



Darrell Posey (1947-2001)

- * The Kayapó forest islands
- * The Earth Summit (Rio de Janeiro, 1992)
- * Indigenous Peoples and Intellectual Property Rights

Working Group on Traditional Resources Rights;

Oxford Centre for the Environment, Ethics, and Society @ Mansfield College, University of Oxford (1993-2004)

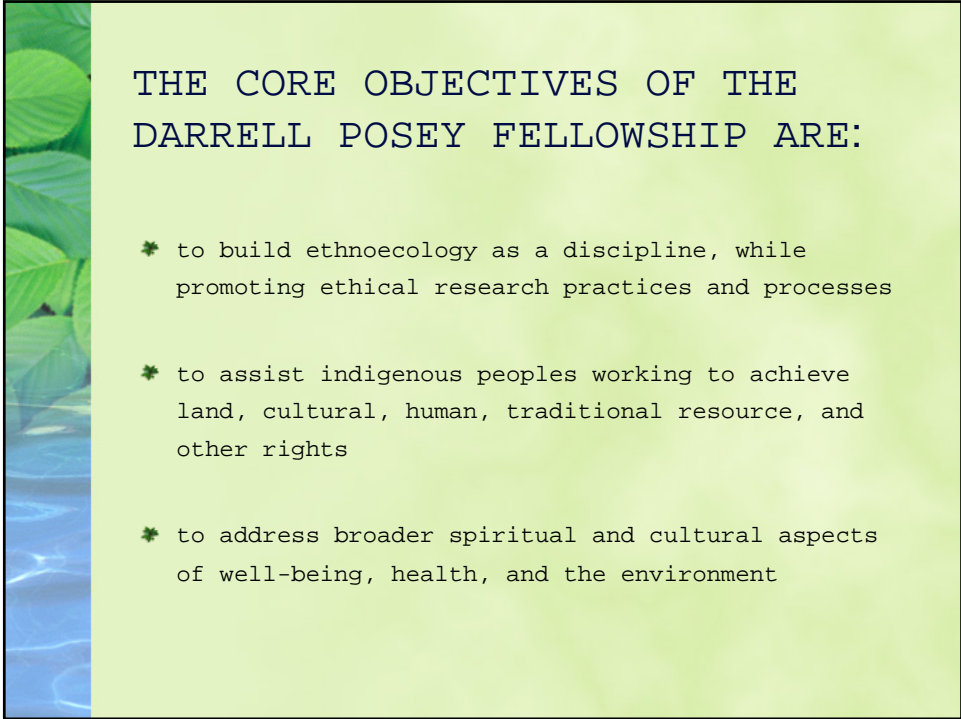


THE DARRELL POSEY FELLOWSHIP
for Ethnoecology and Traditional Resource Rights

The Christensen Fund

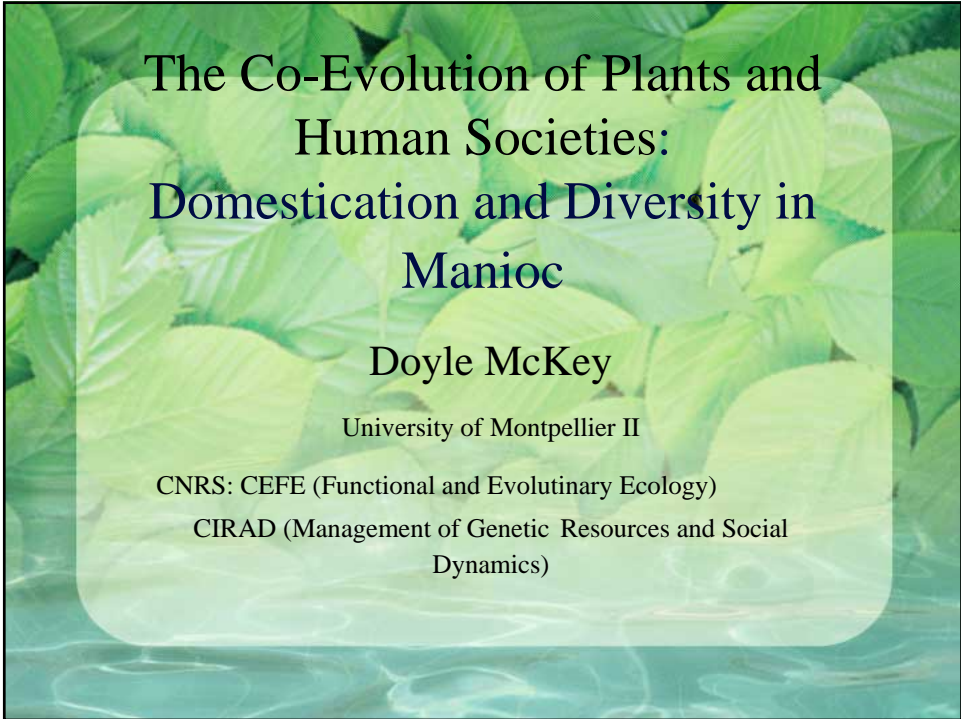
<http://ise.arts.ubc.ca/DarrellPosey/>

- * [Field fellowships](#)
- * [Small Grants](#)
- * [Oxford University-Based Fellowship,](#)



THE CORE OBJECTIVES OF THE
DARRELL POSEY FELLOWSHIP ARE:

- * to build ethnoecology as a discipline, while promoting ethical research practices and processes
- * to assist indigenous peoples working to achieve land, cultural, human, traditional resource, and other rights
- * to address broader spiritual and cultural aspects of well-being, health, and the environment




The Co-Evolution of Plants and
Human Societies:
Domestication and Diversity in
Manioc

Doyle McKey

University of Montpellier II


CNRS: CEFE (Functional and Evolutionary Ecology)

CIRAD (Management of Genetic Resources and Social
Dynamics)




gene/culture co-evolution

Plant domestication is a co-evolutionary process resulting from the combined action of natural and human selection



Ecological anthropology explores the ways in which the environment is historically and culturally produced through human/nature interactions.



What causes so much intra-species variety?

- * Selection for production and adaptation (drought and flood resistance)?
- * Selection for consumption tastes?
- * Love of diversity for its own sake: curiosity, aesthetic pleasure?
- * Continuous exchanges between farmers?

- * Incorporation of 'volunteers'
- * Seed dormancy
- * The Makushi cultivate sexually produced seeds that 'volunteer' in their fields, some modern (exchange), some dormant (seed banks)

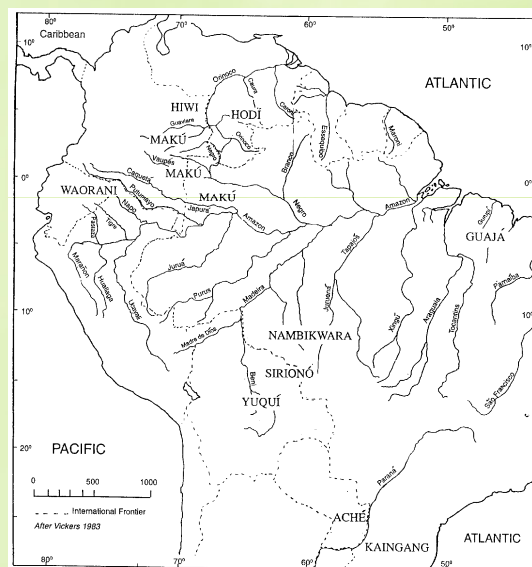


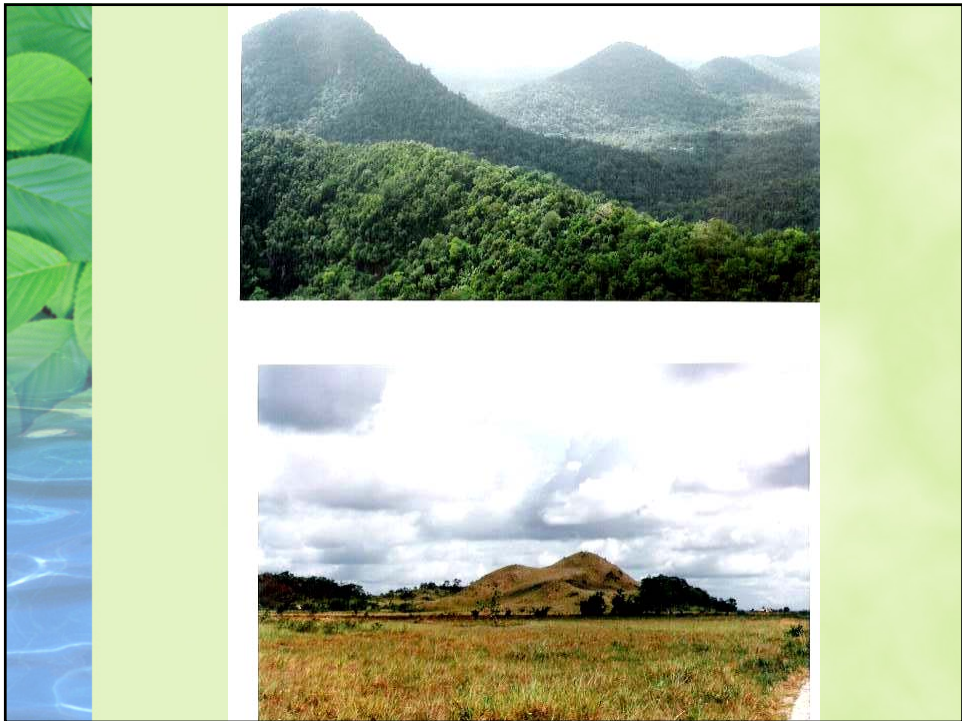
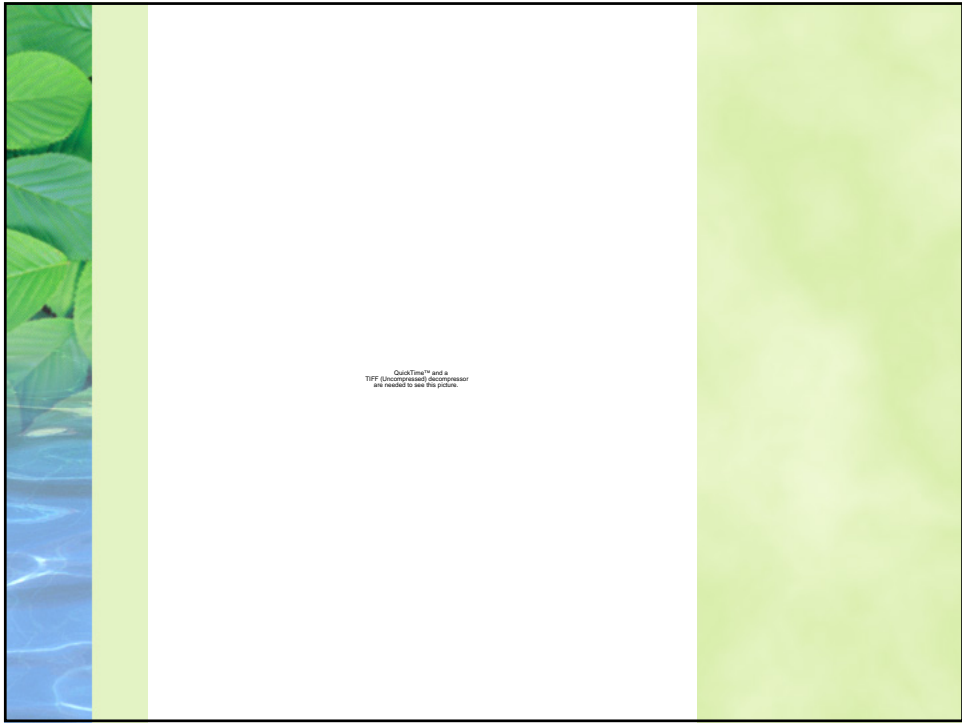
cultural meanings

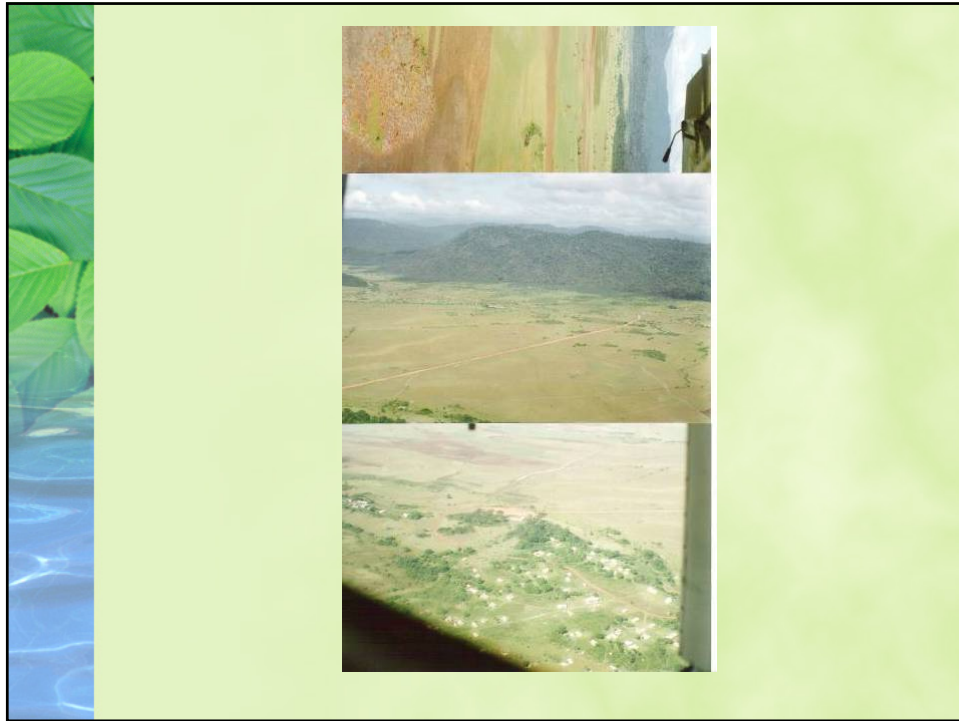
- * Sweet and bitter manioc classified as two entirely different species
- * Mythical origin of the plant
- * The plant is a person, identification with the human body
- * Mother cassava: The spirit owner of the plant
- * Kwana (wild cassava) as a 'degenerate' plant
- * Garden as culture, forest as a space which has lost its cultural endowments

This programme received the
2006 *Terra Ficara Prize*
for the preservation and
management of the plant world

Institut de France
Fondation Yves Rocher

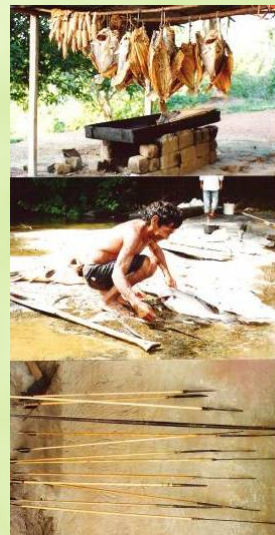






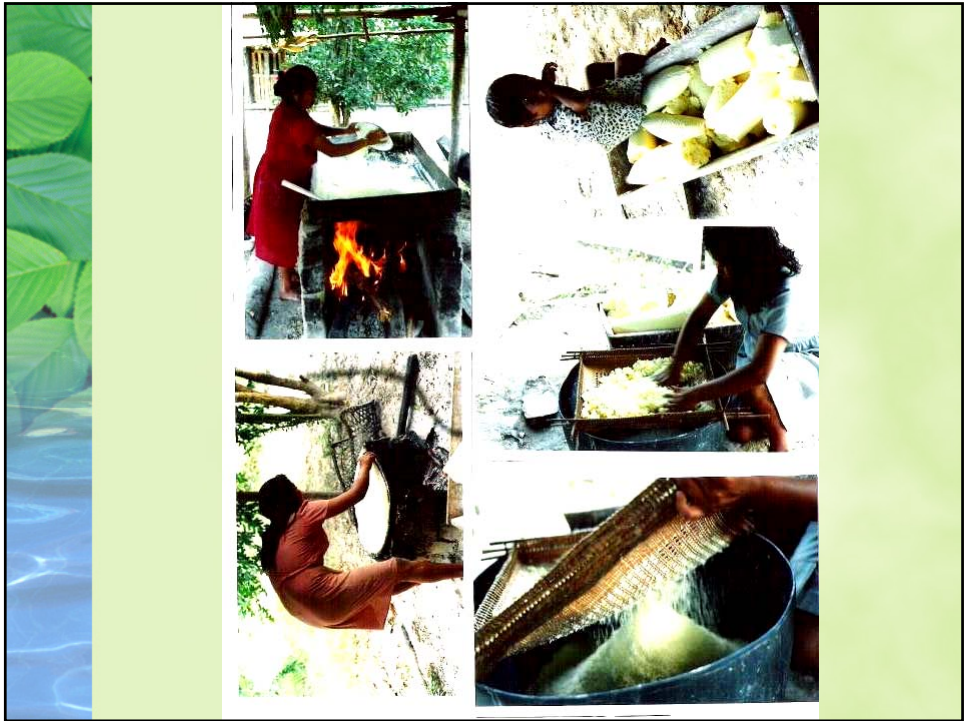
Fishermen and manioc cultivators

- * The Makushi, a Carib-speaking group, live in the Rio Branco-Rupununi region, a region politically divided between Brazil (Roraima State) and Guyana (Region 9).
- * There are approximately 20,000 Makushi today, of whom 7,000 live in Guyana.





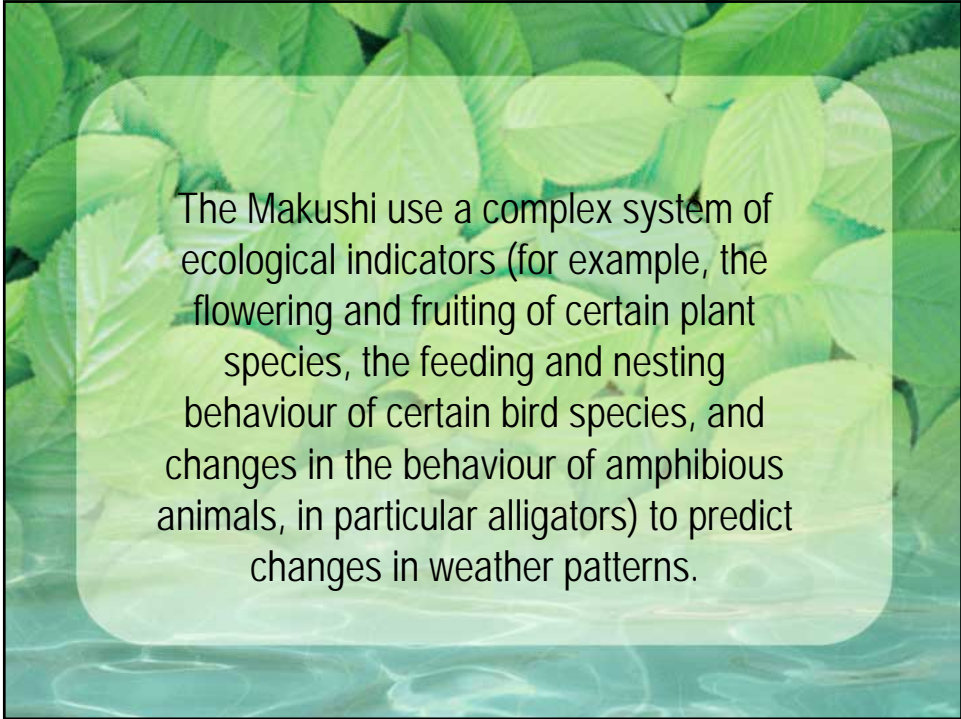




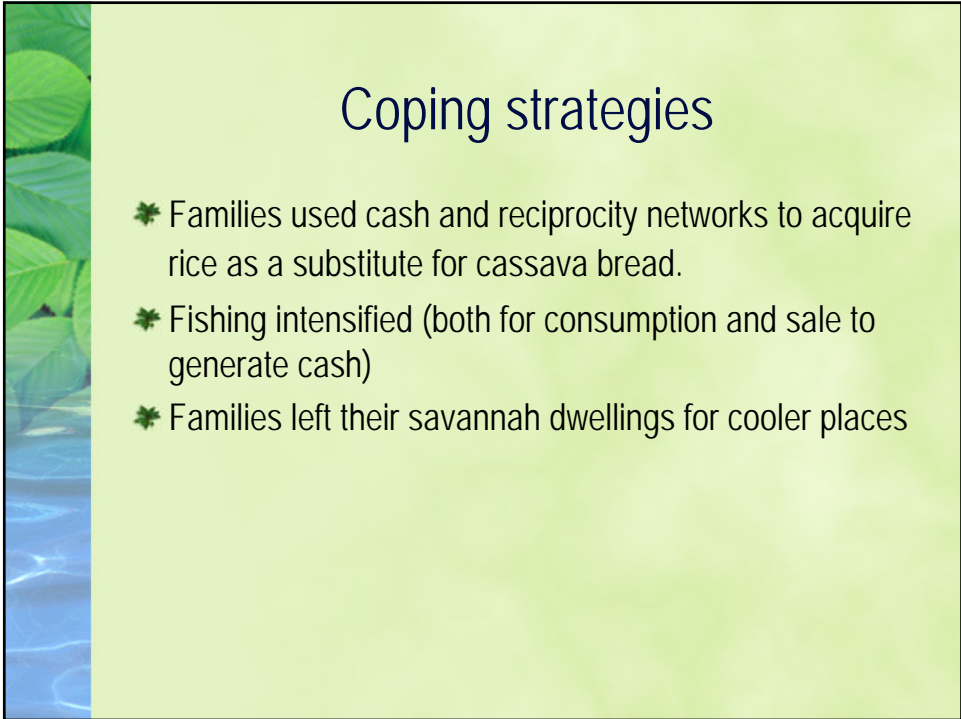


1998: severe drought and savanna and forest fires

- ✦ Rainy season normally April-September, with torrential rains July-August
- ✦ Subnormal rainfall and early end rainy season in 1996 and 1997
- ✦ March 1998: government declares state of national emergency
- ✦ Civil defense and UNDP distribute food (rice, flour, sugar, farine, oil) and water in the Rupunnuni
- ✦ In May, a number of indigenous villages receive manioc stakes from Brazil

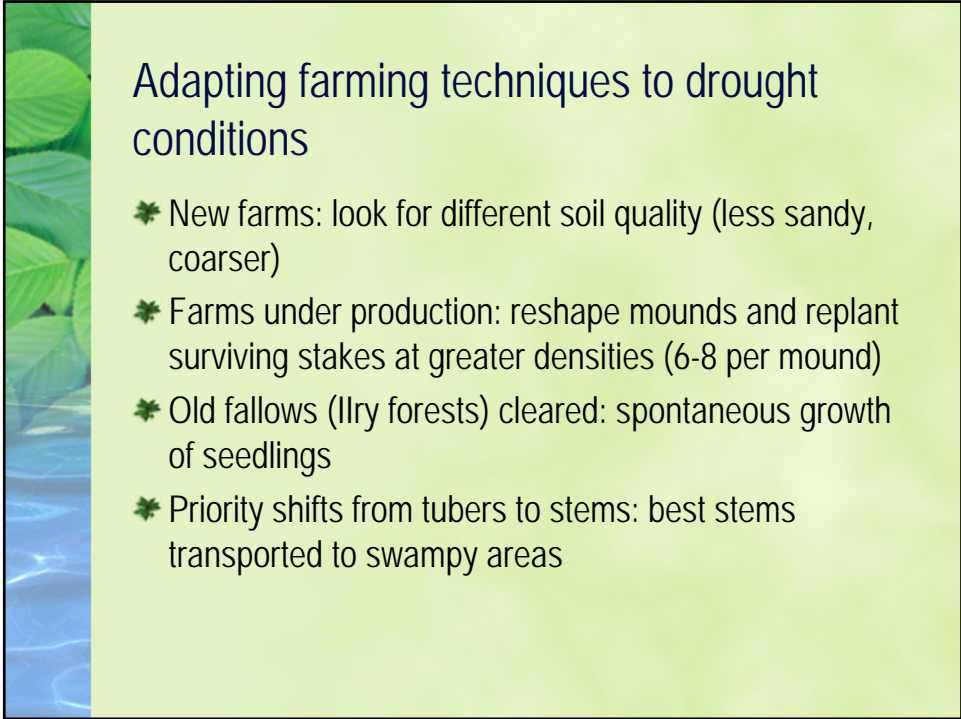


The Makushi use a complex system of ecological indicators (for example, the flowering and fruiting of certain plant species, the feeding and nesting behaviour of certain bird species, and changes in the behaviour of amphibious animals, in particular alligators) to predict changes in weather patterns.



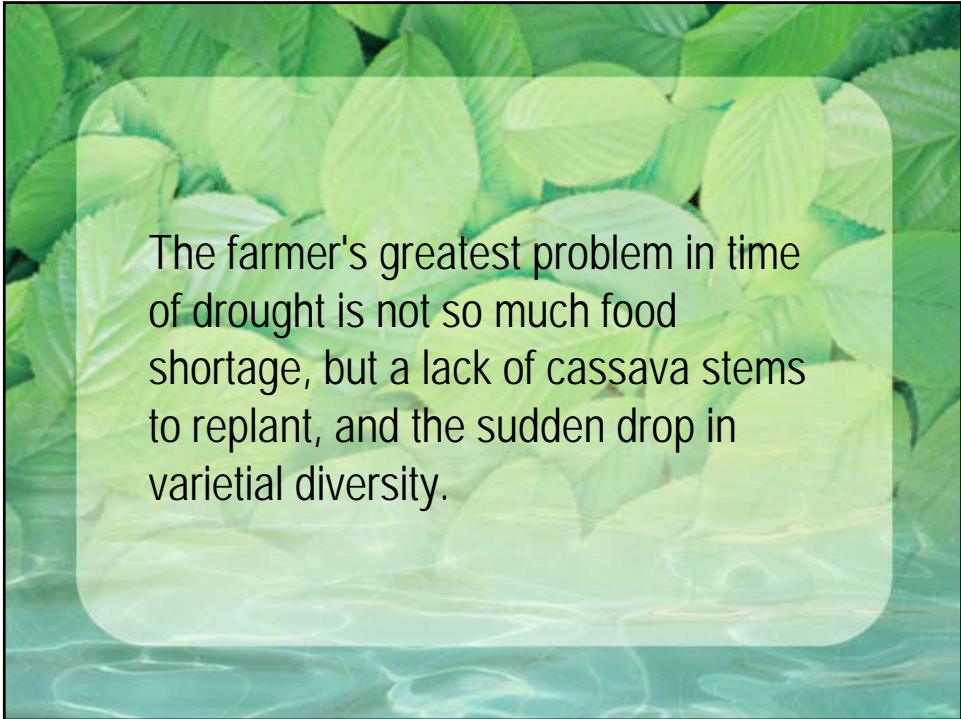
Coping strategies

- * Families used cash and reciprocity networks to acquire rice as a substitute for cassava bread.
- * Fishing intensified (both for consumption and sale to generate cash)
- * Families left their savannah dwellings for cooler places




Adapting farming techniques to drought conditions


- * New farms: look for different soil quality (less sandy, coarser)
- * Farms under production: reshape mounds and replant surviving stakes at greater densities (6-8 per mound)
- * Old fallows (Illy forests) cleared: spontaneous growth of seedlings
- * Priority shifts from tubers to stems: best stems transported to swampy areas



The farmer's greatest problem in time of drought is not so much food shortage, but a lack of cassava stems to replant, and the sudden drop in varietal diversity.



The life histories we collected show that severe droughts are recurring climatic conditions in the Rupununi to which Makushi people have learnt to adapt.

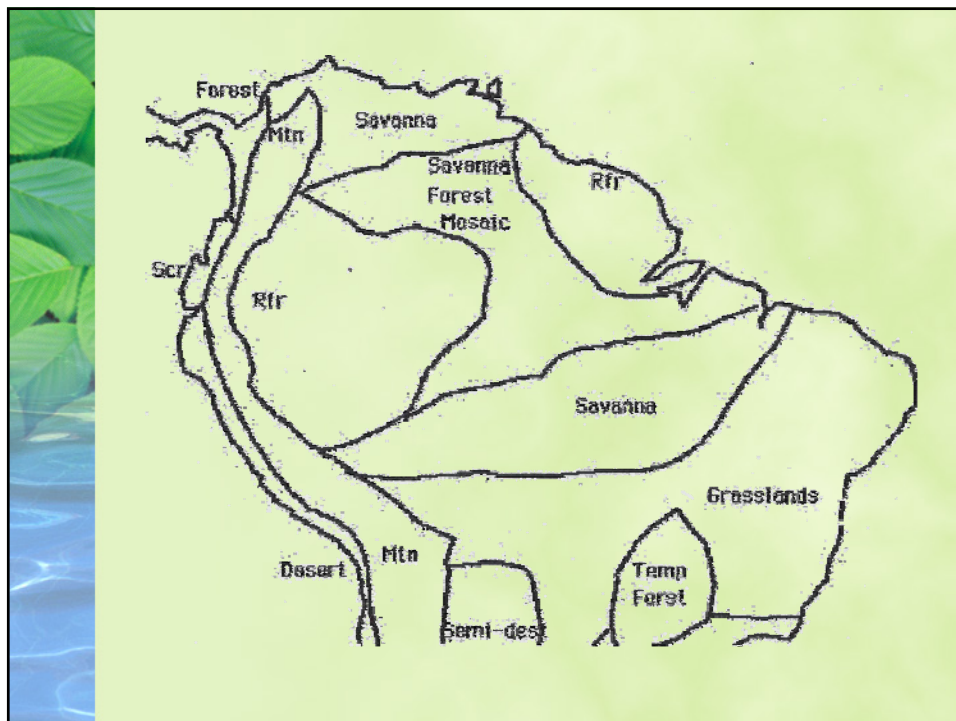
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- * The worst drought I remember was in 1988. The river was very low, cassava had dried out in almost all people's farms. Other bad years I can remember are 1973 and 1974, two years in a row! People survived by catching a lot of fish, and selling it in exchange for food stuff in the shops.
 - * Drought does not affect all cassava in the same way. Some sticks die out, others 'take back' (i.e. shoot again) as soon as the first rains appear. As a result, some people lose everything, others have quite plenty enough to survive.

Nathanaël Edwards, Rewa, Summer 1997

The Makushi were far more mobile in the past. Their primary response to a severe drought was to leave the savannahs altogether.

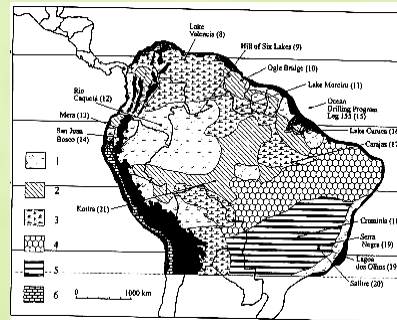
They would intern themselves in the forest and travel up river until the start of the rainy season. With no cassava products left to eat, they would live on fish, game and forest food, including numerous fruits, roots, young shoots, seeds, and honey. They would process the fruit and pith of certain palms, as well as other forest plants and seeds to produce a type of meal used to prepare ersatz cassava bread.

Some of these forest foods are still known, but no longer used.




Reconstructed vegetation of lowland South America between 20,000 and ca 10,500 BP

- * 1- unbroken moist forest
- * 2- forest containing drier elements than today
- * 3- undifferentiated thorn woodland, low scrub, and wooded savanna vegetation
- * 4- catinga/ cerrado-like, but substantially drier than today, fewer trees, more open land
- * 5- fairly open and humid forest containing many current high-elevation taxa (*Ilex*, *Podocarpus*, etc), mixed with forest formation similar to present-day semi-evergreen forest and cerrado.
- * 6- desert, cactus scrub




The germination ecology of domesticated manioc (*Manihot esculenta*) largely reflects that of its wild ancestors. Manioc is adapted to fire.

- * The wild species of *Manihot* are shrubs of savanna-forest ecotones or dry forests whose regeneration depends on fire and other disturbances.
- * Sun-loving plants, they are replaced by taller shrubs and trees when vegetation cover becomes dense. But populations persist as seeds in the soil, which remain dormant under soil temperatures around 25 °C. When disturbance removes covering vegetation, seeds germinate.
- * The disturbance-adapted regeneration niche of the wild ancestor of cassava was fortuitously 'pre-adapted' to the environments created by slash-and-burn agriculture, and as domesticated cassava evolved, its disturbance-adapted dispersal ecology (involving seed burial by ants) and germination ecology were maintained.



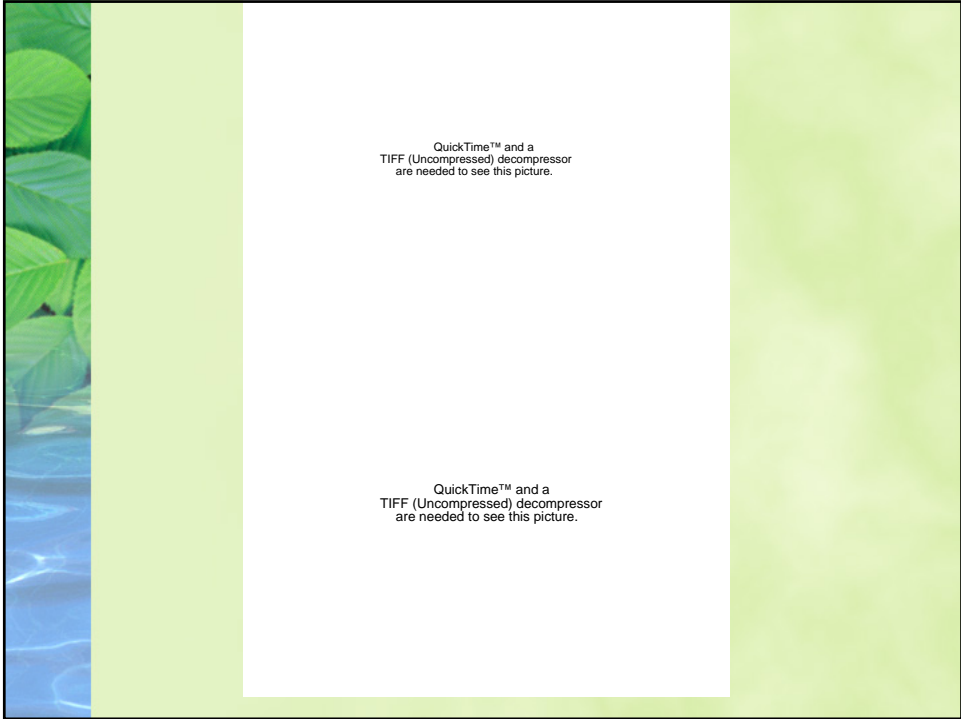
A way of life and a way of managing the environment under threat

- * Farmers need access to both forest galleries and savannah, but their land rights are not recognised
- * Shortages of arable land in the savannah
- * Sedentarization on unsuitable lands
- * The government does not understand or value the indigenous knowledge system (I.e. drought and flood management)




“Millions of small farmers, poor in monetary terms, but rich in knowledge about nature and how to use it to increase food production, have jumped from pre-modern agricultural systems to sustainable and high-producing systems.”

Jules Pretty. The silent revolution in Third World agriculture.



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TIFF (Uncompressed) decompressor
are needed to see this picture.

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**“We will conserve only what we
love. We will love only what we
understand. We will understand
only what we have been taught.”**

Baba Dioum, Senegalese environmentalist