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MAIZE DIVERSITY AND CULTURAL CHANGE IN A MAYA AGROECOLOGICAL LANDSCAPE

MICHAEL K. STEINBERG
Department of Geography-Anthropology
University of Southern Maine
Gorham, Maine 04038

ABSTRACT.– Much research has been conducted investigating impacts of introduced crop varieties on local crop plants. It has been demonstrated in many settings that the diversity of local landraces declines once so called "improved" varieties are introduced. My research in southern Belize among the Mopan Maya found that certain maize landraces are planted by a dwindling number of people. However, this decline is unrelated to introduced varieties. Instead, my research has found that traditional varieties decline once their cultural significance is weakened by social change. This paper examines how cultural change among the Mopan Maya has affected the maize diversity in southern Belize. This paper also discusses the symbolic meaning of maize among the Mopan, and their role in maize evolution.

Keywords: maize varieties, cultural change, missionaries.

RESUMEN.– Muchas investigaciones se han hechos estudiando los impactos de la variedad de cultivos introducidos en plantas locales. En muchos lugares se ha demostrado que la diversidad de plantas indígenas locales decae media vez las variedades "mejoradas" son introducidas. Mis pesquisas llevadas a cabo en el sur de Belice, entre los Mayas Mopán, encontraron que ciertas variedades indígenas de maíz están siendo sembradas por menos gente ahora. Sin embargo, esta disminución no tiene ninguna relación con las variedades introducidas. Mis investigaciones han encontrado que las variedades tradicionales decaen media vez su significado cultural se debilita debido a cambios sociales. Este ensayo examina como los cambios culturales entre los Mayas Mopán han afectado la diversidad de maíz en el sur de Belice. Asísmismo, este ensayo discute el significado simbólico de maíz entre los Mayas Mopán y su rol en la evolución del maíz.

Palabras claves: variedades de maíz, cambios culturales, misioneros.

RÉSUMÉ.– Plus de la recherche avait conduit sur des impacts de les variétés de la réolte introduit sur les récoltes locales. Il y avait démontré dans plusiers des décors que la diversité des variétés locales a décliné autrefois ainsi appelée les variétés ameliorée sont introduit. Ma recherche dans le sud de Belize parmi les Mayas Mopan a trouvé que certaine variétés locales du maïs sont planté par un nombre des gens en diminution. Cependent, cet déclin n'a aucun rapport avec les variétés introduits. Au lieu de cela, j'ai trouvé que las variétés traditionnelles décline dès que leur importance culturelle a faibli par le chandement social. Cet papier examine comment le changement culturel parmi les Mayas Mopan a été un effet sur la diversité du maïs dans le sud de Belize. Puis, il inclut aussi le sens symbolique du maïs parmi le Mopan et leur rôle dans l'évolution du maïs.

Les mots clés: les variétés du maïs, le changement culturel, les missionaires.

INTRODUCTION

I present this case study of the relationship among Maya farmers' knowledge of local maize (*Zea mays* L.) varieties, the symbolic meaning of these varieties, and management of these landraces under conditions of cultural and economic change in southern Belize. Several themes regarding maize and the Mopan Maya are addressed: first, the swidden milpa system of the Mopan Maya in which maize is the focal crop is examined. Next, the symbolic value of maize in Mopan Maya culture is discussed. The author then discusses the role Mopan farmers play in maize evolution. And lastly, the author examines maize diversity in the Mopan cultural region and discusses the factors that are undermining this diversity.

Much has been written concerning the abandonment of local crop landraces -- primarily after so-called improved varieties became available. Many authors point to programs like the green revolution as being responsible for the loss of diversity among most of the world's major cereal crops (Fowler and Mooney 1990; Oldfield and Alcorn 1987; Pearce 1980). Although programs that seek to replace local varieties with greater yielding or more pest-resistant varieties have no doubt led to the loss of genetic diversity in some agricultural landscapes (Harlan 1975; Frankel and Hawkes 1975), my research in southern Belize found little correlation between improved varieties being introduced and old varieties being abandoned there. Instead, this and other research demonstrates how cultural and economic changes alter the perception and use of maize varieties in an indigenous landscape where maize historically has been and remains the focal crop (Soleri and Cleveland 1993; Soleri and Smith 1995; Zimmerer 1996).

This paper is the result of periodic fieldwork conducted between 1994 and 1998. Interviews were conducted with 89 Mopan farmers pertaining to the number of maize varieties planted in the past and present, changes in their agroecological practices, and the symbolic meaning of maize varieties. Most interviews were conducted with farmers in San Antonio and San José; however, Mopan in Santa Cruz, Nalumka, and Santa Elena were also included (Fig. 1). Both informal and formal interviews were conducted with Mopan farmers concerning past and present agricultural practices. I and two Mopan villagers with survey experience administered 89 formal interviews. Topics investigated through formal interviews included the number of maize varieties grown by Mopan farmers, the perception and meaning of maize to individuals, and how traditional agroecological practices and beliefs changed within the lifetime of the informant. Informal interviews covered similar topics, however, these were conducted in situations where a formal meeting was not possible (e.g. meeting someone in a village shop or along a roadside). In San Antonio and San José, a spatial systematic sample was used to select farmers for formal interviews. Twelve ethnobotanical market surveys were conducted in Punta Gorda, the district capital, to investigate crop selection among the Mopan Maya. These surveys were conducted over a three-year period in order to record changes in the varieties of maize being sold.

A great deal of research has been conducted concerning traditional agriculture and crop diversity -- especially maize. Much of this research has been concerned with the erosion of crop diversity in domestication hearths. Some prominent recent examples of this research include Zimmerer's studies of cultural change and crop diversity

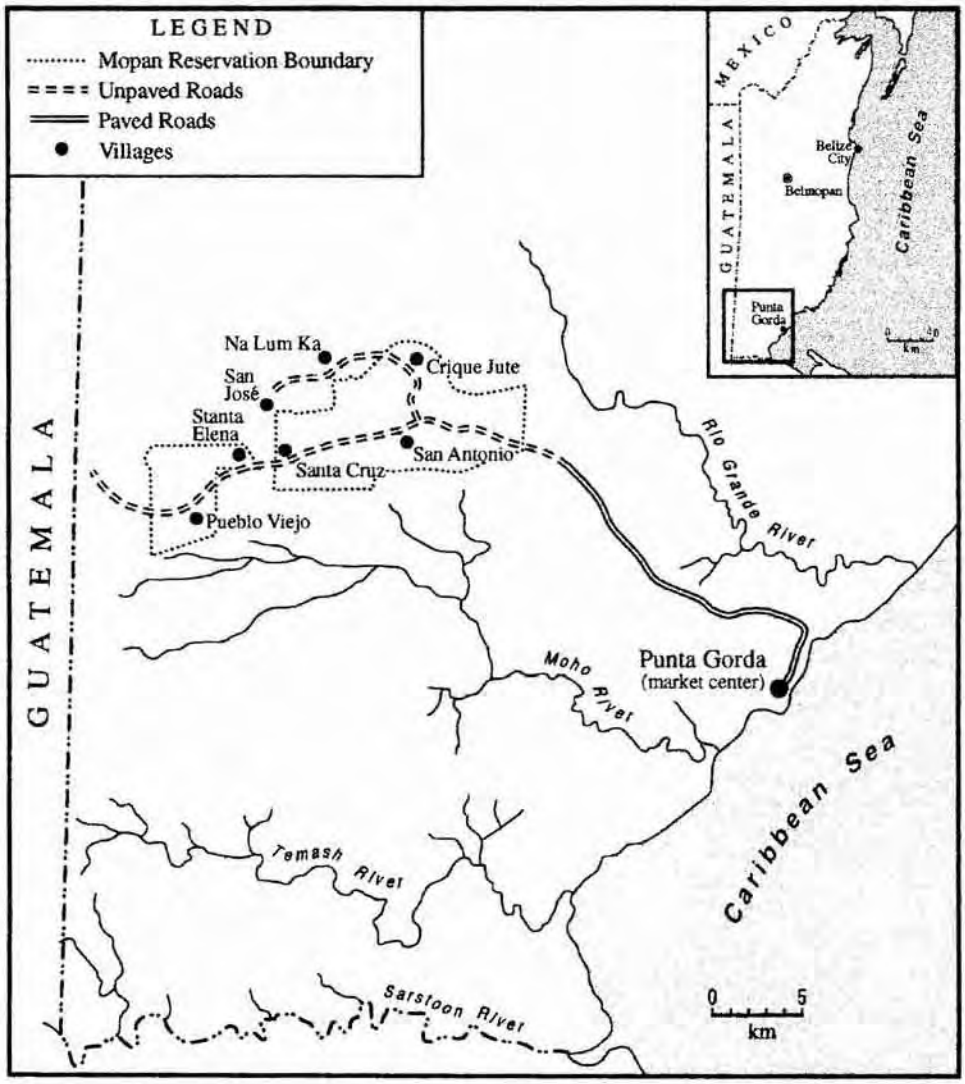

FIGURE 1.–Mopan villages in southern Belize

in Peru (1988, 1990, 1991; and Douches 1991), Bellon's research concerned with maize diversity under conditions of technological change in Mexico (1991, 1995; and Brush 1994), Brush's extensive survey of traditional farming systems and crop landraces in both Mexico and South America (1986, 1989, 1992; et al. 1992), as well as other studies by Clawson (1985), Altieri and Merrick (1987), Merrick (1990), Louette (et al. 1997), and Wilken's (1987) broad description of traditional farming practices in Mexico and Guatemala. Some less recent, yet still prominent, research concerned with crop diversity and traditional agriculture includes Anderson's studies of maize diversity in Mexico and Guatemala (Anderson 1946, 1947), Johannessen's work on the domestication process in Guatemala (Johannessen et al. 1970; and Johannessen1982), and Wellhausen's survey of maize diversity in Mexico (Wellhausen et. al 1952).

An important theme of these works, particularly the more recent literature cited, is the role farmer's play in maintaining crop diversity and how this diversity is affected by cultural and economic change. This chapter will follow a similar vein by discussing how cultural and economic change has affected maize diversity among the Mopan Maya.

CULTURAL SETTING

This study was conducted in the Mopan Maya cultural region in the Toledo District in southern Belize (Figure 1). The Mopan Maya present an interesting group through which to study agricultural changes because their overall culture has dramatically changed over the past 50 years (Wilk and Chapin 1990). Examples of change include the Mopan economy, growing educational opportunities for young people, especially women, and development projects focused on village women (Steinberg 1998).

The Mopan economy moved from subsistence-based to market-oriented after 1940 when the government constructed a road from San Antonio, the largest Mopan community, to Punta Gorda, the primary market town (Figure 1). This road created an outlet for Mopan agricultural products, thereby generating cash incomes in an economy that was previously subsistence-based. Rising income and contact with greater Belizean society resulted in growing economic and social aspirations, especially among young adults. These rising expectations set in motion what Gregory (1987) called the "young man's revolt," in which the younger male generation refused to participate in the previously mandatory civil-religious hierarchy, or cargo system. As a result, the traditional political, economic, and religious hierarchies were turned upside down as prestige and honor were no longer associated with age and experience, but instead with cash and material wealth.

More recently, a young women's revolt has taken place. More Mopan women are receiving high school educations than at any time in the past. Women who attend high school have opportunities beyond the control of their families. In the past, many married around the age of 14 (Gregory 1987; Wilk and Chapin 1990); however, with greater emphasis placed on education, marriage is being postponed and involving less parental interference.

Traditional gender roles where a woman's economic security is totally dependent on her husband's earning potential is also changing with the help of outside development agencies. Most villages formed women's cooperatives in the past five years that earn income by running corn mills and/or selling handicrafts to tourists. Before corn mills were established in villages, women spent up to three hours a day grinding corn by hand for tortillas, the mainstay of the Mopan diet. Some devote the extra time to handicrafts, generating their own income. Some women reported using their money to buy metal cooking pots, which are considered luxuries and a great source of pride for the family. Village women have more free time and money, empowering them within Mopan society.

Other areas of change over the past 50 years include: 1) political change, where politics moved from being local, Catholic Church oriented to more national, secular oriented; and 2) religious change, where since the 1970s large numbers of people left the Catholic Church and joined Protestant evangelical churches.

THE MOPAN MILPA SYSTEM

The Mopan practice slash-and-burn agriculture that is characteristic throughout Mesoamerica as well as most of the tropics. As in other areas of the tropics, vegetation is felled, left to dry, and then burned, with the ash acting as a fertilizer for crop plants. Two maize crops are planted each year by the Mopan. The first in May (***sotzilnil***) and the second in November (***matahambre***). The May crop always involves burning, while in the second planting the vegetation is usually cut and left to rot. However, some farmers will burn their milpas in November if weeds and grasses are becoming too prolific.

May planting is a time of anxiety among the Mopan because if farmers plant too early in the short, dry season, the crop will wither and be wasted. In recent years, farmers have complained that the rainy season is arriving later and later; therefore, many Mopan farmers have begun to adjust their planting time to late May or early June. However, risk always looms large in Mopan agricultural life. Religious ceremonies are an important part of Mopan culture during the burning and planting season prior to the arrival of the rains in May and June. Prayer services are held in most communities and farmers burn copal in their fields and make offerings in order to assure the timely arrival of rain.

Mopan milpas range between two and five hectares. Milpas are almost always created from young second growth vegetation rather than primary forest. Today, primary forests are so distant from Mopan settlements that it has become impractical to maintain a milpa so far away. For example, the largest Mopan town, San Antonio, is about three to four hours walking time from the nearest large tracts of primary forest. Usually, the forest is allowed to regenerate for no more than five years before the Mopan clear the same plot again. All farmers in this study claim a five year fallow period is the longest they would allow their field to regenerate before clearing, with 28 of the 89 farmers indicating that fields are cleared and burned every year.

CULTURAL IMPORTANCE AND MEANING OF MAIZE

Despite all of the cultural changes the Mopan Maya have undergone in the past 50 years, the milpa and maize remain defining features of their culture. Almost every able-bodied adult male, as well as many widowed or single adult females, grow maize. Even those who are considered rich by Mopan standards, and who could buy it from their neighbors, still maintain a milpa with maize, even if the milpa is small and economically insignificant. For instance, a retired Mopan nurse who trained and worked in the United States, who lives in a cement two-story modern home, and who dresses in Western-style clothing, continues to clear, burn, and plant a field with maize. She does not do this for the income, but instead because the Mopan continue to have very strong ties to the milpa and maize. Maintaining a milpa and growing maize is synonymous with being Mopan Maya. Maize is part of the Mopan cultural core.

Maize has similar importance throughout Mesoamerica, particularly in the pan-Maya highland and lowland areas. This applies not only to today, but also for thousands of years in the past. It is the staple crop that gave rise to the magnificent

temples as well as provides income for today's rural peasants (Galinat 1995). As a result of its long-term importance to the Maya, hundreds of varieties of maize are grown in dozens of environments. The diffusion into different physical settings has resulted in varieties ranging from those that are adapted to short growing seasons at high altitudes to drought resistant varieties that thrive in desert conditions. There is no other single crop that is more important in a historical or modern sense to the indigenous cultures of Mesoamerica.

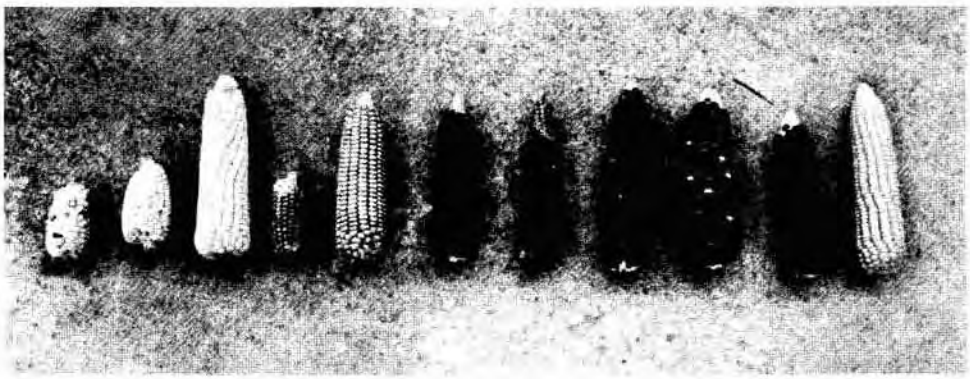

FIGURE 2.–Maize varieties that are planted by the Mopan. One through three, left to right, are the white variety (***sic nil***), four and five are the red variety (***chuck nil***), six through ten are the black variety (***bush nil***), and eleven is the yellow variety (***kún nil***).

Among the Mopan, particularly older villagers, maize continues to have mythological legends attached to it (Steinberg 1996). The Mopan grow four local maize (***ixim***) varieties (Steinberg 99, 100, 101, 102, WIS), and one hybrid variety of maize. These include the black variety (***bush nil*** in Mopan), the red variety (***chuck nil***), the yellow variety (***kún nil***), and a white variety (***sic nil***) (Figure 2). The white variety is harvested as "green" corn that is used in tamales, or harvested when mature and used for animal feed or for tortillas. All varieties (white, yellow, red, and black) take about 4 months to mature, but when harvested green, the white variety is harvested after 2 months, making it the fastest maturing variety.

The symbolic value of maize is linked with its color. Of the four varieties grown by the Mopan, black and red maize have the most spiritual/cultural significance attached to them. Because of their symbolic importance, these two varieties are not sold. They are grown for household consumption, especially at celebrations.

The Mopan claim the colors of maize represent the different temperatures at which it was created. This belief is described in the following folktale:

The Maya saw the ***wewe*** ant (leaf-cutter ant) carrying the maize kernels along a path one day. The Maya were hungry and wanted to collect the maize, but it took too long to collect it from each ant. So the Maya followed the ant to the source of the corn, which was a huge rock with a very thin crack. The crack was too thin for the Mopan to reach in and get the maize. The Maya knew they would need help to crack open the rock and get the maize. So they asked the woodpecker to crack open the stone. The woodpecker tried, but he could not do it alone. So the

Maya asked the Gods to hit the rock with lightning at the same time the woodpecker was pecking at the rock. The Maya told the woodpecker to be careful and to fly away just before the lightning struck the rock. The woodpecker was too slow; when the lightning struck, it also hit the woodpecker in his head turning his comb bright red (probably a Lineated woodpecker). When the lightning hit the rock the rock burst open, burning some of the seeds according to how close they were to the spot where the lightning struck the rock. This heat produced the individual colors. The black variety was created under the most intense heat, followed by the red variety, then the yellow, and the white variety under the least hot conditions.

The association of maize color with different temperatures has also been noted in Maya cultural areas in Guatemala (Johannessen 1982).

Another folktale links the black color to sexual promiscuity. According to informants:

> A women was taking lunch to her husband who was working in their milpa when she met a stranger along the path. The stranger was a handsome man. She stopped and talked with him. He then talked her into having sex with him in the forest. When the husband found out, he was very upset and chased the wife out of the house and killed her. As punishment for their actions, god burned the maize crop, producing the black color in response to the Mopan straying from the path of accepted social mores.

To the Mopan, the red maize also carries a great deal of symbolic value. In addition to the folklore mentioned above, the Mopan claim the red color represents Christ's blood that was shed on the cross. As the blood dripped to the ground, it stained the maize plants growing around him. When white maize is planted too close to red maize, they cross-breed and the Mopan claim the maize is splattered with Christ's blood.

Medicinal powers are also attributed to maize. Maize kernels are brewed with hot water to make maize teas or soups to strengthen individuals who are weak or lethargic. Several informants claimed that tortillas made from black maize provide extra strength, allowing a person to work for a long time without becoming hungry after eating the tortillas.

Besides its supposed medicinal powers, maize porridge or (***lukenoox***) is served during religious ceremonies. All-night prayer vigils to honor a particular religious figure prior to or during Maya Catholic feast days are common in Mopan villages. A maize porridge is served to the individuals who are participating in the vigil. This is said to help participants maintain their stamina through the all-night prayer services as well as become spiritually more pure by eating the most sacred of all Mopan crop plants (maize). This maize porridge is also served to individuals who participate in the Mopan deer dance, a masked-dance performance that was once performed in all Mopan villages, but in recent times has become quite rare (Steinberg 1997). During this celebration, young men in the village attempt to climb a greased pole in an effort to retrieve a satchel of money placed on top of the pole. The participants are fed maize porridge in order to provide them with the energy and power needed to reach the top of the pole.

Maize is also made into ***chicha***, a fermented maize "brew." Chicha is made from maize kernels that are infested with weevils. The weevils are believed to play a role in its alcoholic potency. Chicha is still a common feature in Mopan villages, even with the availability of rum and beer. Unfortunately, it feeds the alcoholic appetite of the most economically marginalized in the villages– usually the old or destitute (which are often one in the same).

The white variety is preferred for tamales and tortillas, the staple food of the Mopan which is eaten at every meal. The white variety is described as being the easiest to work with when it is ground into a paste, followed by the black and red varieties. The yellow variety is described as being extremely tough and difficult to work with by several women in the San Antonio corn mill. The Mopan claim the yellow variety is grown almost solely for animal feed because of its hard texture.

The Mopan value maize above all other crops they grow, referring to it with respect and never wasting it. This respect can be witnessed during ceremonies commemorating certain agricultural events, like planting and harvesting. Personal and material sacrifices are offered to the spirit of the maize plant to help ensure a good crop. These sacrifices include abstaining from sexual intercourse before planting or holding a feast to honor the spirit of maize. Regarding the use of maize, maize is never supposed to be treated in a careless, wasteful manner. Maize is fed to animals in a way that is considered to be respectful to the maize plant. While it is on the ground, individuals are never supposed to trample on it.

No other plant grown by the Mopan has such cultural importance assigned to it. Other crops, such as rice or beans, are merely described as cash crops. These plants are not crops with great cultural importance and are not assigned significant symbolic status.

THE MOPAN ROLE IN MAIZE EVOLUTION

Mopan farmers have an impact on maize evolution as they select for specific desired traits. These traits include kernel size, ear size, color, and resistance to pests. Robust kernels from large ears are selected and set aside for the next season's planting. Seed kernels are never selected from stunted ears, or from the ends of the ears. A similar method is employed when selecting for color. Large kernels from healthy ears with uniform color are selected for seed. In one informant's home was a small, but growing, pile of future seed corn of the red variety. Each kernel was a brilliant ruby color, with no trace of any other variety's imprint. Seed kernels were selected as the corn was shucked and prepared for either sale or home use. Selection for pest resistance is similar. Ears and individual kernels that lack any weevil or other pest damage while on the stalk and in storage are set aside to be used in the future.

Little effort is made to isolate individual varieties in separate fields. The shortage of arable land due to population growth has limited the number of fields available to a single farmer. As a result of this growing pressure on land resources, many farmers do not have the luxury of using multiple fields in several different microenvironments. The Mopan have not maintained the folk pedological system described in many studies in other ethnoecological settings (see Wilken 1987). In my survey, only five of the 89 informants claimed that certain varieties of maize

are adapted to, and have better yields in, specialized soil environments. And of those three, they gave vague descriptions of how each variety of maize is adapted to specific micro-environmental conditions. Instead, most Mopan claim none of the varieties are specialized, and that any can be planted where others have been planted. The Mopan do recognize that different varieties must be grown in separate sections of a field if the characteristics of that variety are to be maintained. Because of the close proximity of the different varieties, many ears bear mixed or speckled kernels.

MAIZE DIVERSITY IN THE MOPAN CULTURAL LANDSCAPE

Over the three year period of field work, the Mopan planted four local maize varieties and one hybrid variety. However, the number of individuals planting the red and black varieties today are so small these two landraces are on the brink of extinction in the study villages– especially the red variety. Of 89 farmers surveyed, only four still plant red maize, while 17 plant the black variety.

Informants claim that more individuals planted the red and black varieties in the past. Although they may never have been as common as the white or yellow varieties, of 89 farmers interviewed, 55 claimed they do remember their fathers planting the red or black varieties. According to one informant, black and red maize were "much more common in the past, especially when the dances and (Maya Catholic) holidays were celebrated."

In contrast to what many researchers have found in other agroecological landscapes, the decline of these varieties is not due to the introduction of maize hybrids. Only three individuals in my survey planted commercial hybrids. Hybrids are available from missionary Mennonite farmers, and they do offer some advantages over local varieties in that they mature in a shorter period of time and they are rarely blown over by wind gusts because their stalks are shorter. However, they are not preferred by the Mopan because of their susceptibility to weevil infestation while in storage.

I found that local varieties are abandoned once their cultural significance is weakened by forces unrelated to hybrid introduction. One of the driving forces behind recent changes in traditional Mopan agroecology is the influence of Protestant evangelical missionaries. The evangelizing of rural villages in southern Belize began in earnest in the middle and late 1970s. As missionaries entered villages, traditional, synthesized Maya Catholic beliefs and practices began to be abandoned (Gregory 1987; Steinberg 1997).

Although maize may at first seem unrelated to religion, stories and rituals associated with it have been incorporated into the Maya Catholic faith. The ritual significance of maize was transferred from traditional Maya beliefs to the Catholic faith. The Maya Catholic religion allowed these traditions to continue in post-contact Maya culture. However, this connection between the spiritual and natural world is being rapidly eroded. As more individuals convert to evangelical denominations, fewer plant red and black maize. A significant correlation exists at the five percent level between those who grow red and black maize and religious affiliation (Table 1). Eleven of the 17 farmers growing black maize were Catholic, while all four individuals who grew red maize were Catholic.

Table 1.– Maize Correlation Coefficients. Probabilities in parentheses

	AGE	RELIGION	PLANT IN PAST?	YELLOW MAIZE	WHITE MAIZE	BLACK MAIZE	RED MAIZE	FATHER PLANT THEM?
AGE	1.000 (0.000)							
RELIGION	0.0600 (0.5764)	1.0000 (0.0000)						
PLANT IN PAST?	0.2475* (0.0194)	0.2415* (0.0226)	1.0000 (0.0000)					
YELLOW MAIZE	0.0302 (0.7788)	-0.2470* (0.0196)	-0.0047 (0.9648)	1.0000 (0.0000)				
WHITE MAIZE	-0.2487* (0.0188)	-0.1259 (0.2397)	-0.0964 (0.3687)	-0.0495 (0.6449)	1.0000 (0.0000)			
BLACK MAIZE	0.2295* (0.3971)	0.2390* (0.0241)	0.3448* (0.0009)	0.0663 (0.5373)	-0.3085* (0.0033)	1.0000 (0.0000)		
RED MAIZE	0.0909 (0.3971)	0.2347* (0.0268)	0.0964 (0.3687)	-0.1765 (0.0980)	0.0471 (0.6614)	0.0326 (0.7620)	1.0000 (0.0000)	
FATHER PLANT THEM?	0.1770 (0.0971)	0.1235 (0.2487)	-0.0947 (0.3772)	-0.2518* (0.0173)	-0.0589 (0.5832)	-0.0297 (0.7820)	0.1706 (0.1100)	1.0000 (0.0000)

A young farmer explained why he did not participate in such traditional activities: he claimed his father's generation planted black maize, but he did not believe in the superstition associated with it. Instead, he planted white maize because he perceived it as having less religious significance, and because it could be sold more easily. He, and many of his generational counterparts, eagerly embrace the new religion that promises a new identity and a break with the perception of the "old ways" as superstitious. The old ways came from a time when the Maya Catholic belief system affected all parts of Maya life. The civic/religious cargo system was supported, each village celebrated its patron saint's feast day with public dances, and the communal land and labor systems were strong. Even among Mopan Catholics today (who still make-up the majority of Mopan), many traditions associated with the old ways are being abandoned because of the divisive nature of the missionary work. Entire communities and families have split along religious lines; thus the cultural solidarity which motivated individuals to continue many traditions is declining. Once the religious connection between the natural world and Maya Catholicism is weakened, traditional varieties are abandoned for those which are more culturally neutral.

Protestant missionaries forbid converts to participate in activities that have ties to the Maya Catholic culture. When one converts, he or she is expected to be "born again" not just spiritually, but also culturally. This means giving up rituals

that are connected with the Maya Catholic faith and culture. Crops, traditional dress, and cultural dances are all examples of ethnic traits that have been impacted by evangelical conversions (Steinberg 1997).

Not only are the red and black varieties becoming rare, they are also grown predominantly by older farmers. Again, a significant correlation exists at the five percent level between age and farmers planting black and red maize varieties (Table 1). Within the study population, 12 of the 17 farmers who were growing black maize were over 40 years old, while three of the four individuals who planted red corn were over 40. While another correlation exists at the five percent level between young farmers and planting efforts concentrated on white maize (Table 1). It appears that the younger farmers want little to do with symbols of the old ways.

Besides the impact of cultural change on maize diversity discussed above, commercialization of the Mopan milpa also has had an impact on how many varieties the Mopan plant and maintain. The Mopan have been producing agricultural products for the larger Belizean economy since the early 1940s; therefore, they are well integrated into a national economy. Although the milpa and maize have retained their significance in the Mopan culture *overall*, the milpa is also a commodity-oriented, market-driven land use system for virtually all Mopan. The Mopan have few economic opportunities beyond what is produced in the milpa; therefore, maximum returns are demanded. The Mopan depend on an economically active milpa system to produce cash income, not a milpa that produces ritualistic crops with little cash value.

The result of this commercialization of the milpa is illustrated in the diversity of maize grown by the Mopan. Few Mopan farmers grow crops that are valued for religious, ceremonial, or cultural reasons. Instead, most Mopan grow crops that can produce cash. By far the most popular varieties of maize are the white and yellow races. These varieties have less symbolic value and more cash value. In 12 surveys of the agricultural market in Punta Gorda, this study found no farmers who sold the black or red maize varieties. As a result, the Mopan dedicate most of the milpa space to the production of first white, and then second the yellow variety. The Mopan cannot sell the black or red varieties; therefore, few people grow them. The market-driven milpa does not value ceremonial and traditional crops (i.e., agricultural diversity); instead, it values commodities that produce economic returns.

Because the red and black varieties are planted by so few farmers, several informants claimed that the seeds of these varieties are no longer available. Several informants acted surprised that they were still planted at all. Seed is exchanged among family and friends. Once these sources stop growing a particular variety, it is very difficult for the Mopan to then find enough seeds to plant. Some informants claimed the red and black varieties are no longer planted by any Mopan. Given the fact that the red and black varieties are used only in home consumption and grown by so few farmers, it is easy to understand why farmers who do not plant these varieties themselves believe that they are no longer planted by anyone.

CONCLUSIONS

Although maize maintains an important position in the Mopan agroecological landscape, its meaning, significance, and maintenance have not been impermeable to outside forces driving cultural change among the Mopan. Most Mopan plant only one or two varieties of maize. This is particularly true among the younger generation. The result is a less diverse, more homogeneous agricultural landscape.

This research demonstrates that decisions made by traditional farmers regarding crop maintenance and selection are more complex than some researchers have suggested. The availability of hybrids does not invariably lead to the abandonment of local landraces. In the Mopan cultural region of southern Belize, certain landraces are maintained for symbolic, ritualistic purposes. Once the rituals are abandoned and their symbolism weakened, these varieties are planted by fewer individuals. Similarly, when farmers move away from a subsistence economy and become involved in a market-driven economy, varieties that have little or no cash value fall out of the crop complex grown by farmers.

The outside Western world is certainly impacting maize diversity in southern Belize, but, in much broader and more complex ways than is posited by placing the blame for the abandonment of local landraces on the introduction of green revolution varieties.

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