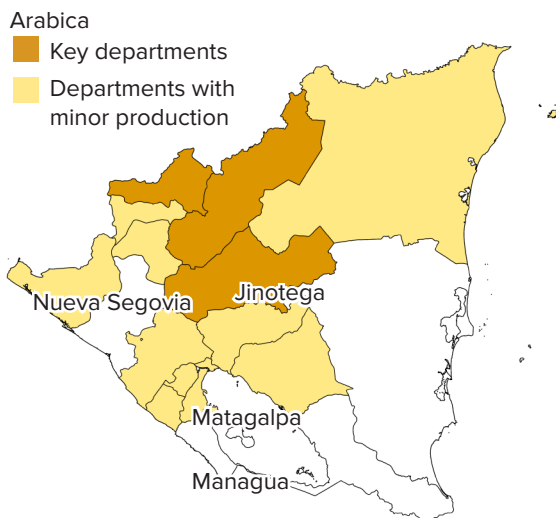
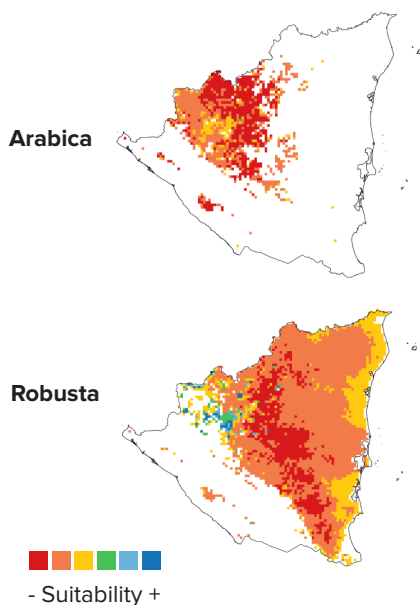


# COFFEE PRODUCTION IN THE FACE OF CLIMATE CHANGE: NICARAGUA

## KEY PRODUCTION AREAS IN NICARAGUA<sup>(5)</sup>



The main coffee regions are located in the north of Nicaragua, in the departments Nueva Segovia, Jinotega and Matagalpa.



Changes in suitability between today and 2050<sup>(12)</sup>

## OBSERVED AND PREDICTED EFFECTS OF CLIMATE CHANGE IN COFFEE PRODUCING AREAS<sup>(4,8,10,11)</sup>



### Rising Temperatures

- Mean annual temperature rise of 2.2 °C by 2050.
- The mean daily temperature range will slightly increase.



### Changing Seasonality

- The number of dry months will likely remain unchanged.



### Changing Rainfall

- A decrease in annual rainfall in the range of 5-10% or around 100mm is expected
- Rainfall will continue to be erratic, likely with greater extremes.



### Extreme Weather Events

- More frequent El Niño events will amplify drought, frequency of hurricanes and floods

## LIKELY IMPACTS OF CLIMATE CHANGE ON COFFEE PRODUCTION

### Predicted changes in coffee producing areas:

- At the moment, the optimum elevation for Arabica coffee is between 800 and 1400 m. This optimum is expected to shift to 1,200 – 1,600 m by 2050.<sup>(11)</sup>
- In Nicaragua, about 100,000 ha equivalent to over 80% of today's Arabica coffee growing areas will likely be unsuitable for Arabica by 2050. In most of these areas, farmers will have to transition to other crops, e.g. cocoa. However, about a quarter of the current coffee growing area may become unsuitable for other crops commonly grown in Nicaragua.<sup>(4)</sup>
- The drastic change in suitable land requires concerted and fast effort by government and development partners helping farmers to transition to other, more suitable crops and off-farm income.
- There is increasing interest from the private sector to plant Robusta coffee. At the moment, Robusta can only be established at least 30 kilometers away from Arabica plantations and below 400.<sup>(2)</sup>

## THE IMPORTANCE OF COFFEE IN THE NICARAGUAN AGRICULTURAL SECTOR<sup>(1,2,3,4,13)</sup>

### Coffee production and export in 2017/2018

- Arabica: 142,000 tons,
- Robusta: 2,000 tons
- 94% of coffee is exported as green coffee

### Area under coffee production

**Arabica**  
124,000 ha

**Robusta**  
2,000 ha

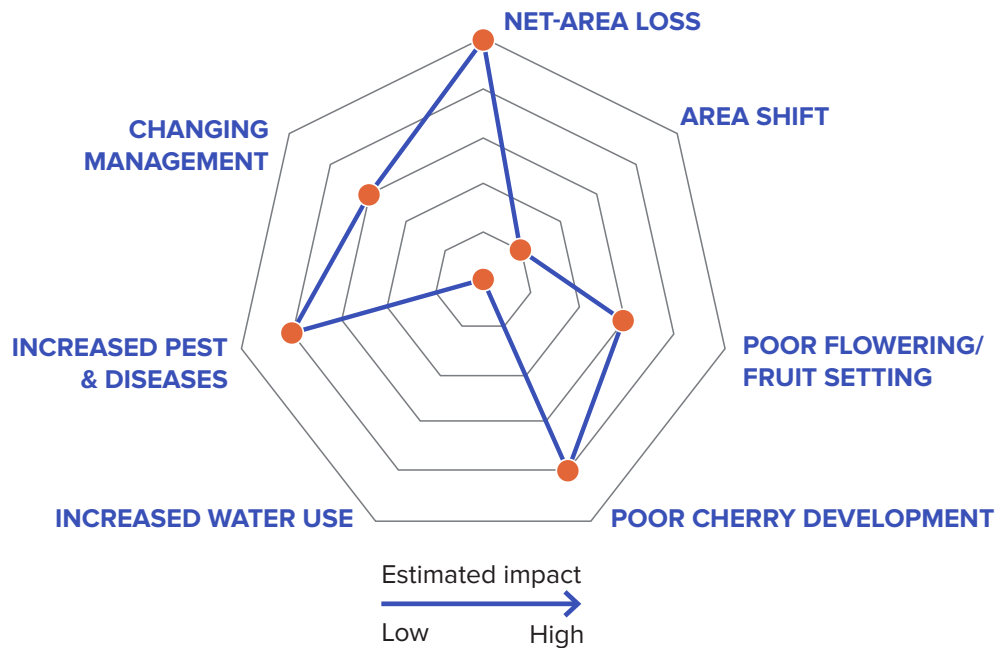
### Farms

- 40,000 small-holders (~ 2 ha) manage 60% of the area.
- Larger farms (>14ha) dominate national production with 60% of total.

### Importance in the national economy

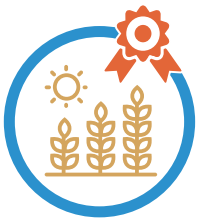
- Coffee:
- 20-25% of export revenues, and
  - 7.2% of gross domestic product
  - Is the largest export commodity and most important crop

## LIKELY IMPACTS OF CLIMATE CHANGE ON COFFEE PRODUCTION



- Rising temperatures speed up the coffee ripening, leading to poorer cup quality.
- Pests and diseases, in particular, Coffee Leaf Rust and the Coffee Berry Borer will affect coffee at higher altitudes.
- Erratic rainfall at the beginning of the rainy season could cause inconsistent flowering and/or the abortion of flowers and cherries.
- Inconsistent flowering and ripening would likely prolong the harvesting season, causing additional costs.
- Hurricanes will damage coffee plantations and infrastructure.

## PRODUCTION STANDARDS AND PRACTICES



### CERTIFIED PRODUCTION

- 4-5% of coffee was certified as organic in 2009, mostly double certified with Fair Trade.<sup>(9)</sup>



### FARM PRACTICES

- The majority of coffee is grown in agroforestry systems.
  - 44% of the coffee area needs rejuvenation, replacing old plants susceptible to Coffee leaf Rust.<sup>(1)</sup>
- About 30% of farms practice integrated pest and disease management.<sup>(6)</sup>
  - Input use is very low.<sup>(7)</sup>



### FARM ECONOMY

- Average yield is 0.7 tons/ha.<sup>(2)</sup>
- Labor is the biggest cost factor with > 60%, followed by inputs with 24%. Labor migrates seasonally from other parts of the country.
- Many smallholders sell coffee through middlemen.<sup>(3)</sup> While Nicaragua is well placed for speciality coffee, farmers are not able to capture the price premium giving them little incentive to invest.<sup>(1)</sup>
  - Cooperatives export about 20% of coffee.<sup>(3)</sup>
  - Farmers receive about 68% of the export price.<sup>(3)</sup>

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