

# Analysis of production costs of Costa Rican coffee

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## **Workshop topics:**

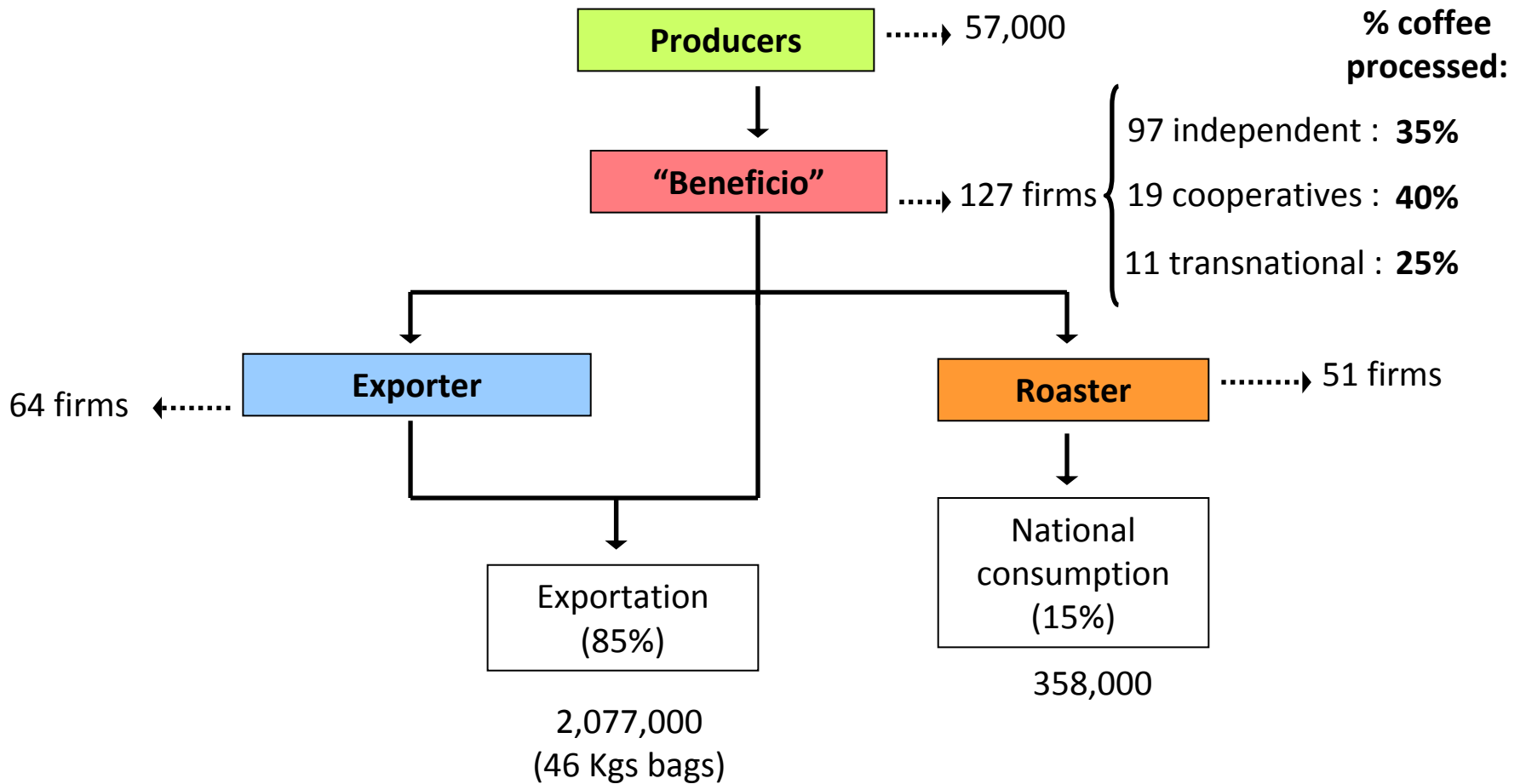
**Introduction:** State of Costa Rican coffee industry

- i. Impact of urban pressure in national coffee production**
- ii. Factors that have influenced production costs**
- iii. Economic viability of sustainable certifications**

# Introduction

## Integration of Costa Rica's coffee sector

Although coffee trade is done by the private sector, the government supervises it through the ICAFE. Next figure shows coffee sector organization in 2008:



# Introduction

Costa Rica coffee industry has been divided in seven producing regions, each representing a wide variety of soil types, altitudes, precipitations and agricultural practices, each conferring a unique cup profile to its coffee.

More than any other Central American country, Costa Rica has embraced technified sun coffee, since almost all crop comes from short, high-yielding, sun tolerant varieties Caturra and Cataui.

However, national production has been decreasing every crop, since no more suitable land to grow coffee is available and urbanization has cut-off plantations nearby the cities in Central Valley as shown in Fig. 1:

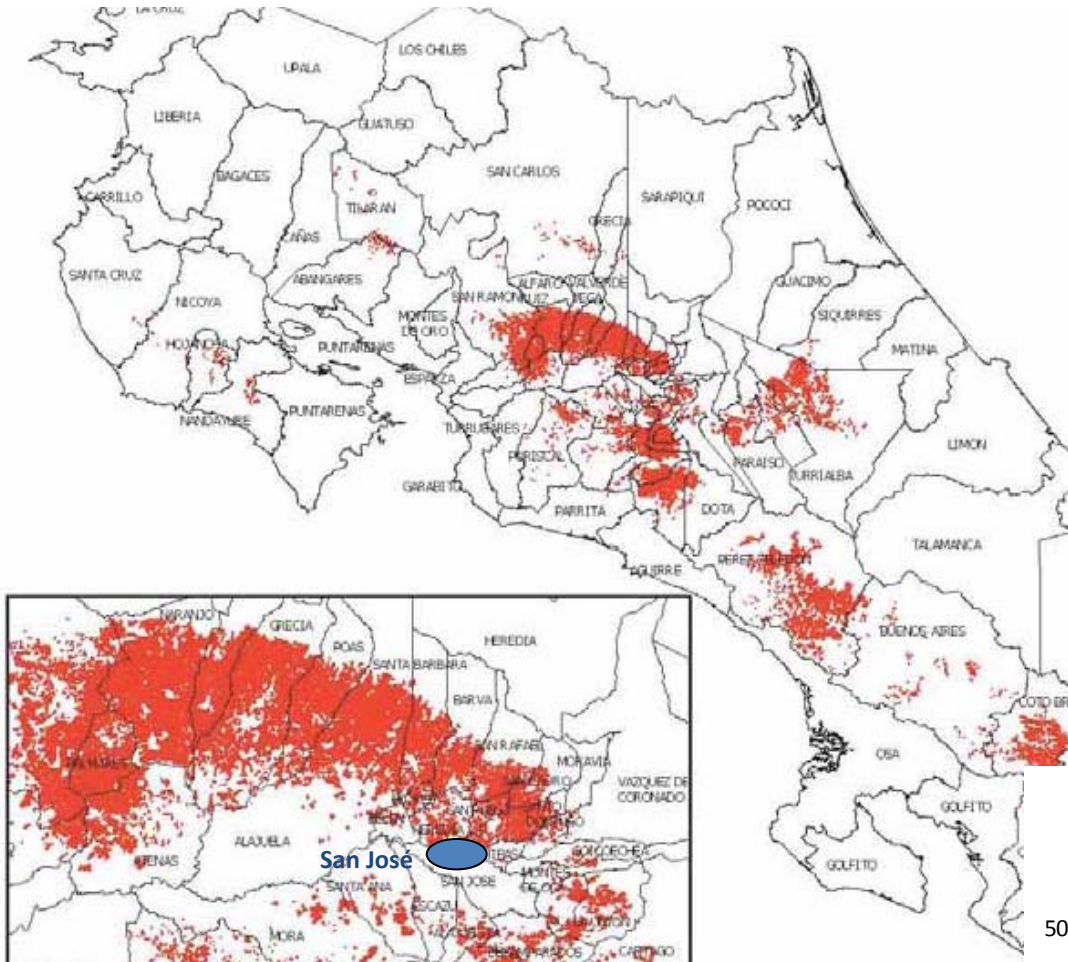
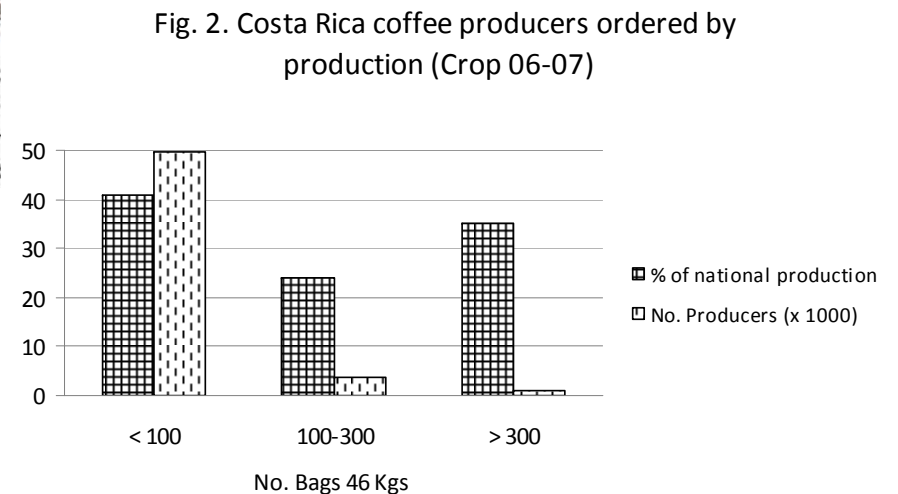


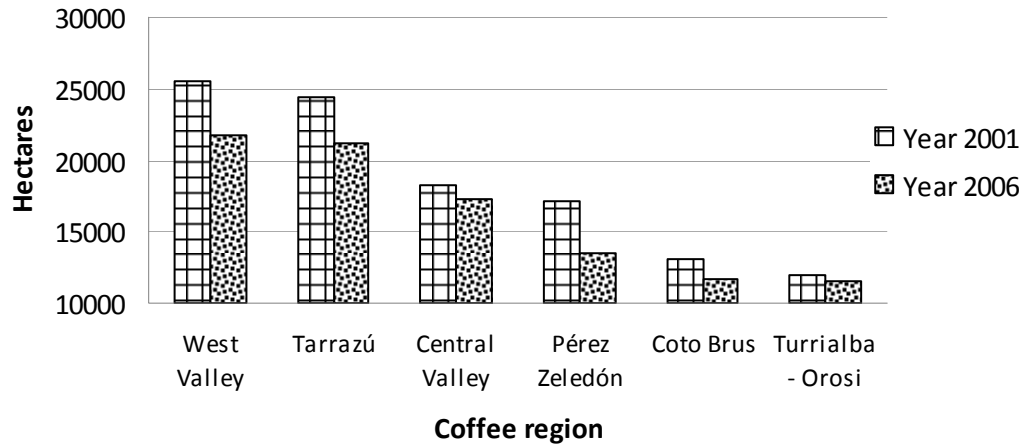
Fig 1. Red points represent coffee areas

On the other hand, although 92% of producers have less than 5 Has, 40% of total production comes from them and the rest comes from medium-large size farms as shown in Fig 2:

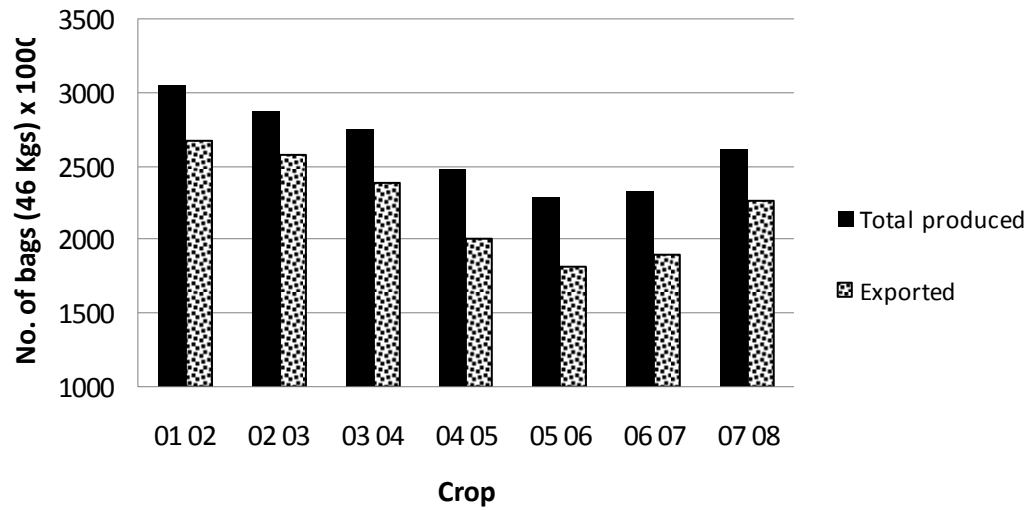


# Introduction

Costa Rica. Evolution of coffee cultivated area by region



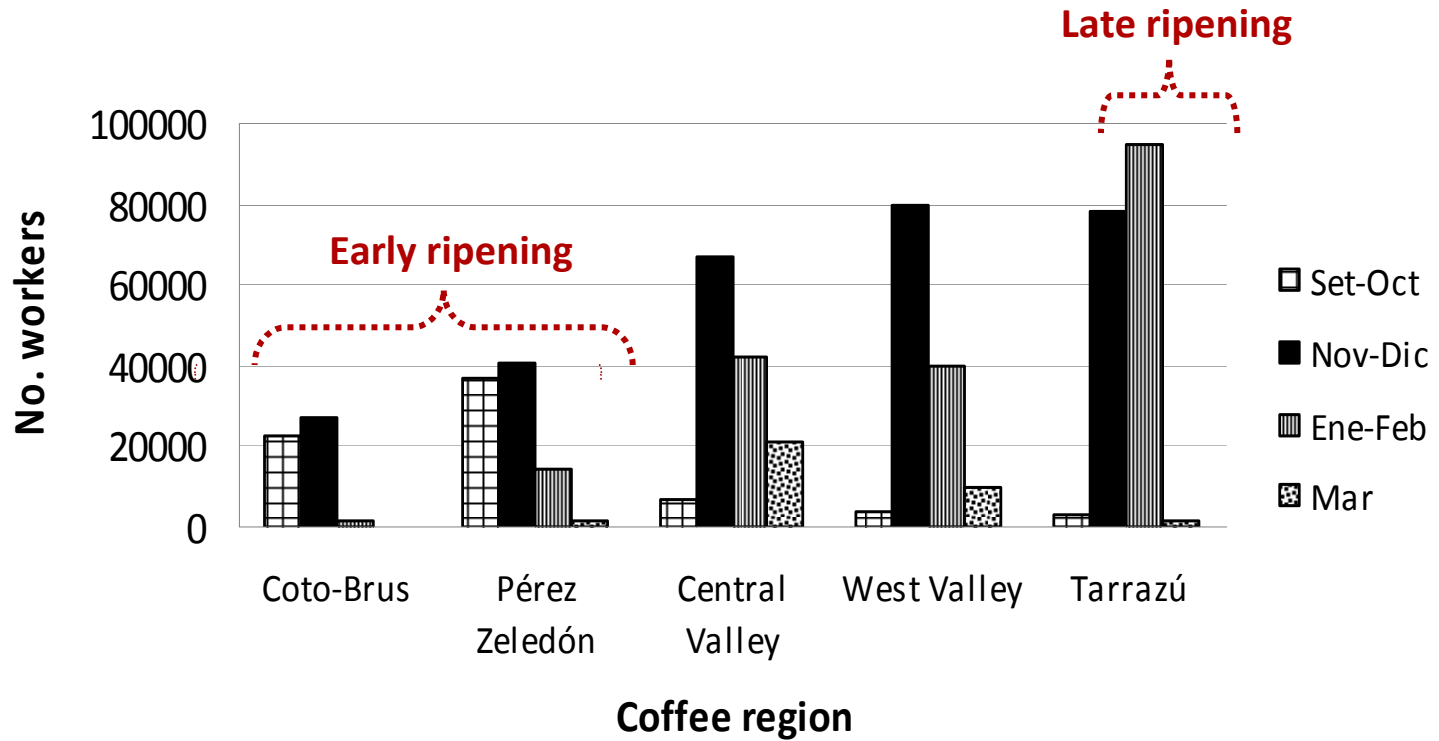
Costa Rica. Historical green coffee trade



Source: CATIE , INEC, ICAFE

# Introduction

## Coffee "pickers" needed by region/month

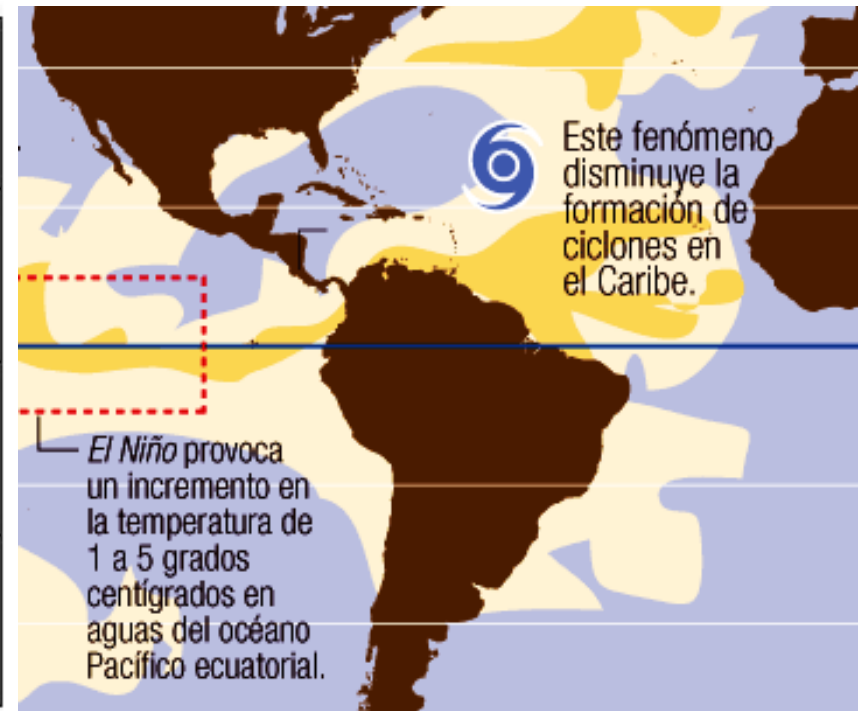
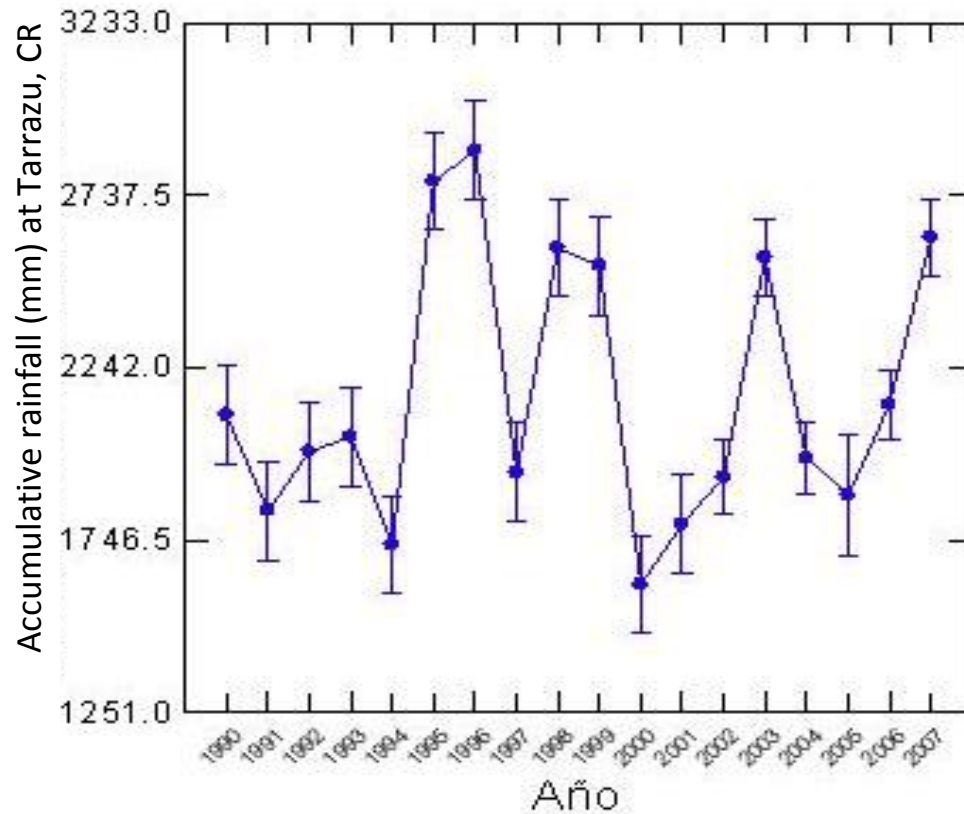


Source: ICAFE

## II. Factors that have influenced production costs

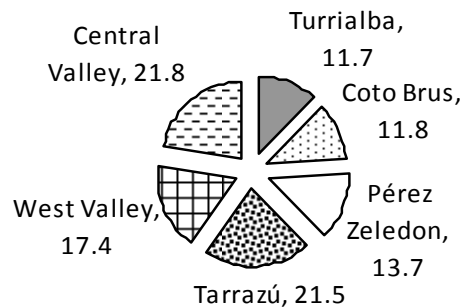
### Weather change :

El Niño / La Niña phenomenon have usually occurred at intervals of 5-7 years, however since 90's decade has been strengthened dramatically

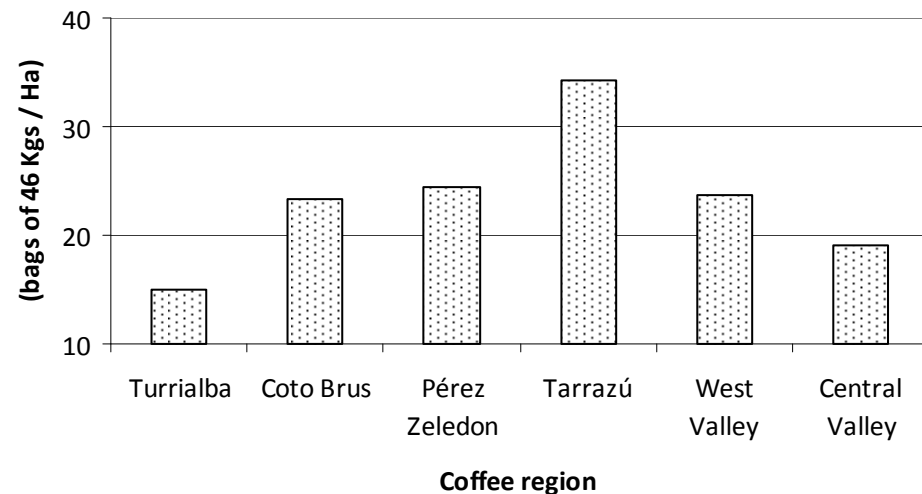


## II. Factors that have influenced production costs

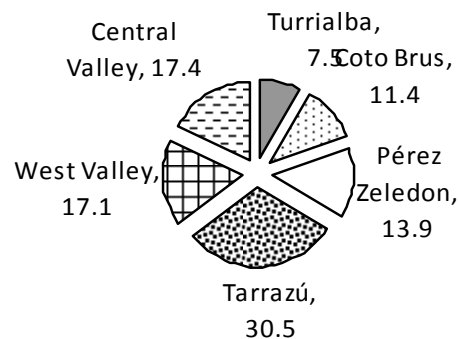
Current coffee land by region (%)



Costa Rica. Current yield by region (qq / Ha)



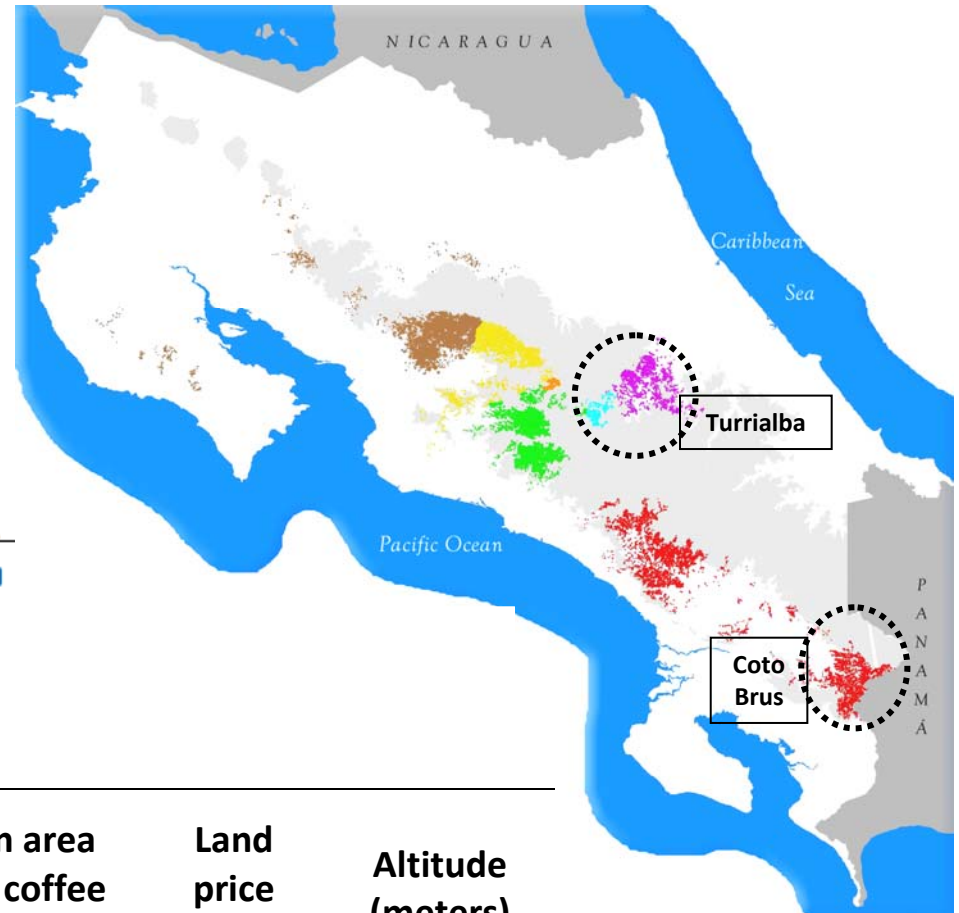
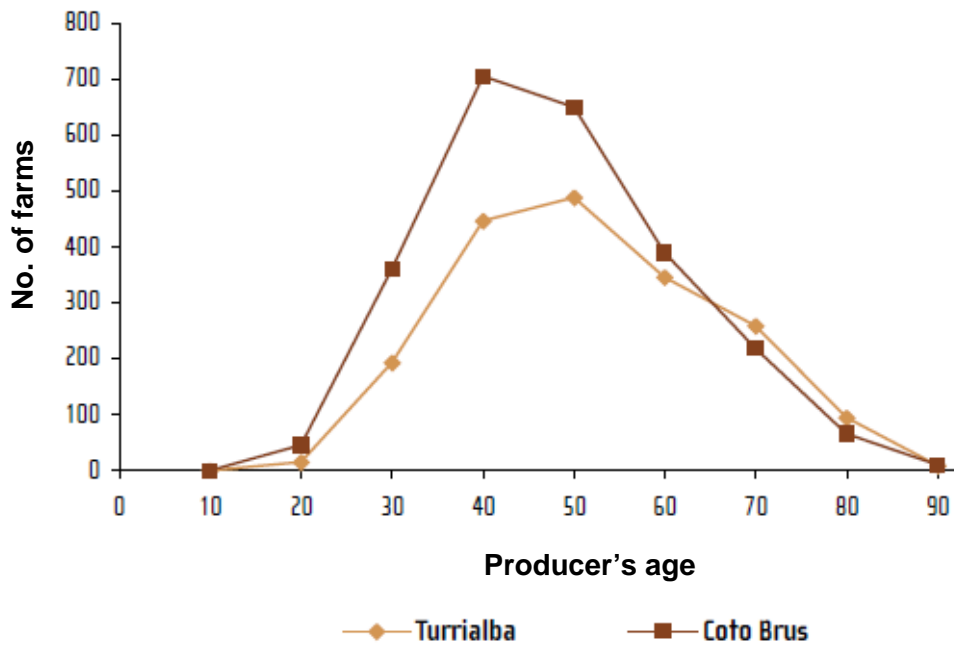
Current coffee production by region (%)



### Observations :

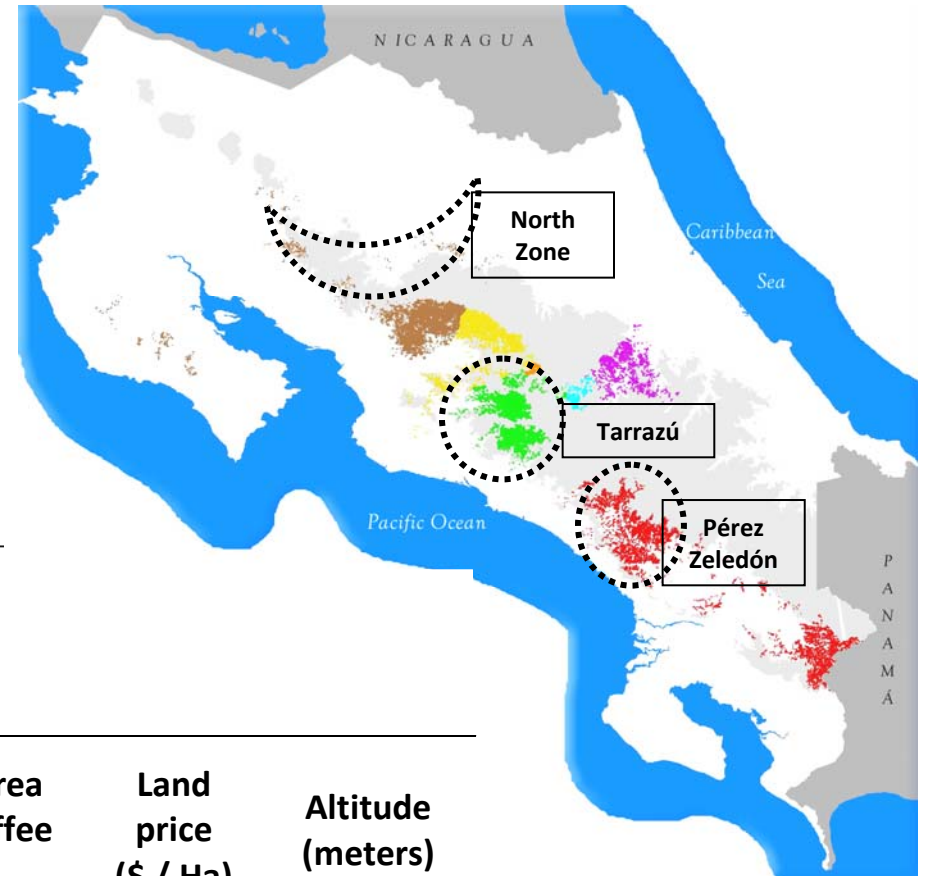
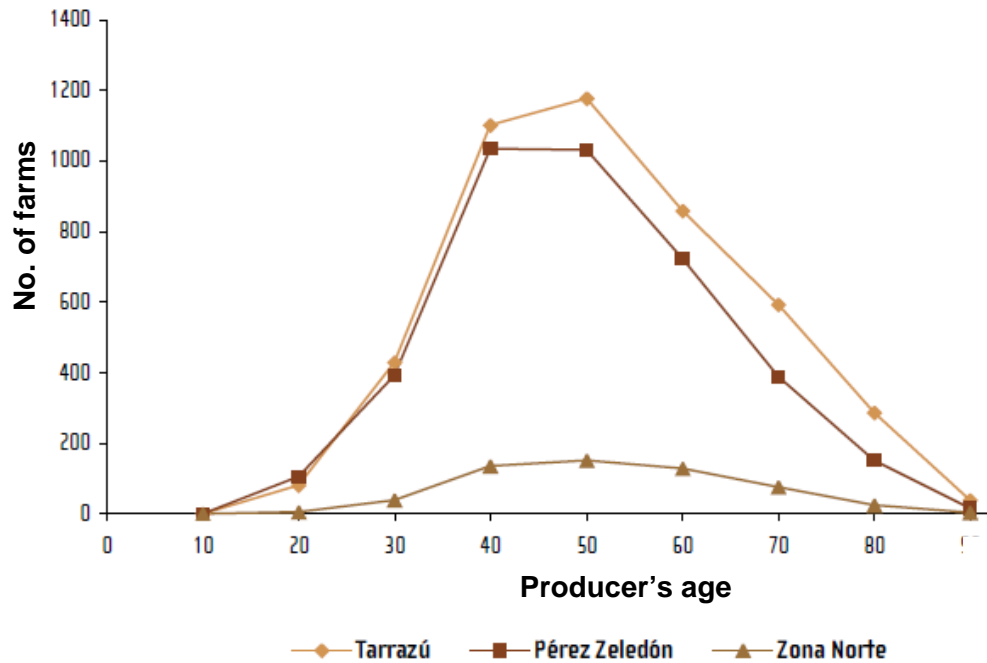
- + **Tarrazu**: favorable dry-wet periods during last years together with high differential price helped production to increase
- **Turrialba**: low prices from 2000-2004 period induce change from coffee to grassland for cattle/sugar-cane (under 800 m.)
- **Central Valley**: Real Estate growth discourage management of farms nearby towns & cities
- + **Other regions**: low prices of HB type coffees eliminate coffee in areas below 1200 m., but encourage development of new SHB coffees as “San Juanillo” (West Valley) & “Paramo” (Pérez Zeledón)

## II. Factors that have influenced production costs



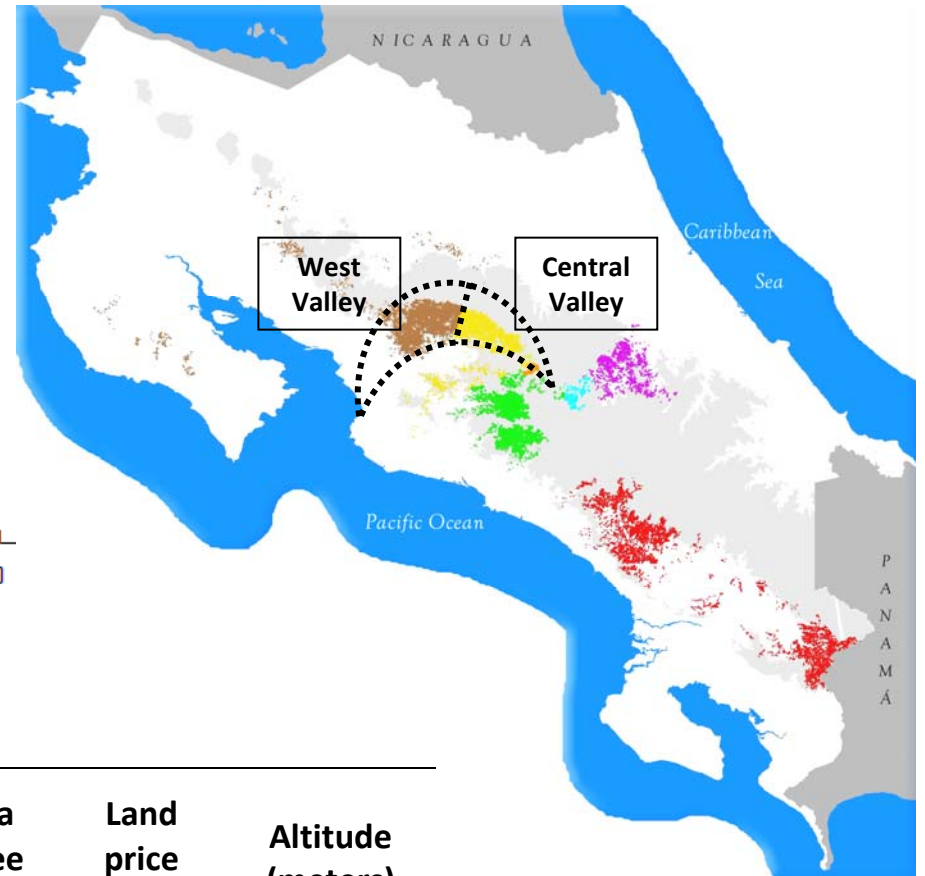
Region	Total average farm size (Has)	Average area with coffee (Has)	Farm area with coffee (%)	Land price (\$ / Ha)	Altitude (meters)
Turrialba	12.6	7.9	63	~10,000	600-1000
Coto Brus	9.9	6.6	67	~10,000	800-1300

## II. Factors that have influenced production costs



Region	Total average farm size (Has)	Average area with coffee (Has)	Farm area with coffee (%)	Land price (\$ / Ha)	Altitude (meters)
Tarrazu	5.5	4.6	84	>20,000	600-1000
Perez Zeledon	7.0	3.3	47	~10,000	800-1200
Zona Norte	12.4	3.0	24	~10,000	600-1000

## II. Factors that have influenced production costs



Region	Total average farm size (Has)	Average area with coffee (Has)	Farm area with coffee (%)	Land price (\$ / Ha)	Altitude (meters)
Central Valley	11.7	6.6	56	>30,000	900-1500
West Valley	8.9	5.8	65	>25,000	800-1600

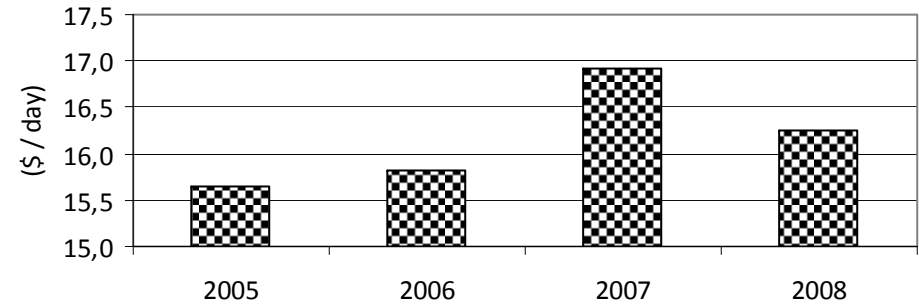
## II. Factors that have influenced production costs

Things have not been easy for Costa Rica coffee producers during the past years,

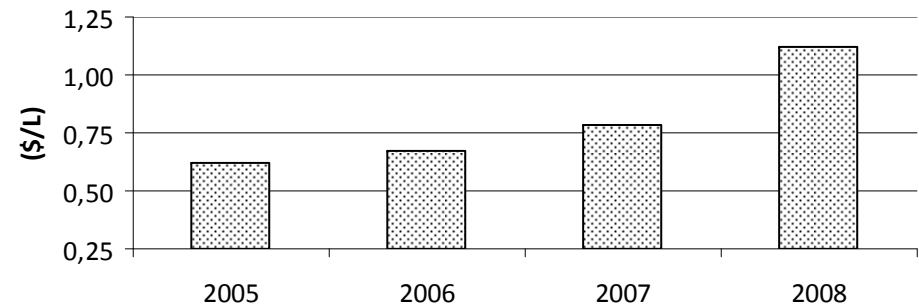
as oil prices raised up, almost every input raised too, and since some of them are not possible to eliminate, most producers cut-off workers and/or reduce amount of fertilizer.

The first “solution” increases unemployment in coffee regions, the second one compromises the yield for next crop.

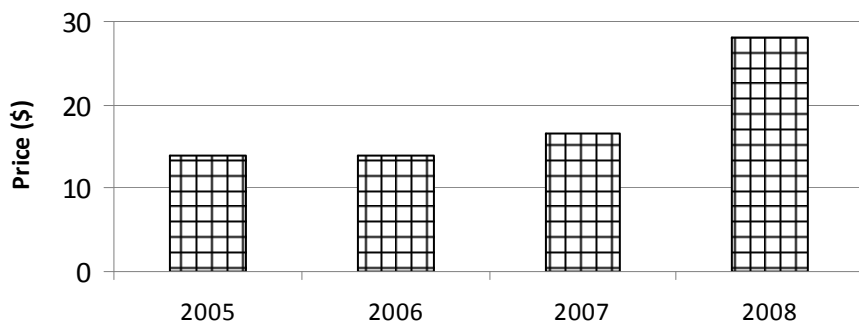
Average minimum salary



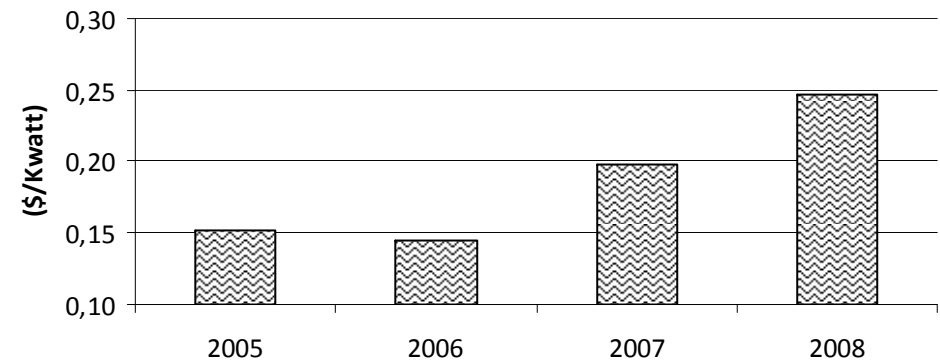
Average diesel price



Average cost of 1 bag (50 kgs.) of fertilizer

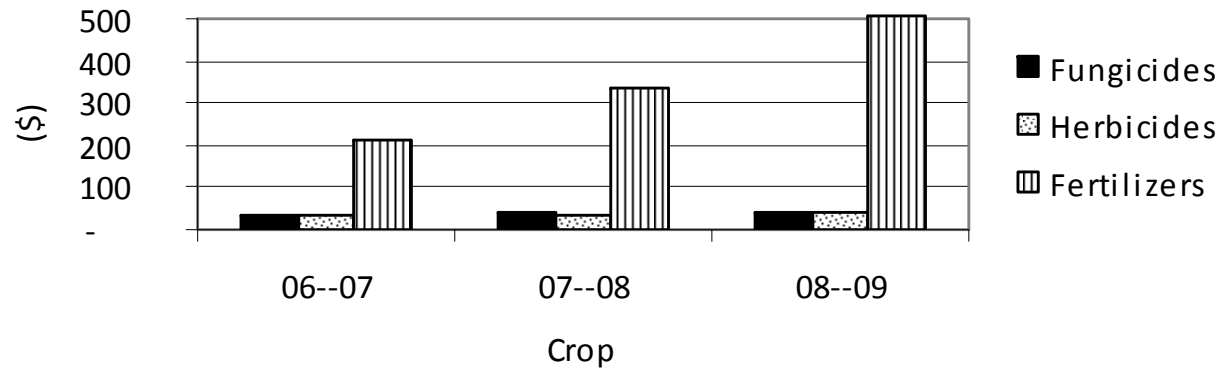


Average electricity price



## II. Factors that have influenced production costs

**Average cost of fungicides, herbicides & fertilizers on technified farm (\$/Ha)**



Source: Doka Estate

### Measures taken by technified producers (2008):

- Elimination of one fertilization cycle (from 3 to 2)
- Replace ammonium form of Nitrogen by nitrates/sulfates
- Increase use of alternative fertilizers: i.e. organic fertilizers, Calcium amendments, shade covertures...

### III. Economic viability of sustainable certifications

#### An extremist **green-view** about Costa Rican coffee :

**“Because of their pooled coffee system and dedication to high-yield technified production, it is very difficult to be assured your Costa Rican coffee is truly sustainable. There are no Smithsonian Bird-Friendly certified farms or co-ops in Costa Rica, that should tell you something. I know a number of University of Michigan graduate students who have done thesis work on coffee farms in Costa Rica, and they have all told me there is very little true shade in the farms. You are better off buying coffee from other Central American countries, especially El Salvador and Nicaragua.**

**If you must buy Costa Rican coffee, look for a high percentage of older varieties such as bourbon and typica, and certified organic beans -- these will all be less likely to be highly technified, as they are more difficult to grow in the sun”.**

Source : Coffee Habitat Organization (2008)  
For more details see: [/www.coffeehabitat.com/2007/01/costa\\_rica.html](http://www.coffeehabitat.com/2007/01/costa_rica.html)

### III. Economic viability of sustainable certifications

**Table 1.** Salary comparison of a coffee worker in different countries

Country	Minimum salary / day (\$)*
Costa Rica	16
Nicaragua	4
Panamá	7
Guatemala	6
El Salvador	4,5
Colombia	8
Mexico	7
Brasil	12

\*Includes social security

Source : Ing. Alvaro Llobet (2008) Coffee consultant

Perhaps Costa Rica does not possess its coffee industry under such *“environmental friendly production system”* from previous comment, but its *“shade-management”* systems maybe explain why the country has the lowest levels of poverty in coffee regions, compared to the rest of Central American countries.

On the other hand, sustainability cannot only be accepted if coffee production system remains *“indefinitely untouched”*, but as *“a system that supplies actual needs of producers without compromising the ability of future generations to meet their own needs”*.

Moreover, Costa Rican coffee producers do not cultivate in high-yield farms *“just because they want”*. Since the creation of Labor law in 1943, salaries in rural areas almost double, this situation almost obligate coffee producers to improve the way of cultivation in order to increase yield and therefore assure its continuity in the business.

### **III. Economic viability of sustainable certifications**

#### **A more adapted vision of Costa Rica coffee producer:**

**“Farmers who sought a balance between the traditions they learned from their grandfathers and the new, high-production, high-cost and high-impact techniques coming out of the agronomy schools... these forward-thinking farmers...have developed farm-management guidelines that maintain the eco-friendly traditions, add a growing awareness of social responsibility, and ensure economic sustainability...”**

**the previous “guarantee that coffee is grown on farms where forests are protected, rivers, soils and wildlife conserved; workers are treated with respect, paid decent wages, properly equipped and given access to education and medical care”**

Source : Rain Forest Alliance (2008)

For more details see: [www.rainforest-alliance.org/agriculture.cfm?id=coffee](http://www.rainforest-alliance.org/agriculture.cfm?id=coffee)

### III. Economic viability of sustainable certifications

The table below shows the current production costs by qq (with 25 qq/Ha yield\*)

<b>At farm gate</b>	<b>2005 (\$)</b>	<b>2008 (\$)</b>	<b>Change (%)</b>
Labor	21,0	26,6	+ 21
Inputs	20,3	27,4	+ 26
Harvesting + transportation	26,0	32,2	+19
<b>Direct Cost Sub-Total</b>	<b>67,3</b>	<b>86,2</b>	
<b>Indirect costs</b> (public services, taxes, insurances, machinery/facilities maintenance, coffee renovation...)	<b>19,6</b>	<b>25,0</b>	<b>+22</b>
<b>Farm gate Sub-Total</b>	<b>88,0</b>	<b>111,2</b>	
<b>Milling process</b>			
Wet + Dry mill	18,1	20,3	+11
Export cost	2,0	2,5	+10
<b>Milling Sub-Total</b>	<b>20,1</b>	<b>22,8</b>	
<b>Total production costs</b>	<b>108,1</b>	<b>134,0</b>	<b>+19,3</b>

\* Estimated for crop 07/08 by ICAFE

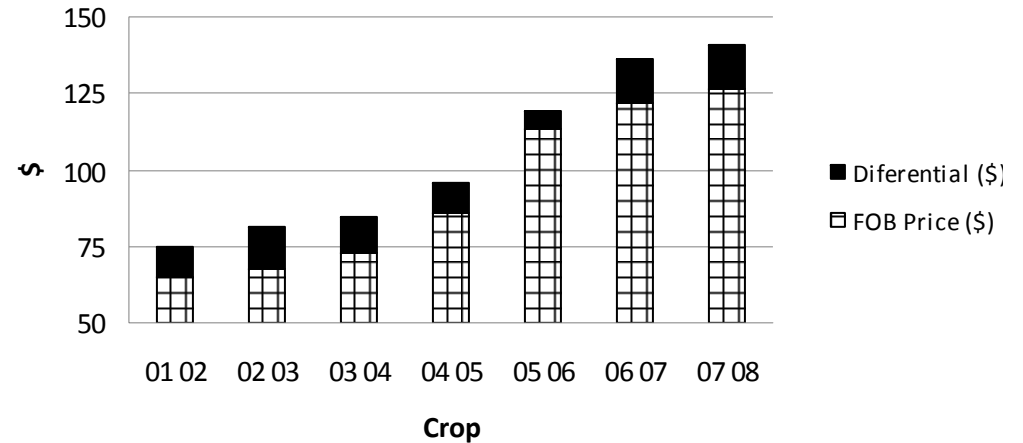
### III. Economic viability of sustainable certifications

Although the figure above shows that Costa Rica has significantly increased average sale price during last three crops,

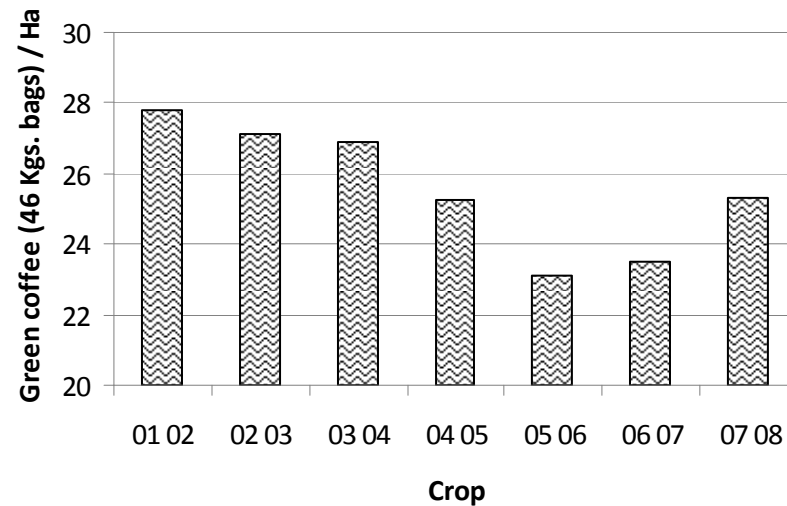
the figure below shows how the industry has not recovered the average yield/Ha until last crop.

Moreover, even if current average price for crop 08/09 could be \$140/qq, this price is not enough to recover yield levels, why is this?

Average differential price for Costa Rican 1st grade coffee (\$/qq)



Costa Rica. Average yield / Ha



### III. Economic viability of sustainable certifications

The table below shows the current renovate cost of 1 Ha of coffee\* in Costa Rica

Type of coffee	Sale price			Accumulate
	Non-certified	Rain Forest		
SHB-EP	\$140	\$155		
New plants	1,500	150		
Inputs	500	600	900	
<b>Direct Cost Sub-Total</b>	<b>4,000</b>	<b>1,450</b>	<b>1,900</b>	
<b>Indirect costs</b> (public services, taxes, insurances, crop depreciation)	300	350	400	
<b>Total renovation cost</b>	<b>3800</b>	<b>1,800</b>	<b>2,300</b>	<b>7,900</b>

\* Annual inflation calculated at 15%

### III. Economic viability of sustainable certifications

The only way to increase yield, it is through “an aggressive change” of old coffee plantations with new varieties, the previous is impossible for a small/medium producer with current prices received by.

Example:

Farm size (Has)	Average yield (qq/ Ha)	Sale price (\$ / qq)	Gross profit (\$)	Direct cost (\$86 / qq)	Indirect cost (\$25 / qq)	Net profit (\$)
5	15	100	7,500	(6,450)	(1875)	(835)
10	25	110	27,500	(21,500)	(6,250)	(250)
50	30	120	180,500	(107,500)	(31,250)	41,750




\* \$ 300 = monthly minimum wage (includes social security charges)

\*\* 1 worker = for 5 Has

\*\*\* \$ 3800 = 1st year renovation cost / 1 Ha

### III. Economic viability of sustainable certifications

According to the previous scenario, is it viable for a small/medium producer to continue producing coffee if he certifies his farm?

Logo	Certified Members in Costa Rica at 2008	Certified area (Has)	Differential price
	<ul style="list-style-type: none"> <li>▪ 10 large Estates</li> <li>▪ 3 Large cooperatives</li> </ul>	>3000	~\$15
	<ul style="list-style-type: none"> <li>▪ 3 large Estates</li> <li>▪ 2 small holder organizations</li> <li>▪ 1 cooperative consortium (6 large Coops.)</li> </ul>	~2600	\$2 favourite of European roasters
	<ul style="list-style-type: none"> <li>▪ 1 cooperative consortium (7 small + 2 large Coops.)</li> </ul>	> 3000	\$135 minimum

### III. Economic viability of sustainable certifications

The table below shows that “differential price” received by small/medium coffee growers who decided to produce in a certified way (i.e. Rain Forest), still not reach the necessary income to pay \$3,800 renovation cost of 1 / Ha.

Non-certified farm					Certified farm		
Farm size (Has)	Average yield (qq/ Ha)	Sale price (\$/qq)	Gross profit (\$)	Net profit (\$111/qq)	Gross profit (+ \$15/qq)	Cost of certification (\$100/Ha)	Net profit (\$111/qq)
5	15	100	7,500	(835)	8,625	(500)	(200)
10	25	110	27,500	(250)	31,250	(1,000)	2,500
50	30	120	180,000	41,250	202,500	(10,000)	53,750

### III. Economic viability of sustainable certifications

The table below shows the feasibility of purchasing a farm (\$10,000 / Ha) suitable for coffee production, outside Costa Rica Central Valley

Scenario	Hectare value (\$)	Loan term (years)	Loan interest (%)	Hectare yield (qq / Ha)	Sale price (\$ / qq)	Net profit (\$ / qq)	Annual loan payment (\$ / qq)
1	10,000	10	10	30	120	<b>(8.9)</b>	(54.3)
2	10,000	10	10	30	135	<b>6.1</b>	(40.7)
3	10,000	10	10	60	135	<b>41.1</b>	(40.7)

1. Farm with **medium** yield at current coffee price
2. Farm with **high** yield at current price
3. Farm with **moderate-high** yield at **differential** price