



Instituto Nacional
de Tecnología Agropecuaria



Universidad Nacional de
Tucumán - Ciencias Económicas



Análisis de Rentabilidad de la explotación apícola (Producción de miel)

Profitability analysis of Apicultural enterprise (Honey Production)

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Objective



Beekeepers need simple tools for making decisions and establish the differences in terms of costs and profitability across different scales.

Description of the theoretical situation of beekeepers who have 200, 400 and 1500 beehives in terms of profits, costs and net income.

Method:

- 1- Empirical background was recollected.
- 2- Apiaries were visited.
- 3- Beekeepers and technicians were interviewed.
- 4- Analysis' workshops with beekeepers were organized.
- 5- Information collected was analyzed.



CVP analysis

Cost-volume-profit (CVP) analysis: how changes in costs and volume affect the operating income and net income?

The production volume is not the only factor which affects costs, but:

- It is an interesting starting point for analysis and for future research,
 - it permits the study of relations among variables in different scenarios
- useful conclusions are obtained.



↓
to distinguish the behavior of costs.

FIRST STEP → Distinguish *fixed* and *variable* costs

Costs were classified and simplified
as fixed and variable depending
on the volume of production.

Invitation to the First Apicultural Costs
Workshop organized by the Universidad
Nacional de Tucumán and INTA-Famailá
(2010)

**PRIMER TALLER DE GESTIÓN DE COSTOS
EN LOS EMPRENDIMIENTOS APÍCOLAS**

Dirigido a
apicultores
productores de
miel

CONFIRME
SU PRESENCIA

MARTES
31 DE AGOSTO
de 18,30
a 21,30 hs.

AULA 15
Facultad de Cs.
Económicas
Av. Independencia
1900 - San Miguel
de Tucumán

Entrada libre y gratuita

Organizan:
INTA
Inst. Nac. de
Tecnología
Agropecuaria
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TRABAJEMOS JUNTOS PARA QUE LA FALTA DE INFORMACIÓN DE
COSTOS YA NO SEA UNA AMENAZA

En el marco de los proyectos "Herramientas de Gestión Aplicadas" (Facultad de
Ciencias Económicas - UNT) y "Proyecto Integrado Apícola" (INTA)
Beca CIUNT "Análisis y Gestión de Costos de Miel para el Sector Apícola del NOA"



Concepts / performance (Kg)	Fixed Variable	Direct Indirect
Direct production costs		
<u>Variables</u>		
Cost honey drum (\$139/330kg)	Variable	Direct
Direct Labor	Variable	Direct
Indirect production costs		
<u>Variables</u>		
A real Cell	Variable	Indirect
10 kg sugar	Variable	Indirect
Wax (300 gr per hive)	Variable	Indirect
Acaricides 1 dose	Variable	Indirect
100 liters of fuel per apiary	Variable	Indirect
Human-hours consumed	Variable	Indirect
<u>Fixed (annual)</u>		
Field Rental	Fixed	Indirect
Depreciation of fixed assets		
Van	Fixed	Indirect
Building	Fixed	Indirect
<u>Annual hives depresiasiones</u>		
Boxes (7 years)	Fixed	Indirect
Fedder (7 years)	Fixed	Indirect
Half box (7 years)	Fixed	Indirect
Rise (Lifespan 7 years)	Fixed	Indirect
Half rise (Lifespan 7 years)	Fixed	Indirect
Floor	Fixed	Indirect
Roof	Fixed	Indirect

It aimed at finding a common language
between beekeepers and economic
investigators: **distinction between direct
and indirect costs has been agreed**

Cost components

SECOND STEP → *Costs components information*

Hand craft activity → **labor costs** are important
for more than 300 beehives



Other costs componets

Food costs
Health costs
Wax costs

Depreciation
Rent of the field.
There are not fixed salaries office
expenses or Service charge

Marketing costs: drums - package



Classification of costs

Direct Costs

Variable Costs

200 Hives
4000 KG

\$AR 0.45

400 Hives
8000 KG

\$AR 1.08

Indirect Costs

Variable Costs

\$AR 2.27

\$AR 3.25

Fixed Costs

\$AR 600

\$AR 1,200

Annual Depresiasion

\$AR 3,708.57

\$AR 6,217.14

**Managament
Costs**

\$AR 1,240

\$AR 5,108

Breakeven Point

THIRD STEP → Definition of the breakeven point

The breakeven point is the sales level that neutralizes the net income because the costs are equal to revenues.

200 Hives

Information	Direct costing	
	Production costs	Expenses incurred
Costs consumed in the year		
Direct materials (drums)	1818.00	
Direct labor	0.00	
CIF Variable	9070.00	
CIF Fixed	3709.00	
Selling Variables		2784.00
Variables Management costs		0.00
Fixed selling costs		0.00
Fixed Management costs		1240.00
	14597.00	4024.00

Highlights

Breakeven point Calculation

Technical marginal contribution

Unitary margin contribution (UMC) is the difference between selling price and unit variable costs and represents the contribution of selling one more unit to gross income.

Is reached when the sales allow the total contribution margin equals fixed costs.

Equation Technique

$$UMC \times Sales = FC \rightarrow Sales = FC / UMC$$

UMC= Unitary marginal contribution

FC= Fixed costs

Direct Costing



Direct Costing	\$ARS totales	\$ARS per unit	Percent
Sales	36.800.-	9,20	100%
Variable Costs	-13.672.-	-3,42	37%
Annual contribution margin	23.128.-	5,78	63%
Fixed production costs	-3.709.-		
Fixed management expenses	1.240.-		
Fixed marketing costs	0		
Net Income	18.179.-	4,54	

$$UMC \times Sales = FC \rightarrow Sales = FC / UMC$$

$$Sales = \frac{(\$ARS 3.708,57 + \$ARS 1.240,00)}{5,78} = \frac{\$ARS 4948,57}{5,78}$$

$$Sales = 855,86 \rightarrow 856 \text{ kilogramos}$$

A first set of conclusions:



A beekeeper who produces 4000 Kilograms of honey per year (200 hives at 20 kilograms per hive) must sell **856** kilograms of honey (**21.40%** of its production) to develop a profitable activity.

From this point, the producer will begin to generate a net profit per unit sold equal to the unit contribution.

The performance of an apiary of 200 hives to exceed 860 kg to start being profitable.



Some interesting issues

Margin of
safety

Margin of safety = Planned Sales – Breakeven

= 4.000 Kg. - 856 Kg.

= 3144 Kg

The **margin of safety** is the sales' level at which a beekeeper can decrease before starting to lose in their activity.

Sales' Goals

$Sales\ Goals = (FC + Objective\ Profit) / UCM$

= $(4948,57 + 18.000,00) =$

5.78

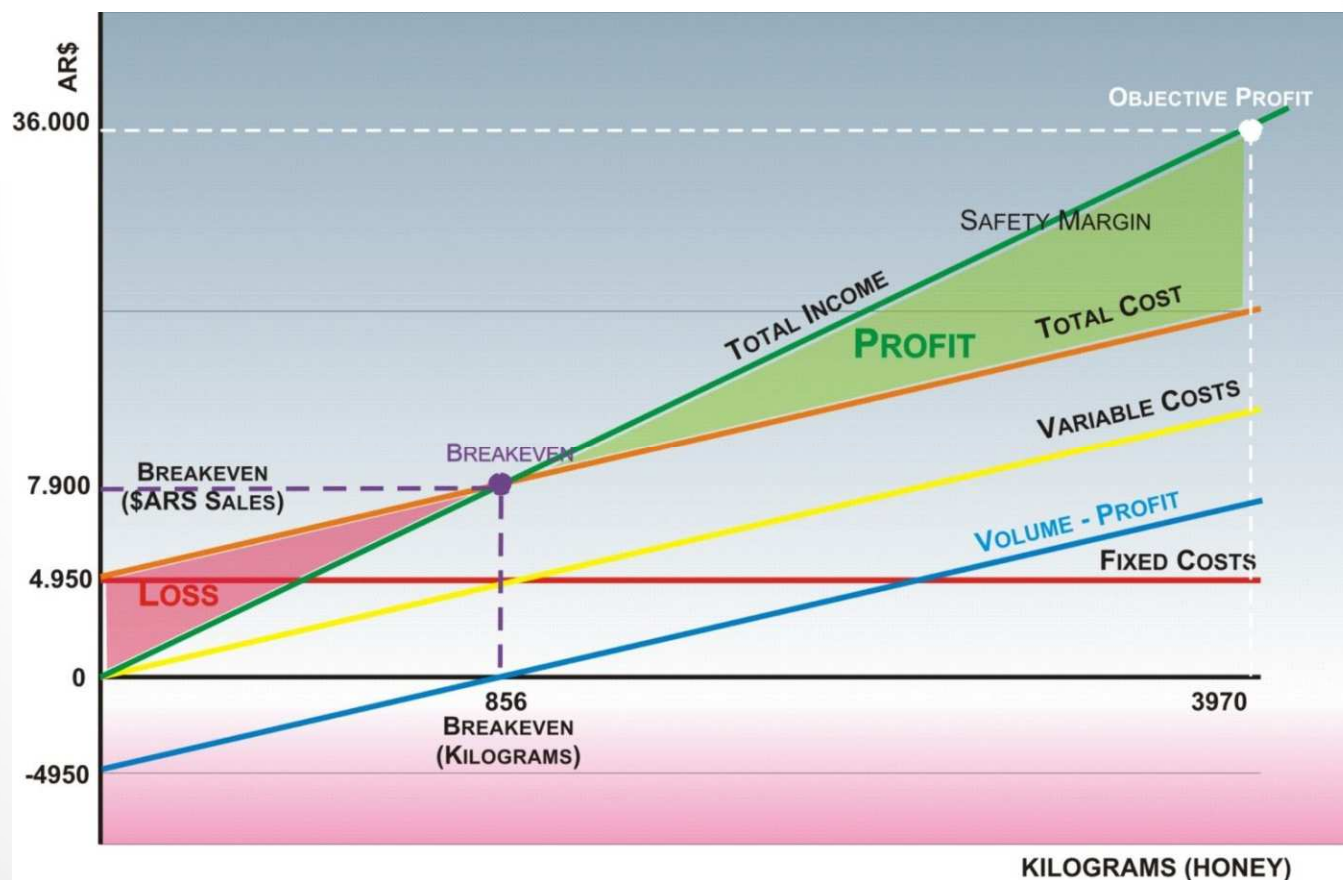
= 3.969 Kg.

The **sales' goals** represents the amount of kilograms that the beekeeper must sell to obtain a given Profit.

Graphically:

Concepts	Breakeven	Objective Profit
Fixed costs	\$ 4949.-	\$ 4949.-
Objetive Profit	\$ 0,00	\$ 18.000.-
Cmgu	\$ 5,78	\$ 5,78
Units	856.-	3.969.-
RCMg	\$ 0,63	\$ 0,63
\$ARS for sales	\$ 7.874.-	\$ 36.515.-

Income Statement	Breakeven	Objective Profit
Sales	\$ 300.210.-	\$ 440.661.-
Variable Costs	\$ -261.735.-	\$ -384.187.-
Marginal Contribution	\$ 38.474.-	\$ 56.474.-
Fixed Costs	\$ -38.474.-	\$ -38.474.-
Net Profits	0.00	\$ 18.000.-



Results



- The performance of an apiary of 200 hives to exceed 860 kg (21.40% of its production) begin to be profitable.
- The beekeeper may reduce sales in 3144 kg before starting to suffer losses.
- The beekeeper can earn \$ARS 18.000 /year selling 3970 kilograms of honey.

What is more competitive in Argentina today: a beekeeper who have 10,000 hives or 50 beekeepers who have 200 hives?

Classification of costs

	200 Hives 4000 KG	400 Hives 8000 KG	1,500 Hives 8000 KG
Direct Costs			
Variable Costs →	\$AR 0.45	\$AR 1.08	\$AR 2.19
Indirect Costs			
Variable Costs →	\$AR 2.27	\$AR 3.25	\$AR 5.22
Fixed Costs →	\$AR 600	\$AR 1,200	\$AR 3,900
Annual Depresiasion →	\$AR 3,708.57	\$AR 6,217.14	\$AR 26614.29
Managament Costs →	\$AR 1,240	\$AR 5,108	\$AR 11,960

Conclusion

As the **productive structure grows**, the **marginal contribution falls** (this is mainly due to labor cost increase and a fixed selling price)

and

Fixed costs increase

the business would lose profitability

This, of course, is a curious fact that will be further developed in subsequent studies but let us ask ourselves: A 10.000 beehive owner or 50 beekeepers who each own 200 beehives? Should a honey producer develop honey production as his only business?

**In the absence
of management tools, this
analysis represents an
interesting starting point**



**When beekeepers become aware of the
importance of managing their own
information about costs, they play a more
flexible part in an increasingly competitive
and globalized world.**

THANK YOU FOR YOUR ATTENTION



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