

# **Defining Shade Coffee with Bio-Physical Criteria**

Results of the Workshop Organized by  
The Smithsonian Migratory Bird Center  
of The National Zoological Park  
Washington, DC 20008

and held at the  
Jardín Botánico of the  
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## **Introduction**

In accordance with the Commission for Environmental Cooperation's (CEC) goal of contributing to the conservation of birds of North America (particularly non-waterfowl species), this project examined --via a three-day workshop-- the manner in which shade coffee systems can contribute to the conservation of biodiversity, as well as to the broader goal of environmental protection in Mexico. With forest lands suffering ever-increasing pressure from commercial and subsistence forces, an exploration of how such managed lands might contribute to conservation provides planners and policy makers with data that can inform decisions not only about biodiversity maintenance, but of community development as well.

Coffee represents a commodity of great economic, social and environmental importance to Mexico. Ranking fourth in world production, Mexico cultivates more than 760,000 hectares of coffee, managed by 282,500 growers --most of whom are small peasant producers in remote areas. Twelve Mexican states contribute to the national production, where some 3 million people in more than 4500 communities scattered across 400 municipios participate in coffee's cultivation and harvest each year. About 85% of the annual production is exported, making coffee an important generator of foreign exchange. The states of Chiapas, Oaxaca and Veracruz stand out as major centers of production, accounting for 30%, 23% and 20%, respectively of the national area. Other states with significant areas of coffee lands include Puebla, Guerrero, Hidalgo, San Luis Potosí and Nayarit, each of which alone accounts for less than 10% of the national coffee area.

This project developed a set of definitions for "shade coffee" for the Mexican context. The mechanism for producing these definitions involved a workshop in which scientifically based information relative to shade coffee was presented and discussed by researchers involved in diverse studies related to coffee. A total of 14 researchers gathered in Xalapa, Veracruz for three days in February of 1999 (8th--10th) to share information on their respective research efforts, review existing criteria related to "environmental" coffee, and contribute to the defining of a shade coffee for Mexico. Due to time constraints for most participants, the original plan to conduct site visits to coffee areas of Mexico did not occur. The unifying thread of the workshop was shade coffee. However, the goal of fitting shade coffee within the larger aim of sustainable development demanded that shade coffee parameters not be divorced from economic and social concerns of the coffee communities to which they apply. To this end, aside from science-based information related directly to coffee lands and their management, the workshop incorporated representatives from the coffee sector --especially those from small producer cooperatives involved in community development efforts around coffee production. A list of participants appears in this report.

## Background

The debate over shade levels in coffee is nothing new. From an agronomic perspective, the use and amount of shade has long occupied space within the production manuals of most coffee regions of the world. The concept of shade coffee as a habitat, however, does present new intellectual terrain. As an “artificial forest,” in essence, shade coffee provides many of the ecological services found in forested lands. Soil protection from erosive elements, organic matter production and incorporation into the soil, carbon sequestration, and habitat maintenance or enhancement are but a few of the kinds of services shade coffee can provide. Shade coffee is an important complement to natural forest protection not only in national environmental efforts, but regionally as well (e.g., the Meso American Biological Corridor).

The principal goal of any land manager is to make a living through manipulation of the land surface. However, given that land is going to be put to economic use, managing it in such a way that maximizes its environmental value certainly qualifies as a worthy goal. Scientific research has only recently begun to examine shade coffee as a habitat or refuge for biodiversity, with the bulk of the work having concentrated on birds and insects. Marketers, meanwhile, have locked on to the concept in their zeal to capture market shares within what they perceive as a potentially lucrative niche market (environmentally friendly coffee products). Coffee as a habitat has quickly emerged as a marketing tool within the specialty coffee community.

The current challenge rests with the fact that few science-based criteria are being used to define “shade coffee”. A number of industry players --grower organizations, importers, roasters, and retailers alike-- employ the terms “shade grown” or “shade coffee” on their products, implying that the source of the product is a production system replete with all the benefits of a forest system. As the workshop participants confirmed, shade comes in many forms and its mere presence does not insure adequate habitat or biodiversity maintenance. Rather, shade displaying distinct characteristics is needed before appellations like “shade grown” or “shade coffee” can be applied to the commodity itself.

At the country level, El Salvador recently launched a nation-wide initiative to promote its coffee as “shade coffee.” This effort is funded by the Global Environment Facility (GEF) program, and satisfies the GEF project priority categories of biodiversity and climate change. Another GEF project involving shade coffee is that located in Chiapas, in the area around the El Triunfo protected area. The efforts of the project --defining shade coffee as a sustainable development activity-- fit well with these initiatives and complement the ultimate long term goal<sup>1</sup> of helping to define an industry-wide set of standards as to what constitutes “shade coffee.”

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<sup>1</sup>No effort within the industry has been made to date to define a set of standards that could be used by all countries. This is not necessarily an obstacle, given that the concept is so novel. As concerns grow and attitudes mature with respect to the shade coffee issue, some attempt to “harmonize” the different initiatives will undoubtedly occur.

## **The project**

A small number of researchers and coffee sector specialists convened to present and discuss the current state of knowledge on shade coffee. The workshop built upon discussions that occurred in 1996/97 at the First Sustainable Coffee Congress in Washington, DC which led to the development of criteria for “sustainable” coffee. These criteria, as well as guidelines that have been developed from a number of other specific initiatives, served to help orient the workshop discussion. The workshop met in Xalapa, Veracruz, at the Centro de Ecología, and lasted for three full days. The nature and goal of the workshop demanded that the number of participants not exceed one dozen or so people. A bilingual facilitator helped guide the discussion.

The results of the workshop --a set of definitions that can be applied to the concept of shade coffee as a sustainability development activity-- are presented here, in several sections that follow after a brief summary of how and why shade coffee can serve to enhance the maintenance of biodiversity.

## **The ecological and socioeconomic services of shade coffee**

The concept of managed terrestrial systems serving as conservation tools is relatively new. Mainstream conservation efforts and dogma have tended to ignore managed systems, characterizing them as tainted by human agency and therefore unworthy of attention. Recent work from a number of quarters, however, points to the ecological services provided by agroforestry systems such as shaded coffee and cacao lands. Agronomically, such systems can inherently serve to protect and enrich the soil, as well as reduce the need to use costly and toxic chemical inputs to control pests and/or weeds.

The ecological value of such agroecosystems has been suggested by their potential habitat services for organisms like birds, insects, and small mammals. Additionally, some may act as a refuge for biodiversity of epiphytic plants such as bromeliads, orchids, and ferns. A final ecological value relates to global climate change, in which the biomass bound up in the shade component, plus that of the soil layer, serves to fix carbon that might otherwise find its way into the atmosphere.

A significant gap in our knowledge about the environmental benefits of agroforestry systems pertains to the landscape. We do not yet understand how the patterns of the landscape mosaic can best protect biodiversity. Intuitively, we understand that natural forest remnants may better maintain their own levels of biodiversity if connecting “islands” or “corridors” of suitable habitat, such as shade coffee, are incorporated into the landscape.<sup>2</sup>

Socioeconomically, agroforestry systems like shade coffee play a risk reduction function for farmers. The non-coffee products derived from the shade component include fruits, firewood, and building materials. Less tangible cultural products from such systems are

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<sup>2</sup> This is obviously an important area of research for the future. Meanwhile, an effort has been made to include this landscape aspect into the criteria (within the “Shade Plus” category).

traditional medicines from the various plants, as well as ornamental or ceremonial plants used during the course of the year. An under-examined group of non-coffee products, aside from medicinal derivatives, is that of natural dyestuffs. A number of tree species commonly associated with coffee farms (e.g., avocado, walnut, wild fig) are traditional sources of textile coloring for indigenous populations.

Taken together, these ecological services, socioeconomic benefits, and agronomic advantages of shade make a strong case for the recognition and preservation of many of Mexico's current coffee land management practices. In many of the country's coffee regions, it is not a case of convincing farmers to introduce and maintain shade that adheres to the criteria presented here. Many are already doing so. Rather, it is a question of finding out where such land stewardship is being practiced, identifying those involved, and exploring ways to certify their holdings as "shade coffee".

### **An overview of this document**

We now turn the fruits of the workshop. There are five sections. The first is a matrix that presents the bio-physical criteria for what constitutes shade coffee in a theme-by-theme format. Accompanying the matrix and explaining its arrangement and subject matter is the second section entitled "Criteria Categories/Themes". The third part of the workshop results (the "Addendum") presents areas of research to which funders concerned about linking conservation efforts to the market place --an example of which is the shade coffee issue-- should pay particular attention. Next, workshop participants thought it prudent to alert the CEC to what they see as some of the logical "Next Steps" in this process that begins with the development of criteria for shade coffee, but must extend beyond the criteria workshop. Finally, a list of participants can be found at the end.

### **A final word about certification of shade coffee**

Though no specific charge was given the workshop participants to develop a certification program outline, much of the discussion occurred with the assumption that the criteria presented here would eventually become part of a effort within Mexico to certify shade coffee. To a person, those involved in the workshop felt that shade coffee could play a positive role in Mexico's conservation efforts. At the same time, however, benefits need to be directed in a socially responsible way that supports the larger goal of sustainable communities in the rural landscape.

Certification should be the initial step in a series of efforts along the coffee commodity chain. If current trends in the North American specialty coffee market are any guide, a certified shade coffee will soon have a premium price attached to it. It is the consensus of the workshop participants that any effort to develop a shade certification must involve that part of the coffee sector that is 1) best positioned to take advantage of any certification due to current management practices, and 2) most in need of any forthcoming price premium. That portion of the sector is the small coffee producer.

## Criteria Categories/Themes

The following list of themes or categories used in the establishment of criteria for shade coffee in Mexico is based on the current “best thinking” of the various ways in which a shade coffee system can qualify as providing environmental benefits. Some of the benefits, as evidenced by the categories, are agronomic in nature. Others tend to be more ecological or environmental in focus. Taken together as a set of standards, we believe that these criteria provide the best balance between production demands on the one hand and environmental concerns on the other for coffee being grown in the present Mexican context.

Obviously, the notion of balancing environmental concerns such as “shade-coffee-as-a-refuge-for-biodiversity” against the production demands of growers such as maintaining coffee yields is new to scientific researchers --be them agronomists or ecologists. We have much uncharted terrain to map with additional research, the results of which will help construct the most useful avenue to a well-defined shade coffee. With that in mind, these criteria are best viewed as a “work in progress” which will undoubtedly undergo modification as more information from responsible research lights our way.

These criteria were developed by a number of researchers whose recent work focuses upon the issue of shade. Some are ecologists, some are agronomists, some are social scientists. All have been active in recent years in trying to illuminate the shade coffee issue with responsible, informative research.

In February, 1999, thirteen researchers convened just outside Xalapa, Veracruz (Mexico) at the Jardín Botánico of the Instituto de Ecología for a workshop on “Defining Shade Coffee”. Sponsored by the Commission on Environmental Cooperation in Montreal, Canada, and conceptualized and organized by the Smithsonian Migratory Bird Center in Washington, DC, the workshop sought to examine shade coffee within the Mexican context and establish criteria that might ultimately be used in some sort of certification scheme at the national level. Over the course of this three-day workshop and with the help of a facilitator familiar with the issues, the workshop participants discussed, established, recorded and discussed again the criteria they thought best define shade coffee as a tool for sustainable development.

The focus was upon biological and physical criteria related to shade management. Emphasis on these “bio-physical” criteria in no way presumes that social, economic or cultural issues related to shade coffee are less important. Indeed, concerns for the socio-cultural dimensions of coffee in general emerged frequently; some of them are addressed in the Addendum to this document, in which a list of broader issues related to shade coffee appears. In accordance with the charge from the Commission on Environmental Cooperation in Montreal, workshop time and energies concentrated upon the bio-physical aspects of shade coffee that might best be used to position this concept as a tool for conservation, landscape ecology and sustainable development.

The criteria are presented in a matrix format. The themes (explained below) are the categories thought pertinent in defining shade coffee as a conservation tool in sustainable development. The criteria in Column 2 represent the minimum threshold which any given farm must satisfy in order to be called (and hence market its product as) “shade coffee”. Qualification is based on an all-or-nothing decision. All criteria must be satisfied in order to pass as “shade coffee”. The third column contains, where appropriate, recommendations relevant to the criteria for a specific theme. Growers should strive to comply with these recommendations where possible. The final column establishes a pathway for certain growers to attain elevated status (“plus status” or “super shade”) for their management practices. Again, these “plus status” criteria are an all-or-nothing condition, meaning that in order to qualify as “super shade”, all the conditions/criteria within this column must be met (as well, obviously, as those in the “criteria” column).

Even though no evident premium or bonus price structure has yet emerged for “shade coffee”, these criteria were developed with the assumption that such a price premium will eventually become a market reality. The goal in establishing the criteria was one of creating a minimum set of standards that define shade coffee, and then a set of criteria considered to represent better land stewardship from an ecological perspective. Growers managing farms that satisfy the general shade criteria would presumably receive a certain price premium. Those satisfying the general criteria *and* the “plus status” standards would be in position to reap a greater price premium. The minimum threshold criteria (the second column) and the plus status column (fourth column) provide a way in which an extra premium (providing a shade premium is forthcoming in the marketplace) could be awarded growers with shade management practices that display stewardship concerns beyond the individual farm level.

- A. Shade tree vegetation cover: this term refers to the foliage above the coffee layer. Satisfying the 40% minimum shade criteria means that one would have to observe foliage present above 40% of a number of randomly selected points within the *cafetal*. This can be measured with inexpensive, hand-held instruments such as densimeters or densitometers, in which 50 or 100 (or some other number of) randomly selected points within a farm are sampled. Each point is evaluated and marked as either “covered” with vegetation (in which a line of sight vertical to the sky encounters foliage from the shade component) or “open” (in which no foliage is found to be above said point).
- B. Structural diversity: applies to the overall architecture of the *cafetal*, with attention focusing on the spatial arrangement of the non-coffee vegetation (hardwood shade trees, woody fruit tree species, herbaceous fruits such as *Musa spp.*, etc.). It might relate to the various “layers” or “strata” often discernible in agroforestry settings. In general, the more strata the better. Conversely, it might, in the case of coffee --where layers are not so readily observed and where the shade is often “raised” by pruning away lateral limbs and branches closer to the ground to provide for air movement within the *cafetal* -- be viewed in terms of the “depth” of the shade. Depth would be a measurement in any given spot of the vertical distance between the lowest and



highest points (from ground level) at which foliage is encountered. A shade cover comprised of mixed tree species, each with its distinct habit and (perhaps) pruning regime, will generate a dynamic, fluctuating shade depth as one moves horizontally across the *cafetal*. In general, the deeper the shade the better.

Twelve meters is determined to be the minimum average height of the uppermost edge of the canopy. The height of obvious emergent species should not be included in estimating this average, but the use of emergent species is certainly encouraged. Several individuals with heights  $\geq 15$  meters should be present in any given hectare of coffee.

- C. Floristic diversity: this term applies to the species mix or diversity of the shade trees. Most studies of the use of shade in coffee farms reveal a dominant tree species or genus used as the main shade tree type. This is called the “backbone” tree type, around which other less common species can be found. In Mexico (as in much of Latin America), several species belonging to the genus *Inga* are commonplace shade trees. This species or genus must be native (not exotic), which, for the purposes of these criteria, means that the farm in question falls within the range of distribution of this tree type. No more than 70% of the shade trees should belong to this backbone grouping, so as to provide a minimum level of floristic diversity. The remaining fraction of tree species ( $\geq 30\%$ ) should be distributed in a non-clumped manner within the *cafetal* (i.e., not restricted merely to living fences or border-marking trees), with at least one third ( $\geq 10\%$  of the total number of trees) being native species associated with local natural forests.

Setting a minimum number figure for species diversity of shade trees poses some challenge. There is simply no work done to date that can inform us in such a task. Naturally, ecological theory and experience tell us that the greater this number, the better for biodiversity maintenance. However, coffee farmers are not in business to maintain biodiversity. They grow coffee to make a living, and worrying about the array of shade tree species is not foremost in their minds. Still, it must be recognized that relatively small holdings may harbor as many as 60 species per hectare in parts of Mexico. Moreover, even on large holdings with “uniform” shade comprised of one or more *Inga spp.*, an observant and methodical walk through the farm usually uncovers a rich array of local species that have “volunteered” and been left to grow. So, even though larger farms might be dominated by a single species (or genus) of tree as the backbone to the shade component, the total number of species can easily reach into the dozens.

It was, therefore, the consensus of the workshop participants that the number of species expected to be on a farm needs to be linked to the size of the coffee area. The responsible, research-based manner to realize this species-area relationship is to construct what is called a species-area curve (see Next Steps section). Since no such curve currently exists for Mexican (or any) coffee farms, the minimum number of species per farm (for the time being) should be no less than 15. This minimum

number will, in all likelihood, increase (even for smaller holdings) once a species area curve is constructed from real-life coffee farms.

The presence of epiphytic plants on the trunks, limbs and branches of the shade trees is encouraged. Epiphytes such as ferns, bromeliads and orchids add to the overall plant diversity of the *cafetal* not only in floristic terms but with respect to structure as well. Arthropods and micro-organisms thrive in such specialized niches, providing a base for other organisms such as birds, reptiles, amphibians and mammals. Due to climatic conditions, not all areas support epiphytic life forms; but in those that do, growers should not remove epiphytes as part of their management practices. Cultural practices in some regions make use of specific epiphytes for ceremonial or celebratory purposes, uses that should not be forbidden.

- D. Soil management: Agricultural and ecological systems alike depend upon the productive base, the soil. For reasons of soil protection against hydric and aeolic erosion, as well as for reasons of nutrient cycling and soil structure, the soil should have a year-round cover. Whether a living cover of vegetation or a cover of mulch in the process of decomposition, the soil layer should at no time during the year be exposed by the complete removal of such cover. In situations characterized by steep hillsides or highly broken terrain, and especially where high precipitation prevails at any time during the year, the practice of soil conservation measures should be evident.

In order to classify as a “plus status” land manager, the grower should use organic fertilizer(s).

- E. Agrochemical use: Because shade coffee can provide refuge for biodiversity, the use of pesticides of any kind (insecticides, herbicides, fungicides, nematocides) is not allowed. In extreme cases where fungal disease(s) threaten the economic well-being of the crop, copper sulfate and its derivatives can be used in a controlled manner to stop the spread of disease. It is recommended that the use of biological control agents be used whenever possible, as well as replacing synthetic/inorganic fertilizer(s) with organic fertilizer(s). A farm can pass into the “plus status” category if, in addition to the minimum criteria being met, a grower demonstrates that no petroleum-based, synthetic/inorganic fertilizers are being applied to the coffee.
- F. Fauna: Inasmuch as shade coffee provides habitat for various fauna (arthropods, birds, reptiles, amphibians and mammals), growers should protect and enhance the faunal diversity as much as possible. It is expected that producers comply with national environmental protection laws relating to faunal diversity. It is recommended that the farm show evidence of maintaining dead tree trunks and snags where possible within the coffee area, as such objects provide habitat (foraging and nesting sites) for a number of taxa.
- G. Conservation of waterways and natural vegetation: Growers should apply water conservation practices along streams and rivers that conform to national norms. In

accordance with national laws governing effluents, no by-products (liquid or solid) from the wet processing of coffee berries can go into waterways.

H. Landscape mosaic: This term refers to the diversity of land use patterns in a region and recognizes the importance of a larger-scale (a landscape) approach to conservation. The promotion and use of shade coffee in land management at the individual farm level is a critical aspect of providing habitat and protecting soils. But the conservation literature identifies the overall condition of a region's landscape as being equally important, especially where shade coffee is to provide corridors or stopover points between undisturbed protected areas. For that reason, it is important that reserves or protected areas be maximized where possible, and that communities work in concert to foster a landscape mosaic conducive to conservation.

Large holdings ( $\geq 50$  hectares) should have 10% (or more) of the total farm area in reserves and/or natural vegetation protecting waterways. It is recommended that producers work in joint efforts to preserve local natural areas adjacent to and/or within close proximity to coffee areas. In order to gain "plus status", there must be evidence of community efforts by producers to preserve such natural areas. Evidence of such efforts will include (but not be limited to) documented agreements, formally recognized projects or programs, and collaborative activities at the community level.

#### **Addendum to Shade Coffee Criteria:**

#### **Themes and questions for further investigation/research**

During the course of the workshop in Xalapa, Veracruz, the purpose of which was to define the bio-physical criteria for shade coffee in the Mexican context, participants immediately acknowledged that there is much we do not know about how an agroecosystem like shade coffee might best be managed to maximize its ecological value. The research has simply not been done.

As the various themes for criteria were discussed, workshop members maintained a list of subjects or themes that merit investigation so as to add to our understanding of how shade coffee might complement either (or both) production or conservation interests. Some of the areas for future research are listed below. Other topics will surely emerge as shade coffee gains importance in the marketplace.

- How does the pruning of shade trees (both temporally and spatially or structurally) affect temporary and permanent levels of biodiversity in the *cafetal* ?
- How does (or how can) shade coffee best fit into overall strategies of landscape planning so as to maximize its conservation value?
- What are the best management practices with respect to the understory (both the coffee itself and other associated plants and/or the herbaceous layer) and how do they relate to soil erosion and biodiversity?

- What sort of species area curve might we realistically expect within larger coffee farms? (This question might be addressed in the near future for the purposes of developing a species area curve for inspection purposes.)
- With respect to introduced species used as shade trees, what sorts of relationships exist with microbiota? What differences exist in terms of habitat quality between native and introduced species of shade trees?
- In the case of fungal and botanical biological control agents, as well as entopathogens with a broad spectrum effect, how does the use of such elements affect the diversity of the micro- and macro-fauna?

Other themes or areas of interest that need to be considered in developing this concept of shade coffee also emerged. While these may not warrant formal investigation (indeed they may as the concept matures and market potential attracts more and more producers), these concerns represent gaps in our overall knowledge of how conservation and production concerns might mesh. In no particular order, these concerns include:

- The technical aspects of planting and managing coffee trees, including density, species, and labor;
- The relationship between shade and insect pests, fungal disease, nematodes, etc.
- When can exotic plants or trees be used as shade and in what proportion?
- How can we measure the structure of the canopy in a way that is easily used in any certification or verification process?
- Epiphytic plants and mistletoes in shade trees --at what point in their density within trees do they become counter-productive and need to be managed?
- Microbiological relations in the soil
- A principal, recurrent problem with coffee worldwide is the crisis of over-production. How can we advocate and encourage the global benefits of a reduction in production (via lower yields in shade coffee) with the local sentiment of wanting to increase production?
- Can a shade premium price paid to the grower compensate for loss of productivity in heavier shade cover?
- Can the shade coffee concept be promoted in a way that favors family labor?
- Can financial aid and/or incentives for shade coffee be created via specific credits or premium pricing structures?
- Incorporation of growers as promoters and/or receivers of traditional technologies.
- What is the role of non-coffee products derived from the shade component in the producer's socioeconomic security?
- Explore the various ways in which the landscape mosaic can be incorporated into whatever certification system is ultimately defined and used. Examine and analyze the spatial distribution of managed and protected areas.
- What Mexican institutions or entities can benefit from, take advantage of or contribute to the concept of "shade coffee?"

## **Next Steps: Beyond the Shade Coffee Criteria Workshop**

While discussion of what to do with the criteria or where exactly to go and/or how to proceed with them was not slated as part of the workshop, all participants felt that creating these standards in a vacuum was impossible. Hence, discussion of the criteria often included commentaries about certification, the role of international conservation organizations, concern about the small Mexican coffee farmer, the reaction of established coffee entities within Mexico to the criteria, etc. In short, workshop participants were very concerned about the steps taken subsequent to the creation of these criteria. It was generally agreed that criteria must be developed with some idea of how they might eventually be applied (i.e., what sort of certification system might emerge to make use of the criteria), and that more growers must be incorporated into the process before the criteria become public.

Some of the thoughts and concerns expressed at the workshop that relate to next steps include the following:

- Any certification scheme must be based on the concept of third-party, independent verification.
- Many maintain that shade affects quality of the coffee (i.e., that it “improves the cup”). These issues of shade and coffee quality deserve a lot more attention, either through some funded research or at the very least a meeting with roasters and others in position to speak to these issues authoritatively.
- The concept of shade coffee for Mexico cannot be launched at the national level initially. We suggest the organization and development of a pilot project --most logically with extant projects like the one at El Triunfo in Chiapas or farms already interested in the shade issue-- to test the viability of a Mexican shade coffee in the North American market. A pilot project might benefit greatly if it coordinates efforts with institutions such as the Instituto Para Desarrollo Sustentable de Mexoamérica (IDESMAC).
- Explore the questions of what actors within the coffee commodity chain might pay for certification and how that might be structured. Should the burden of financing the concept fall to producers, as with the organic certification model, or should the fair trade model be considered, in which a licensing fee paid by roasters supports the costs of the movement?
- How can the image and/or reputation of Mexican coffee be improved in the eyes of the North American consumer?
- What role should international conservation organizations play in furthering efforts to popularize and foster shade coffee as a management practice? Given that many such organizations already spend hundreds of thousands of dollars in land purchases, fencing, park guards, etc. each year to preserve natural areas, there is certainly an argument for their shunting funds into fostering shade coffee in some way. The best ways to arrange strategically placed incentives or funding from international sources like the Global Environmental Facility or national sources like SEMARNAP are worth discussion.

- Clearly define and design a label for the shade coffee that captures not only the shade concept, but its Mexican origin as well.
- One important component to making shade coffee a viable alternative for some growers would be an environmental fund of some sort (a “commission”) that could provide credit loans for activities related to shade coffee production.

### **Recommendations for CEC**

- Funds for research on and development of shade coffee need to be secured. There are a lot of issues related to the shade coffee concept that need further exploration (see the Addendum).
- Link efforts with other ongoing projects.
- Organize and fund a meeting with producers (e.g., via CNOC) in order to incorporate them into the process early on.
- Help with the preparation, production and dissemination of materials for inspectors of shade coffee. Even once the criteria are decided upon and established to everyone’s satisfaction, if they are going to be used in some sort of certification process, inspectors must be able to make sense of them and use them in the field. Materials, forms, and training workshops on measuring or evaluating shade coffee will be an essential part of making this concept a marketable reality.
- Explore the formation and funding (with national funds) of a Shade Coffee Commission (Fideicomiso de Café Bajo Sombra). Such institutional backing for the concept and whatever initial project emerges to further it will go a long way in allaying concerns on the part of growers. The Commission could provide incentives or subsidies via an environmental fund. It could also examine the possibility of national banks initiating a shade coffee program in which producers satisfying the shade coffee criteria would receive preferential interest rates.

## ANNEX 1

### Criteria Matrix

Theme	1. Criterion/Criteria	2. Recommendations	3. Plus <sup>1</sup> Status
A. Shade tree vegetation cover	a. A minimum of 40% shade cover after pruning		a. Rustic coffee (as per the University of Chapingo classification) with $\geq 60\%$ shade cover (after pruning, if pertinent).
B. Structural diversity	a. Upper edge of canopy averages at least 12 meters in height, discounting the obvious emergent species;  b. Various taller trees per hectare that reach at least 15 meters in height; if this is not satisfied, but criteria C-4 is satisfied, farm will be considered in a transition phase <sup>ii</sup> for a period of 3 to 5 years.		a. An obvious stratum of shade trees defined by emergent species $\geq 20$ meters in height.

Theme	1. Criterion/Criteria	2. Recommendations	3. Plus <sup>†</sup> Status
C. Floristic diversity	<p>a. The “backbone” type used for shade (the dominant genus) is native<sup>iii</sup> and does not constitute more than 70% of the total tree density;</p> <p>b. Of the 30% (or more) remaining trees, all should be distributed within the interior of the <i>cafetal</i> and at least a third (or 10% of the total number) should be native forest species from the local area;</p> <p>c. At least 15 distinct species of trees should be used for shade;<sup>iv</sup></p> <p>d. There is visual evidence that the regeneration of large and long-lived species (in particular forest species) is taking place, based on practices of propagation of such species, care for seedlings, juvenile individuals and/or the creation and care of nurseries for these species;</p> <p>e. Epiphytic plants (bromeliads, orchids, ferns, etc.) are left on shade trees and any removal as a management practice is not permitted.</p>	<p>a. The presence of tall and slow-growing species associated with local native forests;</p> <p>b. Maintain “keystone” tree species such as <i>Ficus spp.</i></p>	<p>a. The presence of tall and slow-growing species associated with local forests.</p> <p>b. No more than 50% of the total density of shade trees comprising the “backbone” type.</p>



<b>Theme</b>	<b>1. Criterion/Criteria</b>	<b>2. Recommendations</b>	<b>3. Plus<sup>†</sup> Status</b>
D. Soil management	<p>a. Soil has a year-round cover, be it a living ground cover or a leaf litter/mulch cover in decomposition;</p> <p>b. In cases of steep or highly broken terrain and high precipitation, soil conservation practices are required.</p>		a. The use of organic fertilizer(s).
E. Agrochemical use	a. The use of any type of pesticide is strictly forbidden. In extreme cases the controlled use of copper sulfate and its derivatives to inhibit the spread of fungal disease(s) is permitted.	<p>a. Make use of biological control methods where necessary and possible;</p> <p>b. Use organic fertilizers in place of synthetic fertilizers.</p>	a. The absence of synthetic/inorganic fertilizer.
F. Fauna	a. Protection and enhancement of faunal diversity, and compliance with the national laws of environmental protection relating to such diversity.	a. The maintenance of dead trunks and snags within the coffee area.	
G. Conservation of waterways and natural vegetation	<p>a. The application of water conservation measures that conform to national laws;</p> <p>b. Complying with extant norms governing effluents, producers cannot place into waterways or water sources the by-products of wet processing.</p>		

Theme	1. Criterion/Criteria	2. Recommendations	3. Plus <sup>†</sup> Status
H. Landscape mosaic	a. Large production units ( $\geq 50$ hectares) are required to maintain $\geq 10\%$ of the area in reserves and vegetation that protects waterways.	a. Joint efforts among local producers to preserve natural areas contiguous with and/or nearby coffee areas	a. Evidence of community efforts by producers to preserve natural areas, such as documented agreements, recognized projects, formal activities.

ANNEX 2

**Participant List of the “Defining Shade Coffee” Workshop**  
**Xalapa, Veracruz—February, 1999**

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## Endnotes

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<sup>i</sup> The management of this system of added recognition for good stewardship resulting in a given farm being elevated to the “plus” level will be placed under the control of a group of advisors, most logically the same group that decides questions related to “transition phase” issues (see footnote #2).

<sup>ii</sup> “Transition phase” refers to a waiting period prior to being certified as shade coffee due to non-compliance with the criteria. It may vary between 1 and 5 years, depending upon which criteria are involved. The transition phase is characterized by: no certification (until the time that specific criteria are met); annual monitoring to evaluate progress; having planted shade tree species of taller habit ( $\geq 15$  meters) where heretofore none have been present; for cases of larger farms ( $\geq 50$  hectares) in which there no areas are kept as reserves (or the areas do not constitute 10% of the total farm area), there should be evidence that the required area has been left in a state of natural restoration (3 to 5 year transition phase); for cases in which no soil conservation practices are in place, there should be evidence that such practices are being introduced (1 to 3 year transition phase); for cases in which floristic diversity criteria are not met, there should be evidence that measures are being taken to correct such discrepancies. All questions or decisions related to the transition phase will be forwarded to and/or decided by a consultative group of ecologists and agronomists versed in the issues of shade coffee.

<sup>iii</sup> Because shade tree species vary according to where one happens to be, for the purposes of this document, “native” refers to situations in which the tree species in question falls within its natural range of distribution.

<sup>iv</sup> This number, while somewhat arbitrary, is much less than what has been observed by researchers in many situations. Some small coffee holdings have as many as 60 different tree species per hectare. Ideally, as pointed out in the accompanying documents, the total number of species required per hectare should be determined by the size of the production unit, in accordance with a variable scale based on a species/area curve. The field research and data analysis necessary to construct such a curve (which could be used by anyone inspecting a shade cover to assess whether or not it passes these criteria) is one tangible goal that needs to be addressed as soon as possible.