya diet and agriculture. In other words, as much as I love MacDonalds and Burger King, it helps if you also stop in local restaurants in the Maya areas.

During the late 1960’s (while still a student at Harvard) and in the 1970’s, I did research both in the archives of the Peabody Museum Library, and then in the Archivo General de Centro America (Guatemala City). The American Philosophical Society then awarded a grant which allowed me to explore the Archivo General de Centro America, in Sevilla, Spain. It was a bit like being in academic heaven on earth. Most of this research was on the agriculture of the 16th to 19th century Maya of Chiapas, El Peten, and a bit of Alta Verapaz.

Rereading my notes (all my archival research summarized in Hellmuth 1977) I could not help but notice that in about 99% of the Spanish conquerors’ mention of major crops maize was featured. Beans were next. But squash was only mentioned a surprisingly few times.



Edible Squash

At every food store in Guatemala you can find squash for sale (both in supermarkets in international neighborhoods as well as local markets in Mayan villages). Many different sizes and shapes of squash are available. Plus there are pepitoria seeds (my favorite for adding to soup).

In the holy trinity of plants of Mesoamerica, squash is clearly the least eaten of the three. I see maize in over 95% of milpas and fields, beans in over 50%. But squash is probably not more than 30%. Naturally the crop ratio depends on what part of the country you are in and what month you are hiking through the fields.

Modern commercial agro-business is different, but these are not Mayan fields. Our estimated statistics are for Mayan-speaking areas. In the Costa Sur there are commercial plantations of squash. Near Sayaxche, El Peten, there are plantations of pepitoria (this is squash used for its dried seeds: the squash itself is not eaten).

Squash flowers are edible. You can find recipes on the Internet. Immature squash is edible; I had two meals this week with the tiny squash fruits. These are sold at every modern supermarket.



How many kinds of squash are there in Mesoamerica?

Sechium edule is widely grown in both Highland Guatemala and Lowland Guatemala. I do not personally think of them "squash" though they are of the family Cucurbitaceae. We have devoted considerable effort to find and photograph many different sizes, shapes, colors, and surface variations of *wiskil* (spelled a dozen different ways). The word *chayote* is not used as often in Highland Guatemala.



How many species of squash is a good question for a peer-reviewed journal and monographs of the Missouri Botanical Garden. We show their species list in the tabulation lower down.

One of the best articles on calabaza of Mesoamerica is in the magazine *arqueologia MEXICANA*. They list

- *Cucurbita argyrosperma* as Calabaza pipiana
- *Cucurbita ficifolia*, chilacayote (especially in commercial agro-business)
- *Cucurbita moschata*, calabaza de castilla
- *Cucurbita pepo*, calabaza

But when you go further into the article you note that *Cucurbita maxima*, calabaza kabosha, is originally from South America.









Squash Seeds are edible

In most web sites (in American English) these seeds are called pumpkin seeds. But pepitoria is not a pumpkin, neither in size, shape, and especially not in color. Many plantations for pepitoria cover the Sayaxche and Arroyo Petex Batun area of El Peten, Guatemala. There are comparable plantations elsewhere in the Maya areas.

The following information comparative tabulation does not delve into subspecies. The MOBOT monograph goes into depth for these. I list only the main species, and not varieties either.

MOBOT (UNAM, et al.)	Arqueologia MEXICANA
<i>Cucurbita argyrosperma</i>	<i>Cucurbita argyrosperma</i>
<i>Cucurbita ficifolia</i>	<i>Cucurbita ficifolia</i>
<i>Cucurbita lundelliana</i> (wild, not cultivated)	
<i>Cucurbita moschata</i>	<i>Cucurbita moschata</i>
<i>Cucurbita okeechibeensis</i>	
<i>Cucurbita pepo</i>	<i>Cucurbita pepo</i>



Most reports by Guatemalan botanists indicate there are four species cultivated in Guatemala.

The names will vary by country (above is for Mexico). And within a country, plant names often vary by area of the country or whether the person is a botanist or a local Mayan farmer.

Squash in Guatemala (Azurdia and Gonzales 1986)	Common names in Guatemala (Cesar Azurdia)	Other names
<i>Cucurbita argyrosperma</i>	Saquil (Q'eqchi'), Chigua (Maya)	Calabaza, pepitorio
<i>Cucurbita ficifolia</i>	chilacayote	
<i>Cucurbita lundelliana</i> (wild, not cultivated)	Conchej, choc (Jakalteko)	
<i>Cucurbita moschata</i>	ayote	
<i>Cucurbita pepo</i>	guicoy	

Within Guatemala or Mexico often a single plant will have different names depending on what part of the country you are in. In Guatemala there are 21 native Mayan languages. As a starter we show names for basics, provided by our helpful team from Senahu, Alta Verapaz.

XK'AB'AEB' LI KUM – AYOTES - SQUASH		
Q'eqchi' Mayan	Local Spanish	English (in preparation)
IK'OY	Güicoy	
K'UM	Ayote	
Q'ANI K'UM	Ayote amarillo	
Q'OQ'	Chilacayote	
Q'UNIX K'UM	Ayote Tallo	
RATZ'UM K'UM	Flor de ayote	
RATZ'UM Q'OOQ'	Flor de chilacayote	
RAX K'UM	Ayote verde	
SAQI K'UM	Ayote blanco	
SEELI K'UM	Ayote Tol	



Squash will unlikely be demoted from the Maya Diet Trinity (because it is stuck in too many text books and even too many peer reviewed journals). But as much as I personally enjoy eating, and growing squash, and as often as you find it in iconography (even after eliminating the misidentifications), it is time for serious field research and statistics to document what percent of the Maya diet is really squash. In the food diet trinity, all three are definitely not equal (though I admit I enjoy studying squash flowers and fruits because they are photogenic).

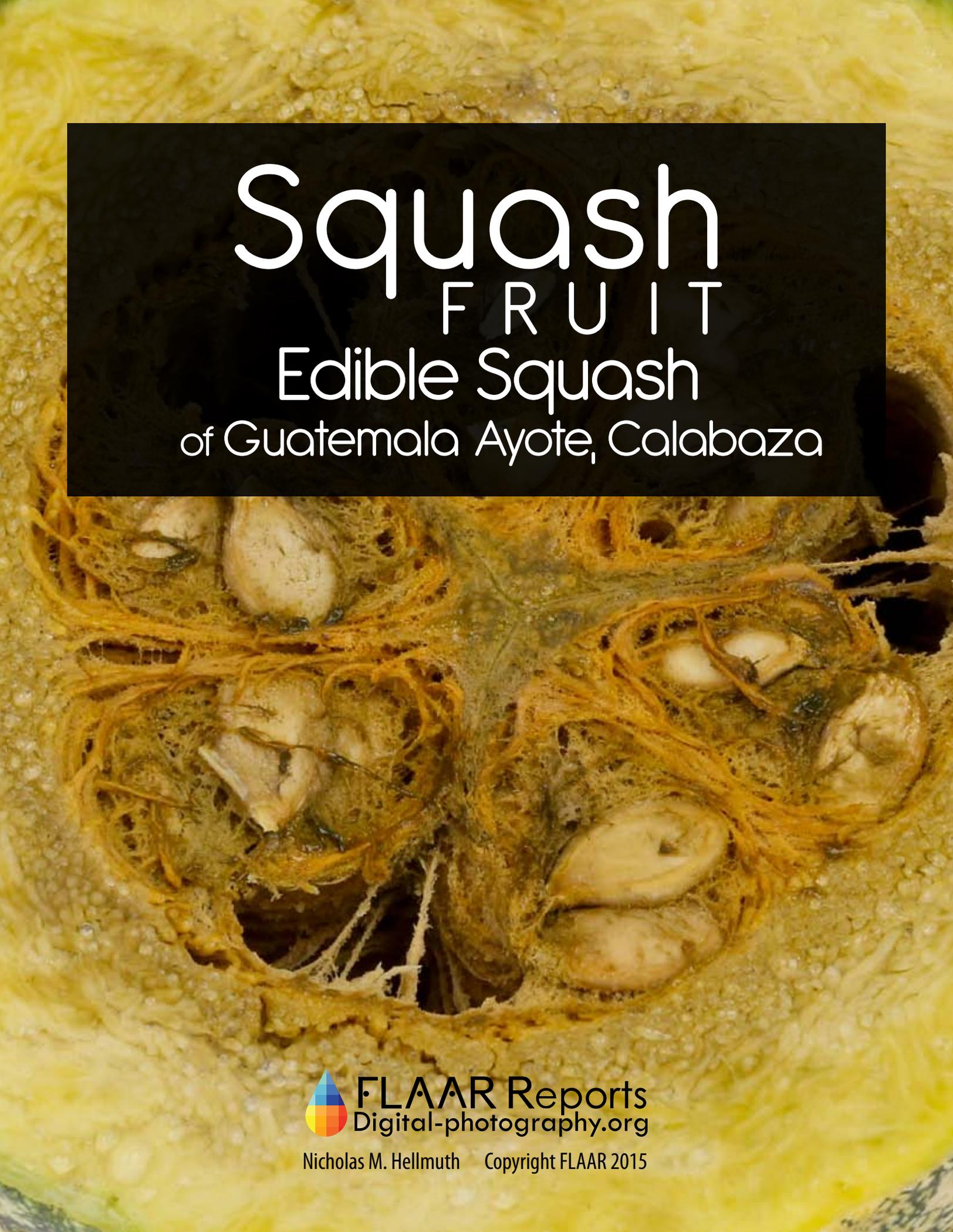




But even when it is finally recognized that squash is not as important a food as fruits, the study of squash and gourd and pumpkin species in Mesoamerica is still crucial. In addition to being part of traditional Maya diet (even if only a lesser percent than imagined), gourds are used as containers for tobacco by the elite (clearly mentioned in the Popol Vuh). Gourds are also containers for holding bees and wasps to hurl at your enemy during warfare. A dried gourd may break up more easily than a morro or jicaro (*Crescentia alata*, *Crescentia cujete*, or crosses between the two, which are common in Monterrico, coastal Guatemala). So there is a lot more to study.

I hope this photo essay on squash flowers, fruits and fields, draws attention to the need to study these plants with more rigor. If this FLAAR Report raises interest in a student doing a thesis or dissertation, or individual(s) or foundation(s) providing funding for us to continue high-resolution photography and presenting photographic data bases in PDF format to assist the world, this would make my years of study and photography of squash worth the time and costs. We would also like to have these photographs on-line, something which funding out make realistic.





Squash

FRUIT

Edible Squash

of Guatemala Ayote, Calabaza



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