

**CLIMATE MANAGEMENT OF FOREST  
FIRES IN THE COLOMBIAN AMAZON  
BASIN**

**By: Environmental Women ORG**

# FIREPROOF PLAN FOR THE REFORESTATION OF THE COLOMBIAN AMAZON BASIN

## RESUMEN

This plan aims to carry out a diagnosis of the state of anti-forest fire coordination in the Colombian Amazon, and a strategy for the reforestation of 144Km<sup>2</sup> of forests in the Colombian Amazon, in the vicinity of the Arahuac indigenous community. It is estimated that monthly, > 250 sources of forest fires are generated in Colombian Amazon forests, mainly due to two causes: 1. Fires of anthropic origin, originated to deforest areas destined for agriculture in surrounding communities; and 2. Undeleted Forest fires, generated by climate change. Through this plan, which lasts for 5 years, we will restore an area of 64Km<sup>2</sup>, a victim of forest fires, through the planting of at least 120,000 trees of native species. At the same time, we will establish a response protocol to promptly extinguish the sources of forest fires in Colombian Amazon forests. We have the support of the Arahuac indigenous community, Fauna & Flora International and the University of Chocó. Likewise, we will evaluate the conservation status of the tree species victims of the fires, to register their populations on the red lists of biodiversity conservation.

This project, promoted by ENVIRONMENTAL WOMEN org, represents an interdisciplinary and collaborative effort to address one of the most pressing environmental crises of our time: the management and control of forest fires in the Colombian Amazon basin, an area of vital importance for both global biodiversity as well as for the indigenous communities that inhabit it. The Amazon basin, covering approximately 6.7 million square kilometers, is home to unrivaled biodiversity, with around 10% of the world's known species, and plays a crucial role in regulating the global climate. However, this region faces significant threats due to deforestation and forest fires, which have increased dramatically in recent years.

The main focus of the project is on the territory of the Ticuna indigenous community, which covers approximately 144 square kilometers in the region. Forest fires, both spontaneous and induced, not only threaten the biodiversity and ecosystems of the region, but also put the ways of life and territorial sovereignty of indigenous communities at risk. Over the last decade, the Amazon region has experienced an increase in the frequency and intensity of forest fires, with millions of hectares affected annually, underscoring the need for effective and sustainable management of these natural disasters.

This project proposes an integrated approach that combines the ethnobotanical wisdom of Ticuna communities with advanced fire monitoring and management technologies. The inclusion of traditional methods is essential, as these communities have managed their ecosystems sustainably for centuries. On the other hand, the integration of advanced digital technologies, such as geographic information systems (GIS) and satellite data analysis, will allow real-time monitoring and rapid response to forest fires. These digital tools are essential for the accurate identification of areas at risk and for the implementation of effective prevention and control strategies.

A crucial component of the project is capacity building within the Ticuna community, especially among youth. It is planned to train 100 young people, aged between 18 and 35, in key aspects of forest fire management. This training will include the use of digital tools to monitor, verify and respond to forest threats. The training will focus not only on technical skills, but also on legal and environmental policy aspects, preparing these individuals to enforce the law and protect their community lands and protected areas.

In addition, the project will seek the co-design of land defense strategies together with the Ticuna community. This collaborative approach will ensure that proposed solutions are aligned with local needs and priorities. Anti-fire ranger brigades will be established, equipped with the necessary tools and knowledge to track and respond effectively to forest fire outbreaks.

Finally, the creation of an online course aimed at the Spanish-speaking community in the region is contemplated, focused on the specific problems of deforestation and the use of digital tools. This course will be a vital tool to raise awareness of the challenges of deforestation and to train non-experts in the effective use of digital technologies to combat forest fires.

In conclusion, this project is positioned as a comprehensive and culturally conscious response to the forest fire crisis in the Colombian Amazon, promoting an environmental management model that is both technologically advanced and deeply rooted in the communities' traditional knowledge and practices. natives.

**Keywords:** Forest fires, Kamsá indigenous community, anti-forest fire protocol, reforestation



## INTRODUCTION

The Colombian and Brazilian governments have authorized commercial activities (mining licenses, construction of roads and unsustainable tourism) that have deforested 128,000ha of Amazonian forests in 2019-2020, eliminating the biodiversity of the area. Restrictions and quarantines due to the pandemic have set back in terms of conservation in the Amazon watershed. The Fauna & Flora International, University of Chocó (UNICHOCO, district educative entity), the Arahuac indigenous community and our organization, have formed a team to coordinate multilateral and multifunctional conservation projects (benefits of various species) to stop the advance of 'legal' activities that harm Amazonian ecosystems, especially the Rosewood tree.

This project addresses 4 threats to the target species: (a) Forest fires: with natural origin, anthropogenic actions of tourists and residents, and for agricultural activities, the main enemy of Rosewood is fire given its flammable capacity. There is no coordination of fire care by regional entities, there are no firebreaks, there are no fire control elements. (b) Deforestation: the concession of mining titles in the Amazon and constriction of roads, the Colombian Amazon is deforested 'legally'. Construction companies always say: we are not doing anything illegal. (c) Invasive species: 26 invasive species are known (for example: 'Attalea butyracea' and 'Andropogon bicornis') that compete nutritionally with the Rosewood tree (*Aniba rosodora*), eliminating the seedlings of this species. (d) Illegal traffic: The wood of our tree is required for the extraction of oils and cabinetmaking, given its striking pink color. This project collaterally benefits other Amazonian species: the giant otter (Endangered, EN), pink dolphin (EN), jaguar, etc.

The Protection proposal considers short, medium and long-term actions, having this relationship mainly with the need for permanence, the expected effects and the cost in time necessary for their execution.

Similarly, and in order to maintain order in the execution of activities, it is carried out based on

technical programs, which will contain clear objectives and actions of the work to be carried out. These technical programs are related to the guidelines established by the National Forestry Corporation, Araucanía region, although they are capable of improving, reducing the priority of some and / or incorporating others that are deemed necessary through participation and effects in community.

The proposed activities are presented in Table No. 10, where a description is made, ideal times (months) for their execution are established and the entity or entities responsible for carrying them out are defined.



## 1. EDUCATION AND DISSEMINATION PROGRAM.

As a way of communicating to the population the prevention or action measures against forest fires, this program is implemented, which seeks to place in the collective subconscious the message that there is a problem, forest fires, and that it is everyone's responsibility to eliminate them, especially between the spring and summer months.

It aims to reinforce the knowledge of local authorities, organized community, public institutions with action in the prevention and control of forest fires.

### OBJECTIVES:

- Create an instance for a coordination meeting and dissemination to officials of the Carabineros de Colombian Amazonas, Investigative Police and Local Prosecutor's Office.
- Create an instance for a coordination and dissemination meeting with municipal officials.

- Create an instance for a coordination and dissemination meeting with leaders and representatives of peasant communities, Mapuche communities, forestry companies, among others.
- Design and have dissemination material that incorporates the corporate image of prevention, with messages alluding to participation and protection, with a strong emphasis on social participation.
- Carry out at least 2 annual road operations, 1 at the beginning of the period of high occurrence and another at the approaching time of the execution of controlled burns.



- Put on the air, through at least 1 local radio, phrases about forest fire prevention measures and / or focused on the topic of the Use of Fire and its alternatives.
- Generate coordination with local radio stations, so that in emergency situations, there is communication to the population.
- Organize and carry out traveling exhibitions (at least 2 a year) where the material related to fire fighting, damage and effects of fire and prevention of these is displayed.
- Make chalk (at least 2 a year) for children, who paint with chalk on the streets, a theme allusive to preventing forest fires.
- Participate in massive events (at least 2 per year) with the presence of the Forestin symbol.
- Make at least 50 face-to-face contacts delivering self-protection messages to people or groups who are in risk areas or dangerous situations in the face of forest fires.

## 2. COMMUNAL ENVIRONMENTAL EDUCATION PROGRAM

Environmental education in the field of forest fires implies the execution of a series of actions aimed at delivering permanent concepts and values related to the forest and natural resources.

This is intended to generate a change of habits in the population through permanent environmental education actions, formally and informally, with a strong emphasis on the generation and protection of forest resources.

### OBJECTIVES:

- Study the development of an agreement between forestry companies, the Municipality of Traiguén, the Ministry of Education and ARAHUAC INDIGENOUS COMMUNITY, in order to implement training for teachers-monitors in environmental education.
- Carry out informal environmental education for at least 100 people a year from neighborhood councils in sectors defined as critical.
- Carry out informal education for 100 adult fire users in forestry and livestock activities in the rural sector.
- Carry out 10 talks on Environmental Education in educational establishments inserted in sectors defined as critical.
- Disseminate and generate instances of participation in activities such as the Regional Painting Contest among students from municipal and subsidized schools from 1st to 8th grade.

## 3. SELF-PROTECTION AGAINST FOREST FIRE PROGRAM

Citizen participation constitutes one of the best and most effective forms of involvement of the organized community in major issues that are of self-interest. This concept, in the case of the problem of forest fires, is perfectly applicable and opportune to undertake. This is intended, on the one hand, to achieve a change in the

attitude of the population tending to reduce the risk situations that may be

conflictive and that can generate forest fires, and on the other, carry out activities on the ground aimed at reducing the danger of spreading this type of fires.

For its part, through the culture of self-protection, it is intended to create a space and achieve a permanent commitment from public and private actors related to the environmental issue of the region.

#### **OBJECTIVES:**

- Diagnose the situation of forest fires at the local level (at least 5 sectors a year), delivering prevention measures to be developed in the areas of greatest risk.
- Register existing organizations in sectors identified as critical.
- Implement prevention action plans with each social organization that is detected and identified as participatory.
- Manage advice to develop local prevention activities (signs, brochures, among others).
- On the part of the inhabitants, rural and interface areas, the environment of their homes must be kept clean, remove live or dead fuels that could spread fire to and from their homes; clean roofs and gutters frequently; maintain easy and clear accesses for the arrival of emergency vehicles; keep emergency numbers up to date; give notice of the intention to use fire to ARAHUAC INDIGENOUS COMMUNITY.

#### **4. PROGRAM USE OF FIRE AND INSPECTION OF CRITICAL BURNS**

A behavior of high risk of occurrence of forest fires in the commune of Traiguén, is the use of fire to eliminate agricultural and forest waste. This activity is deeply rooted and year after year agricultural and forestry areas are intervened through fire.

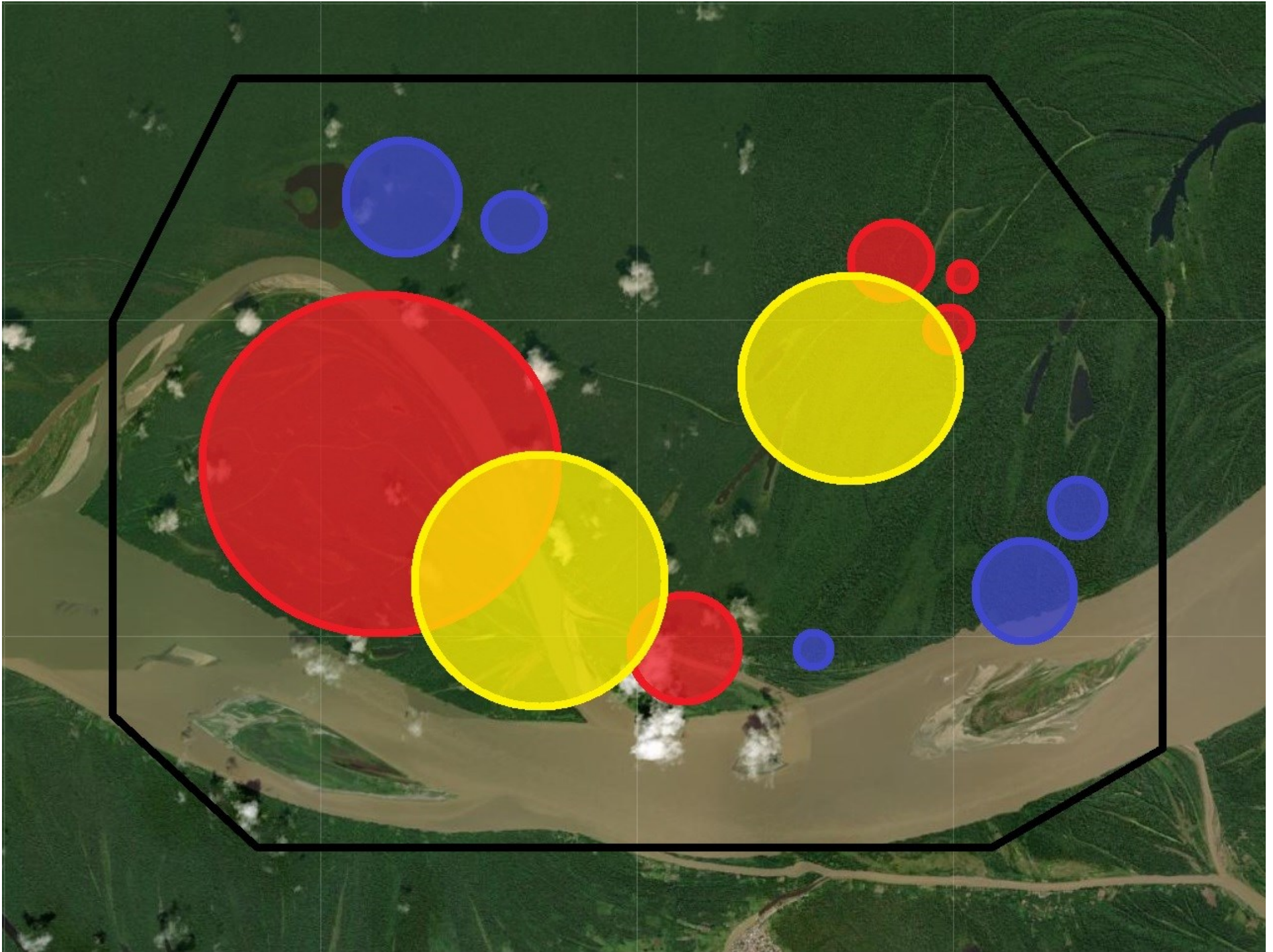
Current times demand, especially from public bodies related to the subject, to control the correct application of the regulations on the use of fire, thereby trying to avoid polluting sources, road accidents and social effects, among others.

Likewise, it is necessary to search for alternatives to fire in order to banish this culture and replace it with a less polluting one. The regulation and incentive of alternative techniques are part of a set of actions aimed at installing the concept of reuse of waste in this type of work.





#### **OBJECTIVES:**

- Disseminate the procedures for controlled burns to be developed in areas adjacent to high-traffic highways, in areas adjacent to power lines and in areas adjacent to population centers.
- Supervise 100% of the high risk-controlled burns that are being notified and to be executed in the commune.
- Detect at least 50 risk situations due to potential fire use activities.
- Hold 1 coordination and training meeting with detachments of Carabineros de Colombian Amazonas in the commune on issues related to the use of fire, procedures and sanctions.
- Implement operations (at least 1 per year) of mobile reception offices, which allow the correct notification of the use of fire by distant rural inhabitants or those with difficulty in displacement.

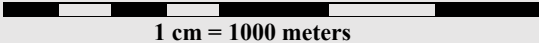




**CLIMATE MANAGEMENT OF FOREST FIRES IN THE COLOMBIAN AMAZON BASIN**  
CONVENTIONS

	Project map
	Deforestation zone
	Forest fire zones
	Ticuna indigenous cities

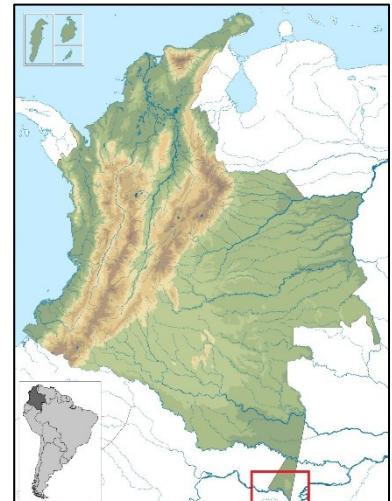
**SCALE**



**Sources:**

- Google maps
- Environmental Women ORG
- IMAP, Colombian Biodiversity Map Center

- **Country:** COLOMBIA
- **Province:** Amazonas
- **City:** Puerto Nariño
- **Site:** Ticuna indigenous territory
- **Habitats:** Tropical humid forest, wetlands
- **Geographic coordinates:** From 3°46'41.3"S 70°38'49.7"W and 3°46'41.3"S 70°35'10.9"W; to 3°49'46.3"S 70°38'36.1"W and 3°49'33.3"S 70°36'30.0"W



## 5. ENVIRONMENTAL PROGRAM AND REGULATORY PLANS

This program is intended, on the one hand, to respond to the need to implement protection measures in high-risk interface sectors, and on the other, to advise the municipality on matters of regulatory plans and / or municipal ordinances.

### OBJECTIVES:

- Identify risks in the interface areas with frequent occurrence and prepare reports on the subject (2 per year).
- Encourage, in at least 4 sectors defined as critical, the construction of firebreaks on the edge of towns with high risk of forest fires.
- Encourage preventive forestry actions by individuals, mainly in interface areas.
- Implement a program of periodic maintenance of roads to the community (especially sectors defined as critical).
- Respond to community information requirements for the preparation and / or updating of land use planning plans.



## 6. PROGRAM FOR PREPARING AND FIGHTING FOREST FIRES

This program aims to provide technical knowledge and establish coordination between the entities that participate in the extinction of forest fires, especially in situations of emergencies and / or when they threaten populated centers.

### OBJECTIVES:

- Generate 1 meeting with the Fire Department of the commune, to review and reinforce the knowledge to fight forest fires, as well as advise on the implementation of equipment and tools necessary for their control.
- Coordinate with Fire Department personnel interested in participating in the chainsaw workshop carried out by ARAHUAC INDIGENOUS COMMUNITY.

## 7. INFORMATION, EVALUATION AND MANAGEMENT SYSTEM

To evaluate the management of the Forest Fire Protection Proposal for the Traiguén commune, the following actions should be considered:

- a. Surveys among the direct beneficiaries of the project, to measure the degree of uptake of the contents of the activities.
- b. Hold a semiannual meeting to evaluate and advance the project among the project stakeholders.

## PROPOSED ACTIVITIES

### DIFFUSION

- a. Design and print diffusion material with corporate image
- b. Execution of road operations
- c. Radio phrases with prevention measures or related to the use of fire
- d. Contingency plans for religious activities
- e. Execution of traveling exhibitions
- f. Execution of tizada
- g. Running massive events
- h. Execution of face-to-face contacts



## DETERMINATION AND INVESTIGATION OF CAUSES

- a. Operation of professional team in determining the causes of forest fires
- b. Investigation of 1% of the causes of forest fires in the Arahuac indigenous community
- c. Training and training for Brigade Chiefs
- d. Training and training for Colombian police, Investigative Police and Prosecutor's Offices
- e. Execution of prevention activities
- f. Response to information requests



## REGIONAL ENVIRONMENTAL EDUCATION

- a. Collaboration agreement to train teachers-monitors in environmental education
- b. Implement a pilot plan for environmental education in critical communes
- c. Educate 500 people from Juntas de Vecinos
- d. Educate 500 fire users from rural areas
- e. Conducting 34 talks on environmental education in establishments in critical communes
- f. Regional Painting Contest
- g. Reinforcement of personal knowledge of the Arahuac indigenous community
- h. Strengthening management of Oirs, Provincials in prevention

- i. Prevention manual distribution and dissemination

## WORK ALLIANCES IN SELF-PROTECTION ACTIVITIES AGAINST FOREST FIRES

- a. Community diagnosis of forest fires
- b. Delivery of diagnostic records to critical communes
- c. Identification of preventive measures with municipalities of critical communes
- d. Cadastre of social organizations
- e. Implement prevention action plans with participatory social organizations
- f. Delivery of technical knowledge to social organizations in the region
- g. Preparation of community plans for the protection against forest fires
- h. Development of local forest fire prevention activities

## USE OF FIRE AND CONTROL OF CRITICAL BURNS

- a. Update action procedures for controlled burns adjacent to roads
- b. Update action procedures in controlled burns adjacent to power lines
- c. electrical
- d. Control of controlled burns in critical communes
- e. Detection of risk situations due to the use of fire

## BIBLIOGRAPHIC QUOTES

- Agustín Codazzi Geographical Institute, Government of Antioquia, Institute for the Development of Antioquia. 2007. Antioquia geographical characteristics. Bogota, 318p.

- Table, O; Poveda, G; Carvajal, L.F. 1997. Introduction to the climate of Colombia. National University of Colombia, Faculty of Mines. Medellin. 390p.
- Eslava, J. 1993. Some climatic peculiarities of the Colombian Pacific region. EN: Atmosfera, N ° 17. pp45-63.
- Institute of Hydrology, Meteorology and Environmental Studies. IDEAM. 2005. Climate Atlas of Colombia. Bogota 157p.
- Law 322, article 2. The prevention and control of fires and other related calamities in charge of fire-fighting institutions is an essential public service in charge of the State. It is the duty of the State to ensure its efficient provision to all the inhabitants of the national territory, directly or through the Voluntary Fire Brigades.
- Rothermel, R.C. 1972. A mathematical model for predicting fire spread in wildland fuels. Res. Pap. INT-115. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 40 pp.
- Publication of U.S. Government. ZÁRATE, L.G. 2004. Study of the physical and geometric characteristics of the flame in forest fires. Doctoral thesis Polytechnic University of