

KASSA

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Conceptual Issues Theme II

“Improvement of the Farming System”

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**Within a mostly “Non Subsidized”
and frequently “High Taxation Economic Environment”,
and in front of the opportunity to**

**“Respond” and “take advantage” of the
Global Food market demand and signals,**

during the last fifteen years,

we

the AAPRESID and CAAPAS Farmers

.... had transformed our farming systems and based on No Till had made substantial progresses toward the achievement of:

I. A higher level of productivity and total production (and a better economic result for our farming operations “ we do not have subsidies”)

and.....

II. A more environmentally friendly way to farm

At the bottom line these goals represent

..... a True Evolution of

our Farming Systems and a

Valid Answer to the

“Biggest XXI Century Farmers Challenge” !!

For the AAPRESID (and CAAPAS) farmers, the promoted New Farming Model based on NO TILL, nowadays represents:

**“Neither a Theory”, “Nor a Hypothesis”
(or something that would be desirable to happens)**

IF NOT JUST

our Mercosur and CAAPAS

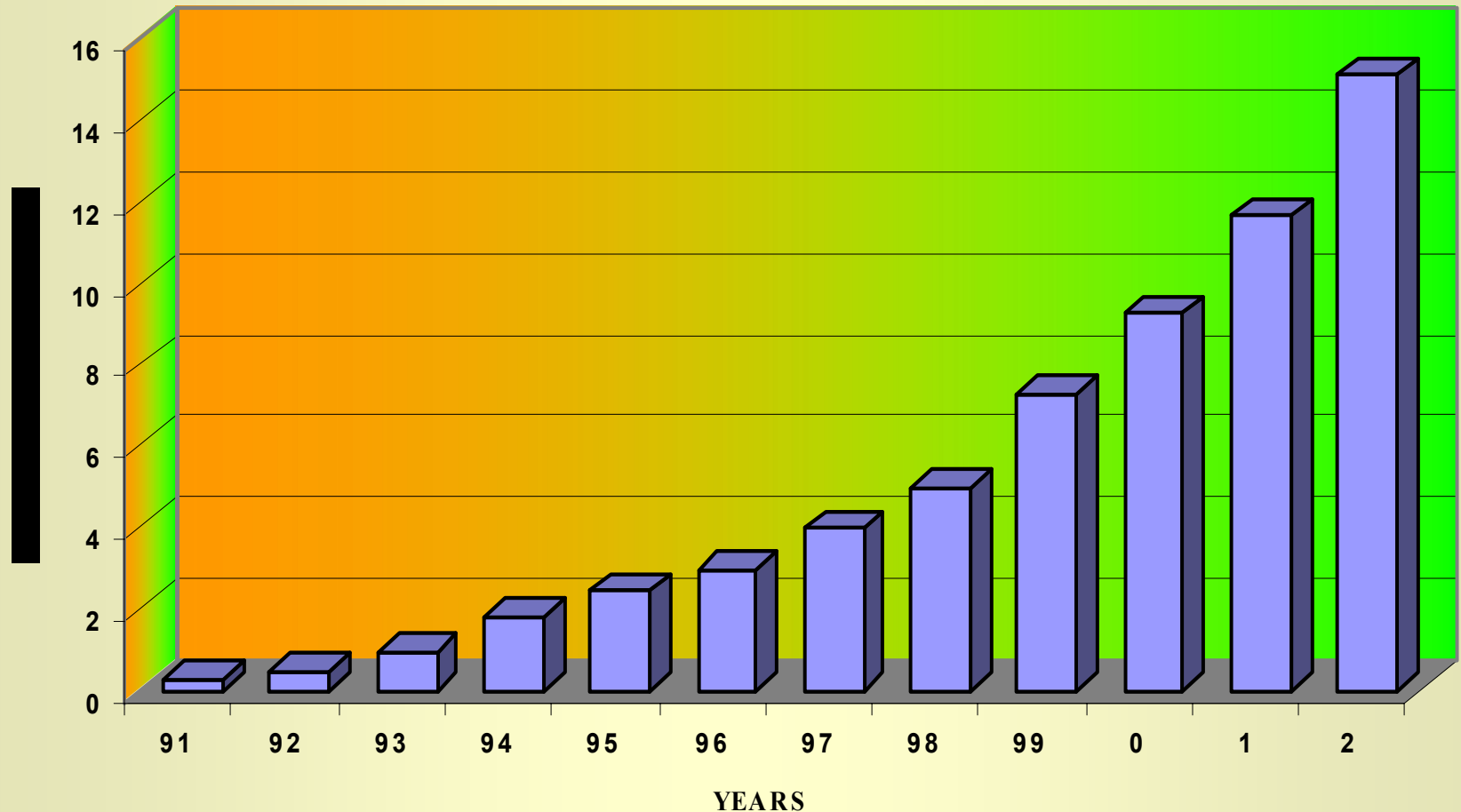
EVERY DAY FARMING REALITY for millions of hectares!!!

Within CAAPAS, we account for around 50 million No Tilled hectares that are currently farmed following

“The New Proposed Farming Paradigm”

The pattern followed by the Argentinean No Till Adoption Process is very commonly found within the Mercosur (and CAAPAS) countries.

ARGENTINA - NO TILLED AREA ALL CROPS



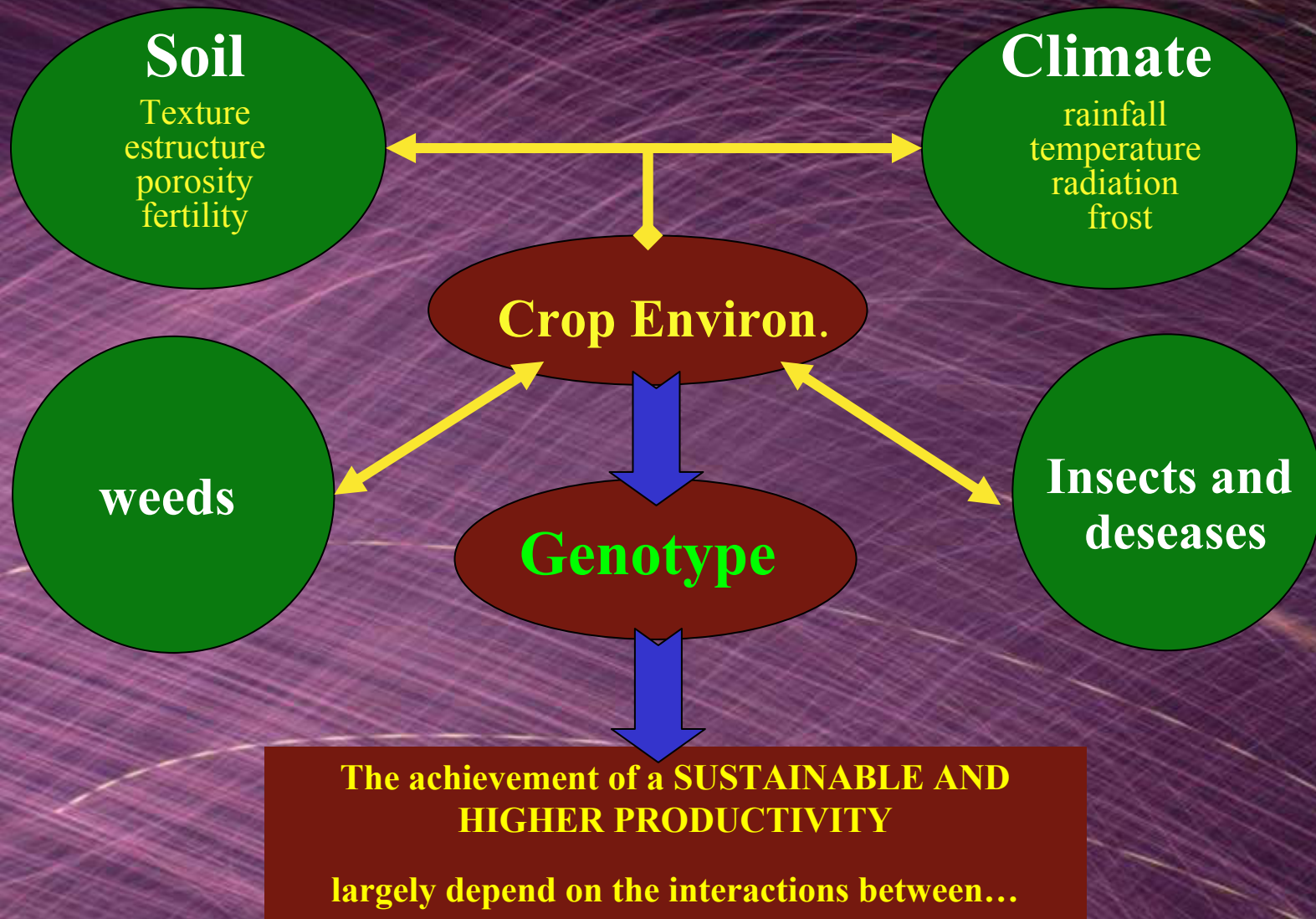
HOW DID WE ACHIEVE THE EVOLUTION OF OUR FARMING SYSTEMS ?

**Some Examples of the Mercosur Adoption of the General Strategies
and Principles utilized to move toward the achievement
of a higher level of**

**Productivity, Total Production and
Related Economic Benefits within a
Sustainable Frame**

(Especial reference to the Argentinean Case)

To evolve our farming system, conceptually we focused on the way that the Agronomic Part of the Farming Process develops, and in figuring out **Where and How to act first ??**





Improving the CROP ENVIRONMENT

- **Soil and Crop Residues Management**
- **Water Management**
- **Crop Rotation and Sanitation**

The **“Complete Avoidance of Soil Tillage”** and the achievement of a **“Soil Covered”** were the **“key factors of the paradigmatic change”** needed to evolve to a **Better Crop Environment** ;;;



Source: FREPASIDIAS Paraguay 2003

**The Soil Needs to be Sheltered and even
FEEDED :::**

**No Till Principles provide us an appropriate
framework to satisfy these soil necessities ::**

**Crop Residues should be considered as
“THE SOIL SHELTER AND FEED”**

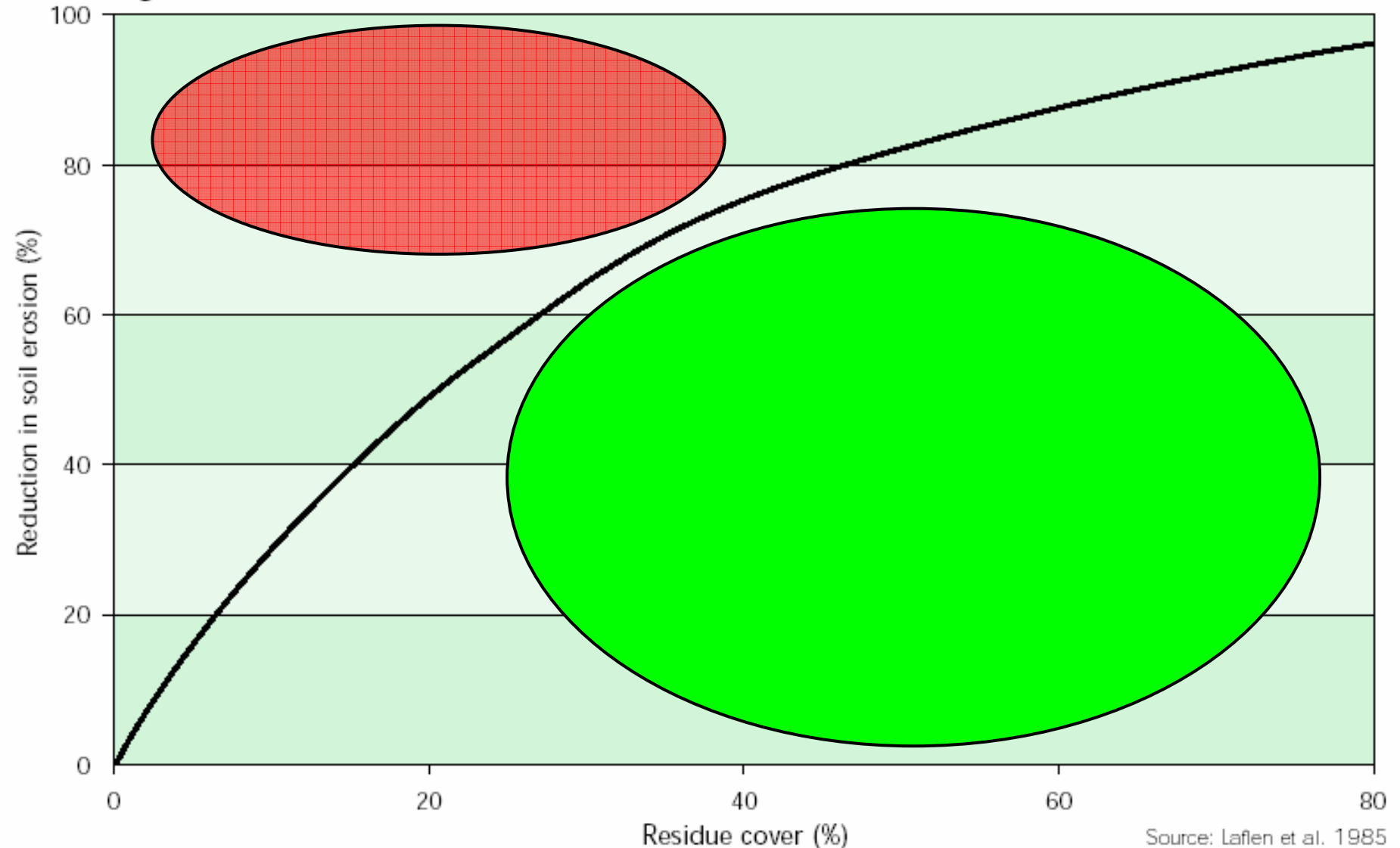
Large amounts of crop residues = Well covered soils = Organic Matter Increase = Greater Soil Biotic Load = to ...

“An improved crop environment and a better soil and farming system functioning ::



A Positive Interaction Between Crop Residue Cover and Reduction of water born Soil Erosion is clearly showed by this experimental results.
They constitutes a validation of what we see in our farms

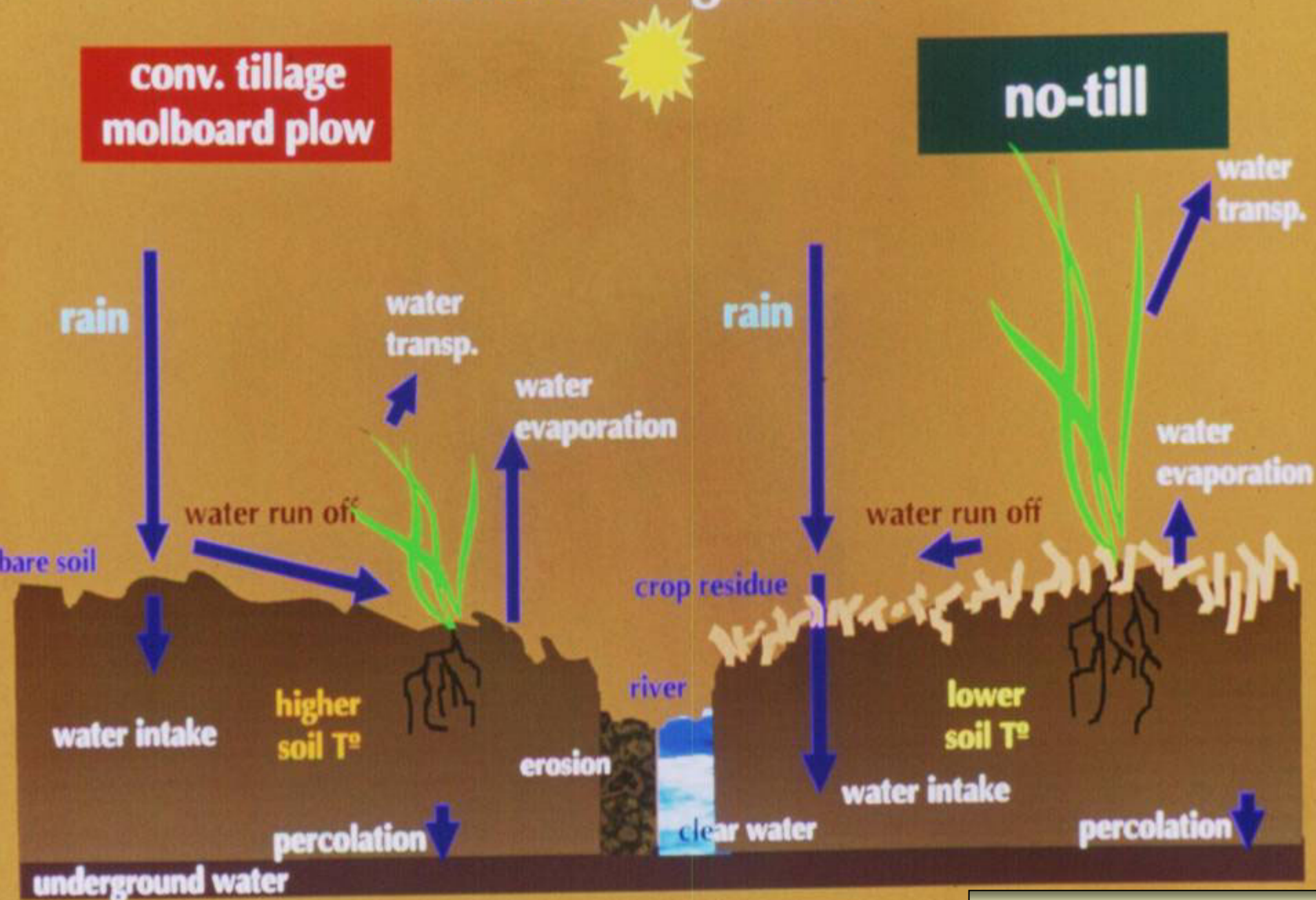
Figure 1. Effect of Residue Cover on Soil Erosion



Further Improving the “Crop Environment”

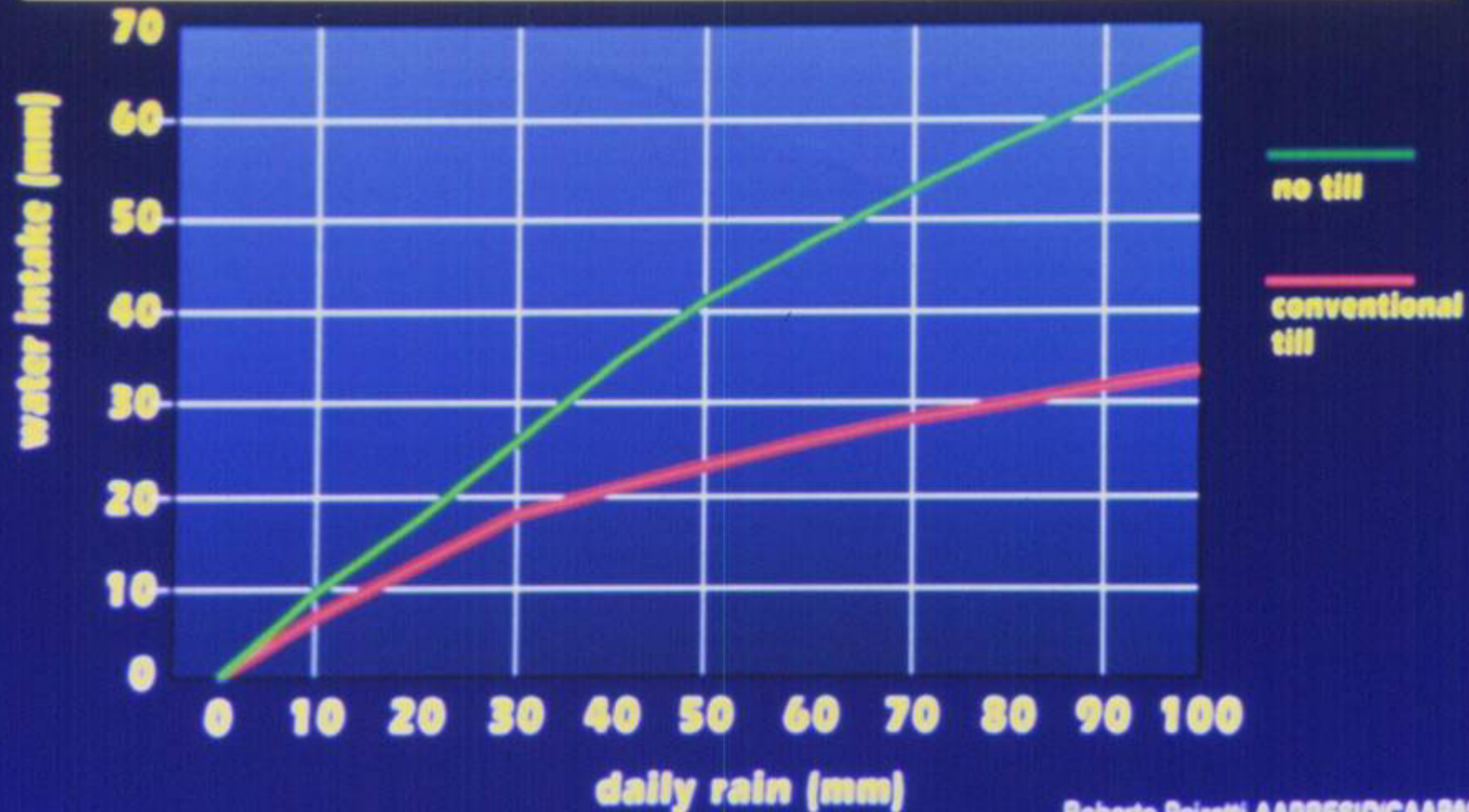
- 
- Soil and Crop Res. Management
 - **Water Management**
 - Crop Rotation and Sanitation

water-management



Under No Till we can achieve a much greater “water capturing capacity” for our soils.
(It could mean an increase of around 15-25 % of “plant available water” for certain areas)

Daily rain and soil water intake

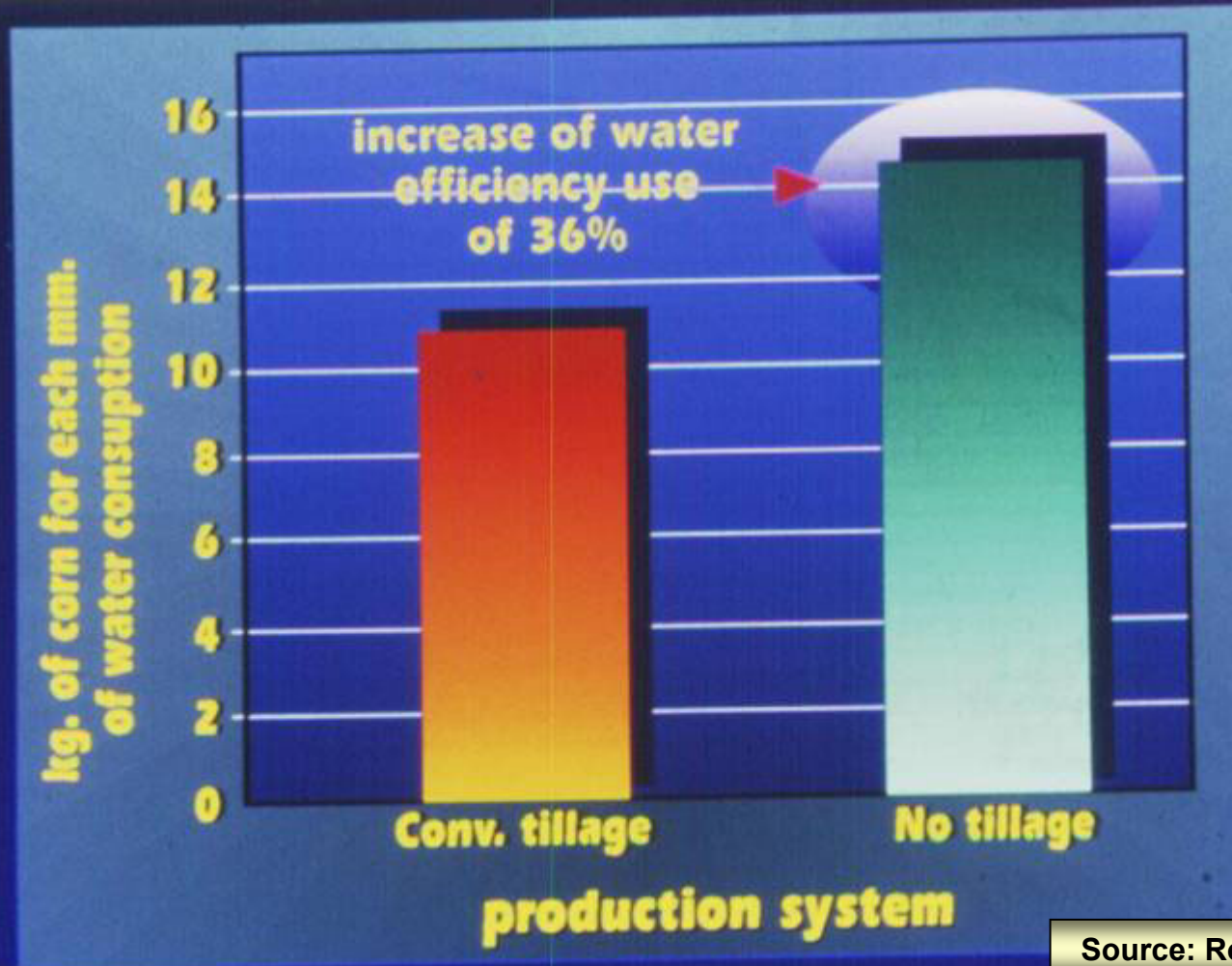


The combination of a higher water intake capacity and a diminished topsoil water evaporation losses (due to a covered topsoil) in certain cases could increase between 15 and 25 % the annual amount of soils available water to crops ;;;;

It means a lot from the productive and from the economic standpoint;;

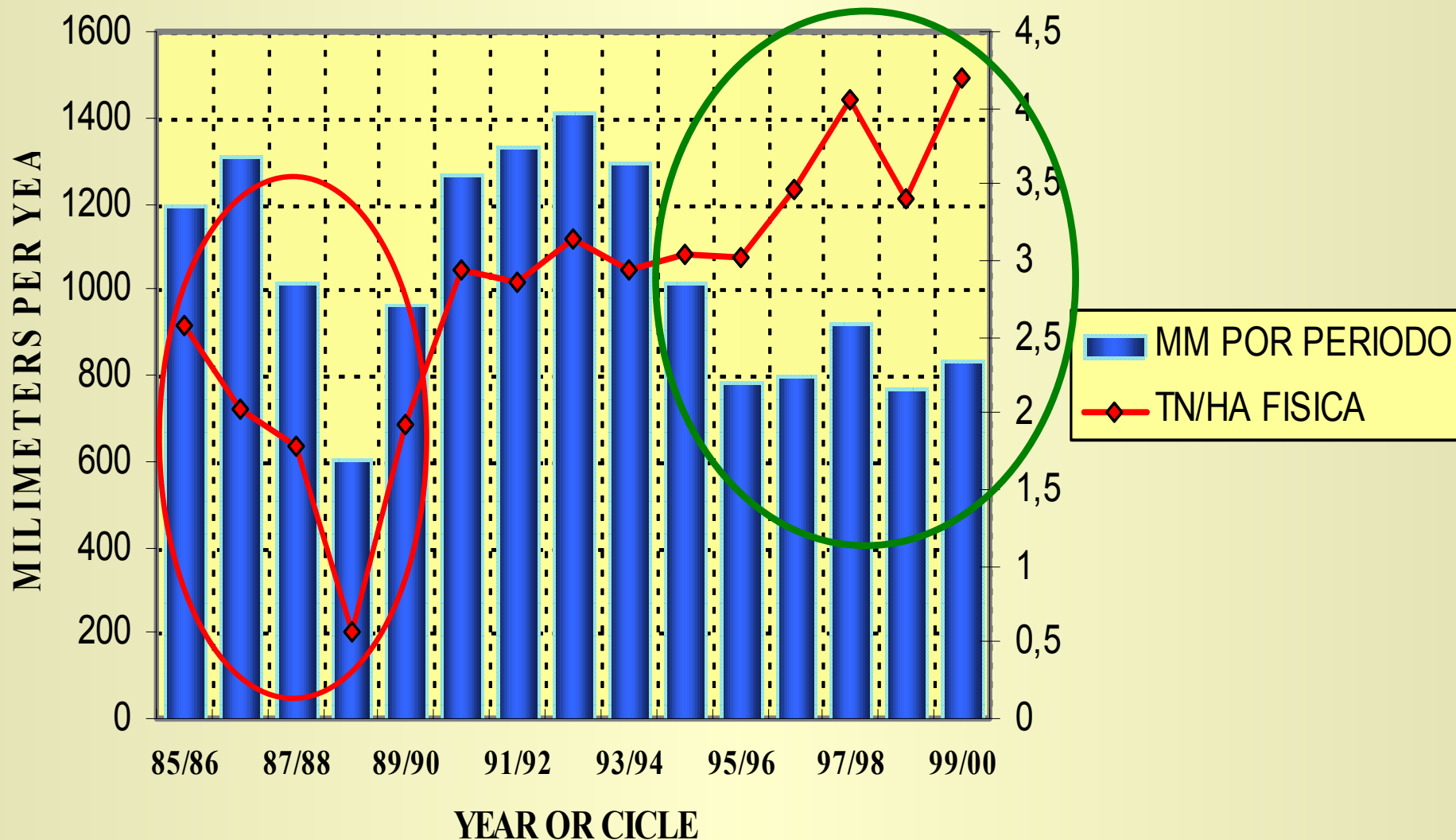
The water efficiency use is largely enhanced

WATER EFFICIENCY USE Corn - both systems



Up to 88/89 Convent Tillage Management. After 88/89 No Till and improved Strategies allowed a better water utilization

PRODUCTIVITY AND RAINFALL FOR TWO DIFFERENT MANagements



En regard to Water Management reality is offering clear evidences of an improvement achieved through the NO TILL SYSTEM and the MOSHPA Model Principles ;;;

Winter Fallow

Ploughed soil

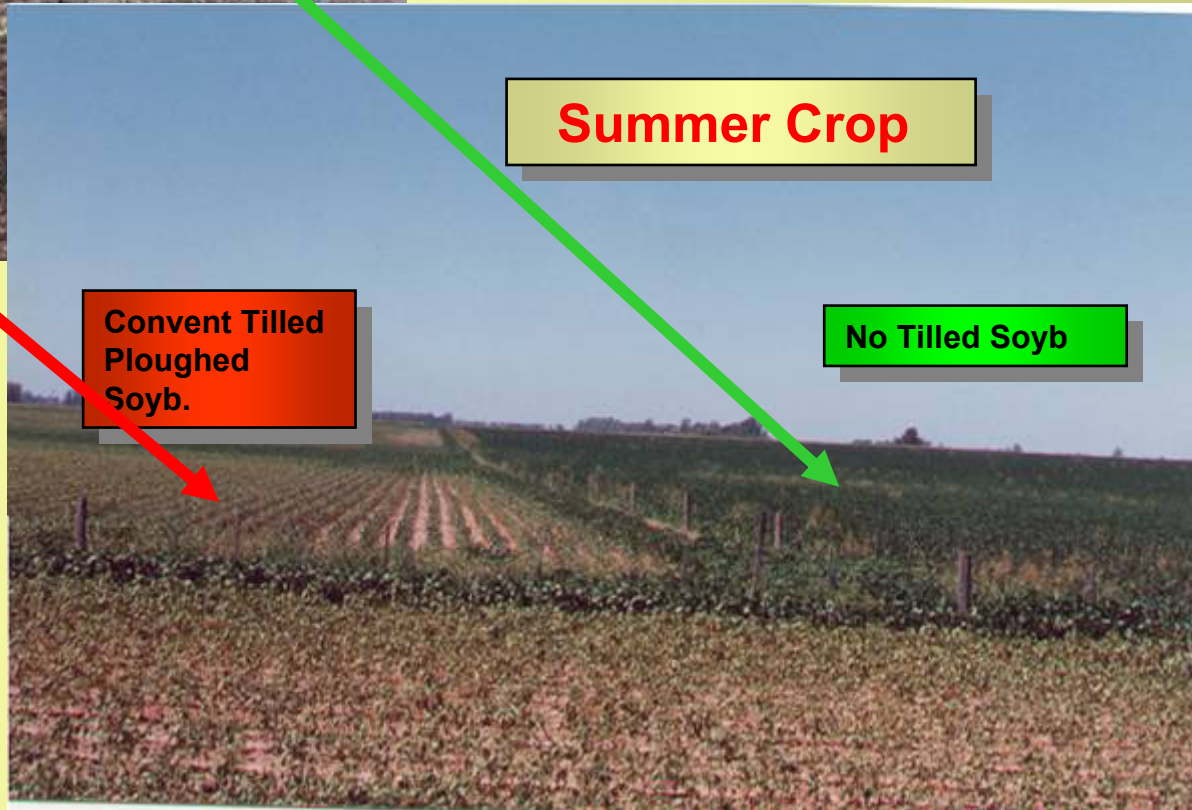
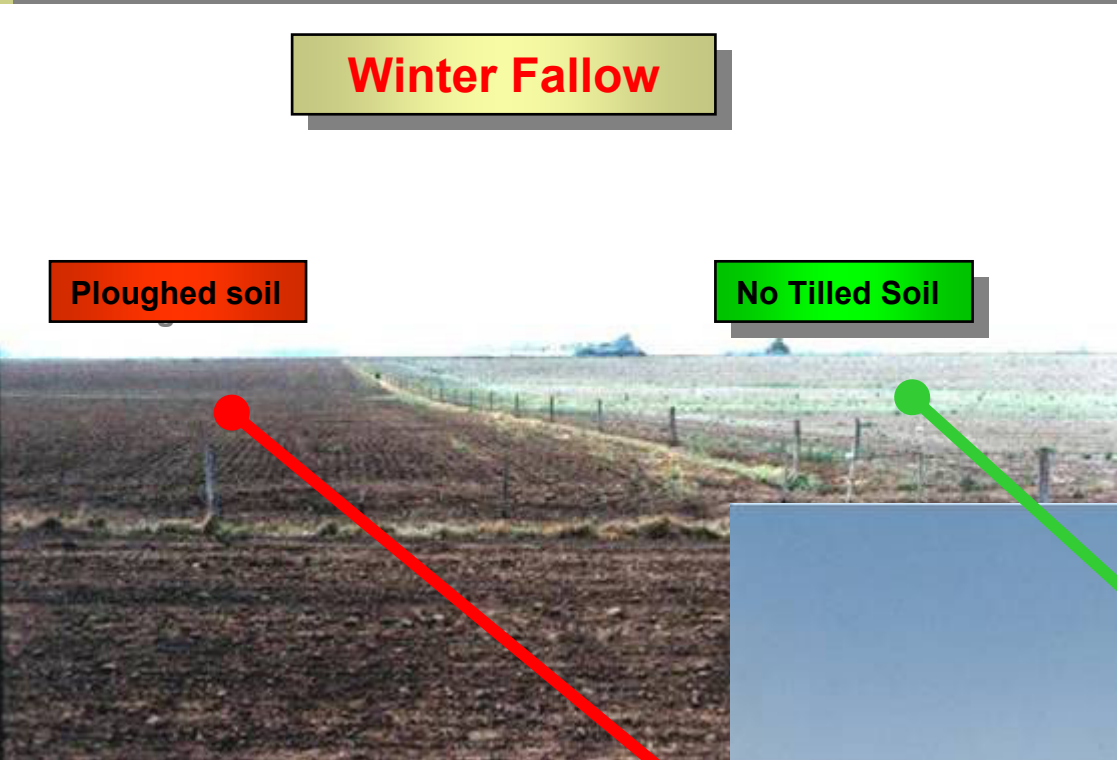
No Tilled Soil

Summer Crop

**Convent Tilled
Ploughed
Soyb.**

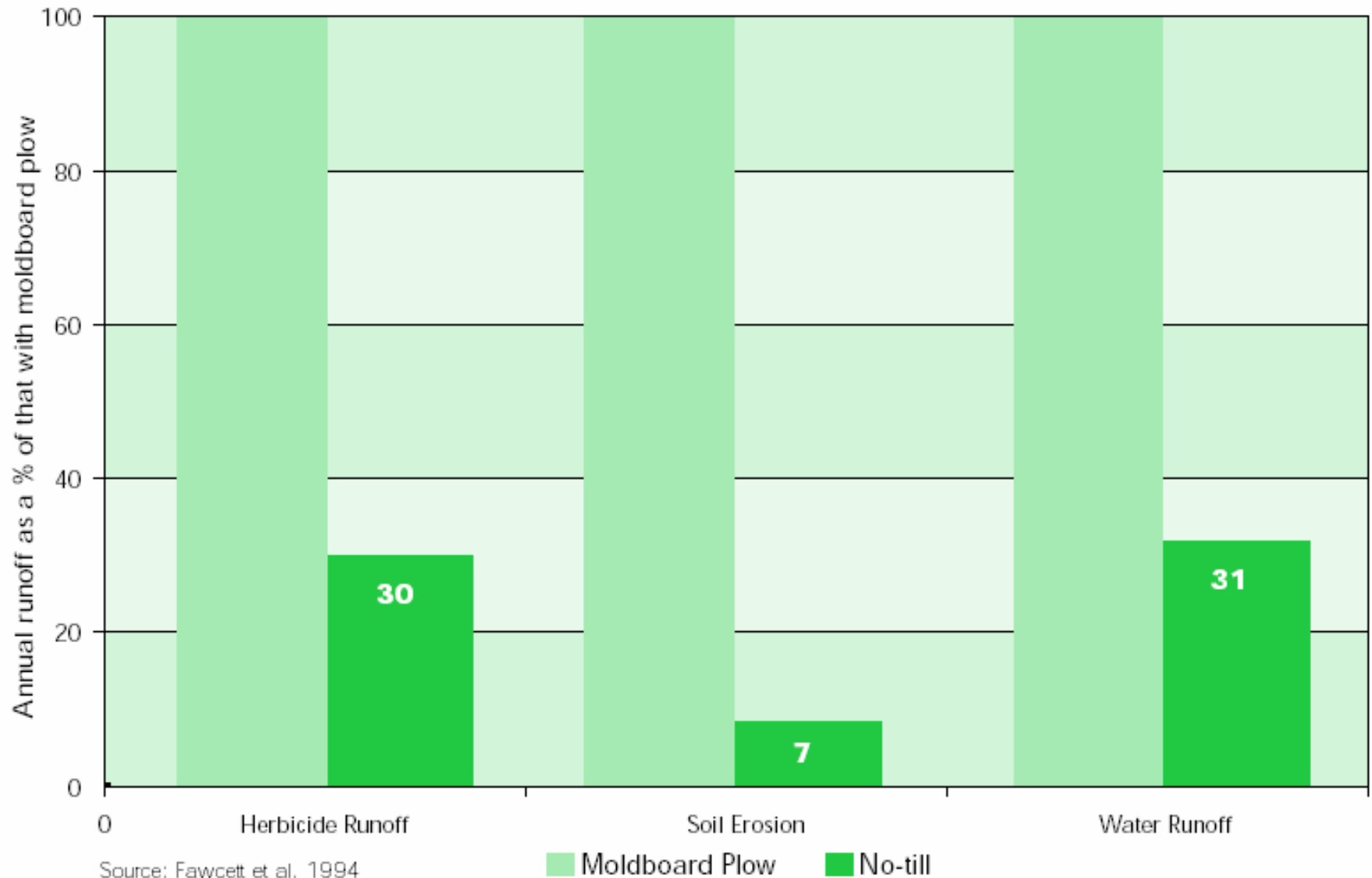
No Tilled Soyb

Source: Roberto Peiretti 1998



Again, experimental results are in coincidence with what we see in our Farms ☹☹☹

Figure 4. Runoff and Erosion in No-till Watersheds Compared to Conventional Tillage Watersheds



No Tillage = Soil Covered = Diminished and Clearer water run-off = More water for crops = **Increased Productivity and positive Environmental Impact** !!



Source: Roberto Peiretti 2003

Moving even forward at improving the “Crop Environment”

- Soil and Crop Res. Management
- Water Management
- Crop Rotation and Sanitation



Besides Ag Chemicals and Biotech, also integrated pest and Weed Management Strategies and Crop Rotation are also important and useful tools. In many cases they allow to reduce the use of Ag.Chemicals



SOIL NUTRITION RATHER THAN CROP FERTILIZATION

The soil organic matter is considered the most
important simple indicator to define the soil quality
Larson & Pierce, 1991

OM is a key component in NT
Moraes Sa, 1993

One of the First Steps is To Understand that soils can be compared to
“A Marvelous Natural Lab, able to Sustain and to Contain Life” and that a
“Healthier Soil Condition” is one of the Main Pillars to achieve a more “Reactive
Agroecosystem Condition” (Roberto Peiretti 2003)





Source: C. Belloso





To some extent we can even consider that we are “creating soil”. By the addition of Organic matter we are entirely changing the functional characteristics of the “Upper Most Active Part of the Soil Profile”.

This soil had grown “One Millimeter of Organic Soil per No Tilled Year”

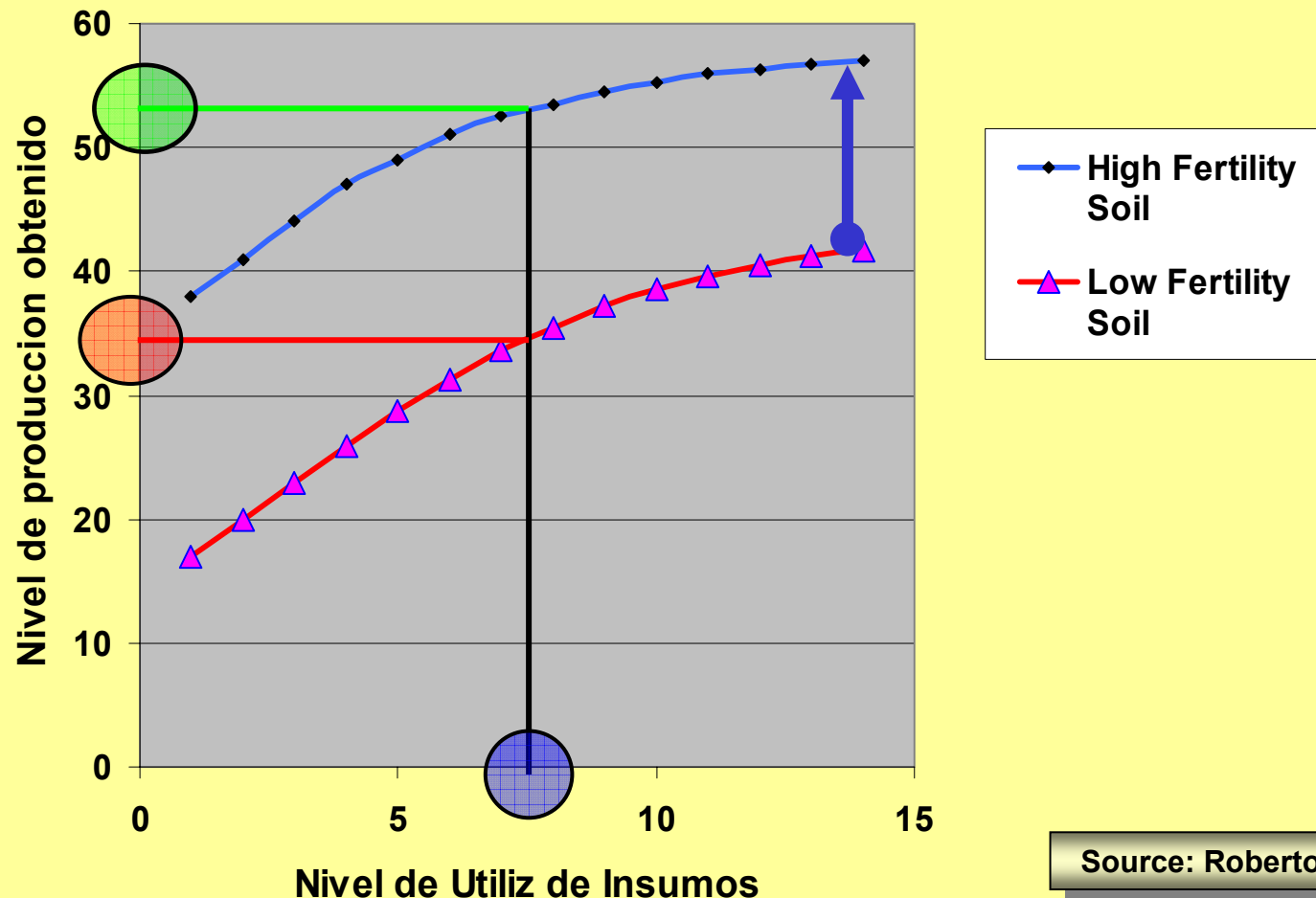
“ Carlos Crovetto’s Soil”



HOW THESE AGROECOSYSTEM MANAGEMENT PROGRESSES INCREASED OUR PRODUCTIVITY AND PROFIT

(Especial reference to the Argentinean Case)

A higher level of “**Agro ecosystem Reactivity**” is achieved under No Till. It allows us to be entering an area of a better “**Input/Output Relationship**”. We start to get “**More by the Same**” or even “**More by Less**”. We get a “**Higher Yield Decreasing Law Curve**” “**This Facts Have Great Positive Economic(Cost reduced) and Environmental Impact**”



Source: Roberto Peiretti 2003

Annual Use of Pesticides in Kg/Ha of Active Ingredients

ALSO :

The achievement of a “more reactive agro ecosystem” allow us to suspect that those Countries that had developed No Till CA Principles (Like the CAAPAS Countries did)

Are getting a “Higher Level of Profit, and a Cleaner and more Environmentally Friendly Agriculture”

Uso anual de Productos Fitosanitarios (kg de ingrediente activo / hectárea arable / año)

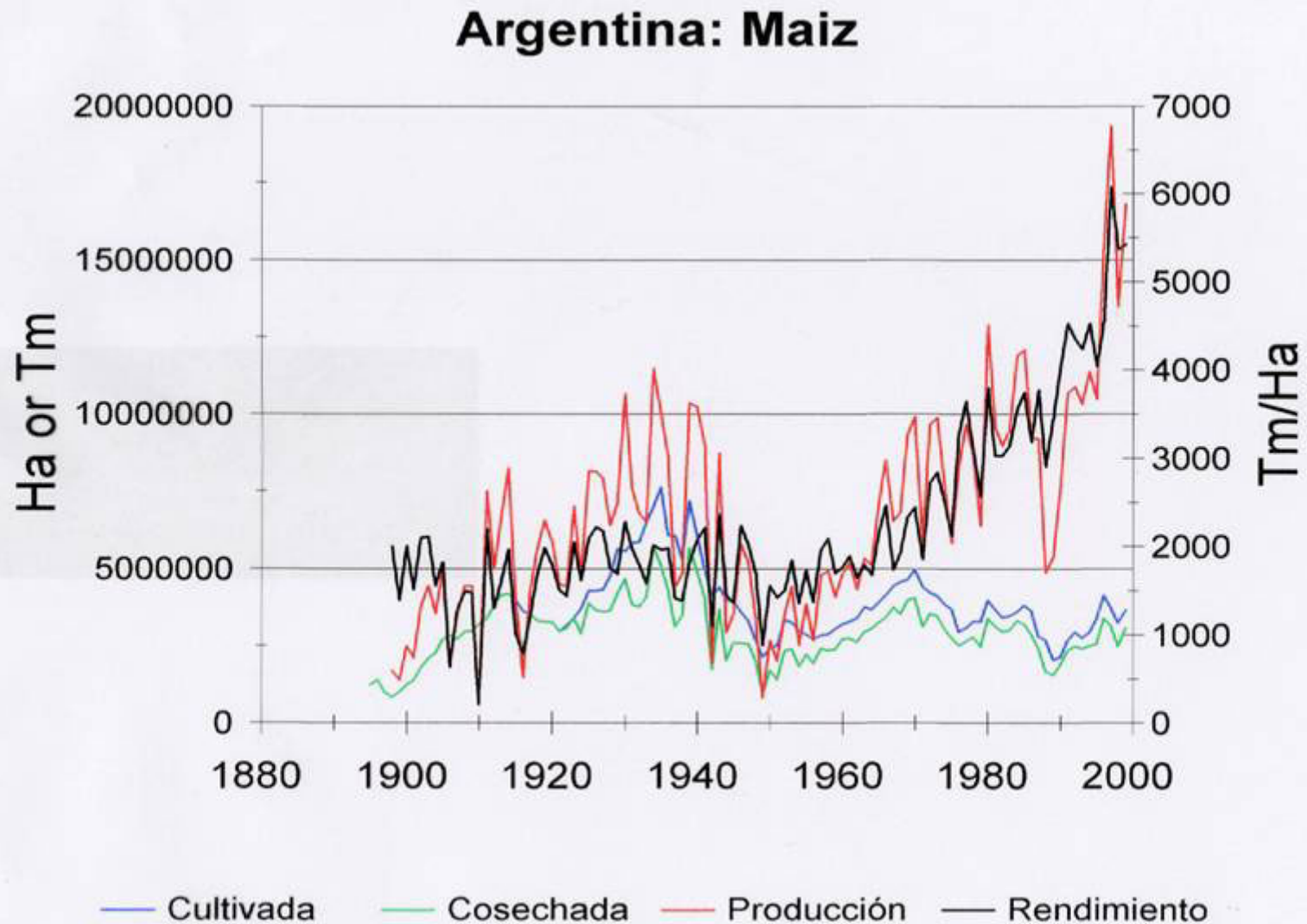
País	kg i.a./ha/año
Holanda	20.8
Japón	17.5
Bélgica	12.0
Francia	6.0
Reino Unido	5.8
Irlanda	4.3
Yugoslavia	4.0
Alemania	4.0
Jordania	3.6
Dinamarca	2.6
Estados Unidos	2.4
República Dominicana	1.6
Suecia	1.3
Argentina	1.0
Polonia	1.0
Brasil	0.8
India	0.3
Pakistan	0.2

Fuente: ECPA (European Crop Protection Association). "Benefits of crop protection products". 1997
CASAFA. Estadísticas de mercado 1996

**HOW THE IMPROVED SOILS,
AGROECOSYSTEM AND GENERAL
MANAGERIAL STRATEGIES IMPACT ON
CORN PRODUCTIVITY AND PROFIT IN A
SUSTAINABLE MANNER**

Some Parameters related to the Evolution of the Argentinean Corn Production

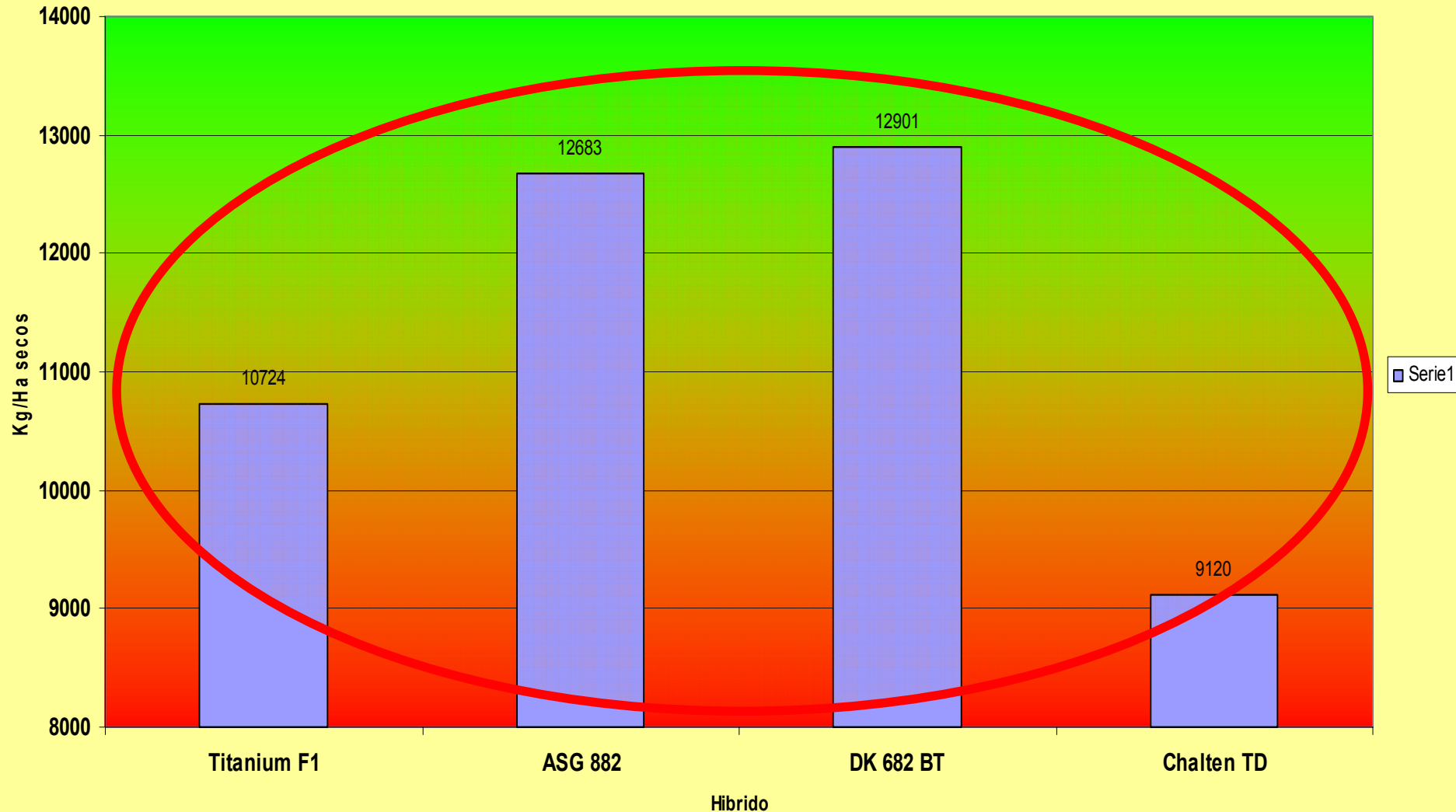
Area Planted and Harvested - Productivity (Yield), and Total Production



The Best Genotypes Should be Selected, Tested and Used in a combined strategy with the Agro ecosystem Reactivity

Comparacion Hibridos Q 02/03

Fert N 95 - P2O5 40 - S 20

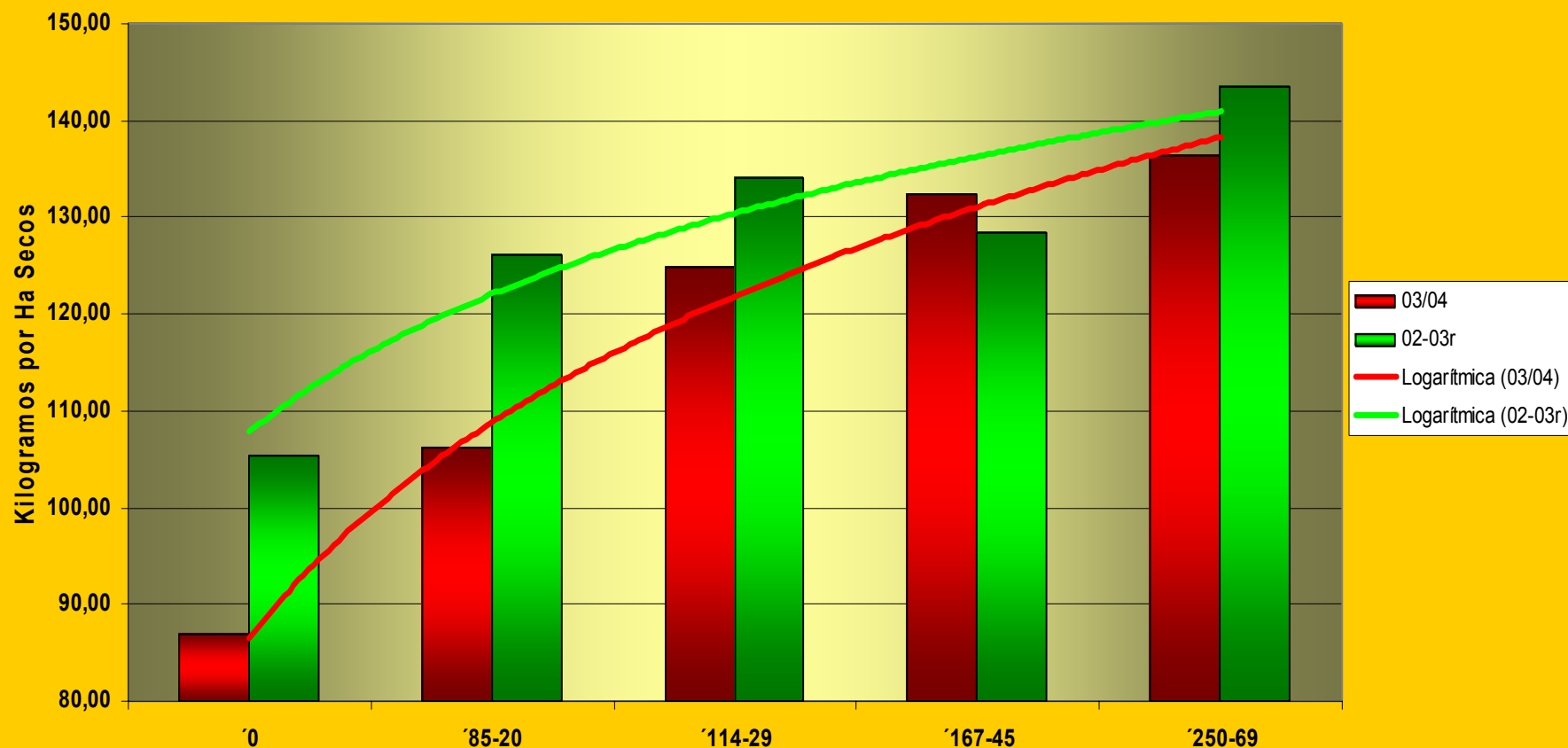


Combining the Best Genetic with a “better Agro ecosystem Reaction”

Corn Yield Vs Nitrogen Application for two Environments .

Which is Our Target from the Economic Standpoint? How to Maximize Profit?

Rinde de Maiz Vs Dosis de Nitrógeno - D J 02/03 - 03/04



Dosis de Nitrógeno(N) y Azufre(SO₄) para P₂O₅=40 Kg.

Req. (Planta+Grano) por Tn Grano Producido (N 22 Kg - P₂O₅ 4 Kg - SO₄ 4 Kg)

Índice Cosecha Nutr que se llevan en el Grano = N 0.66 ; P₂O₅ 0.75 ; SO₄ 0.45

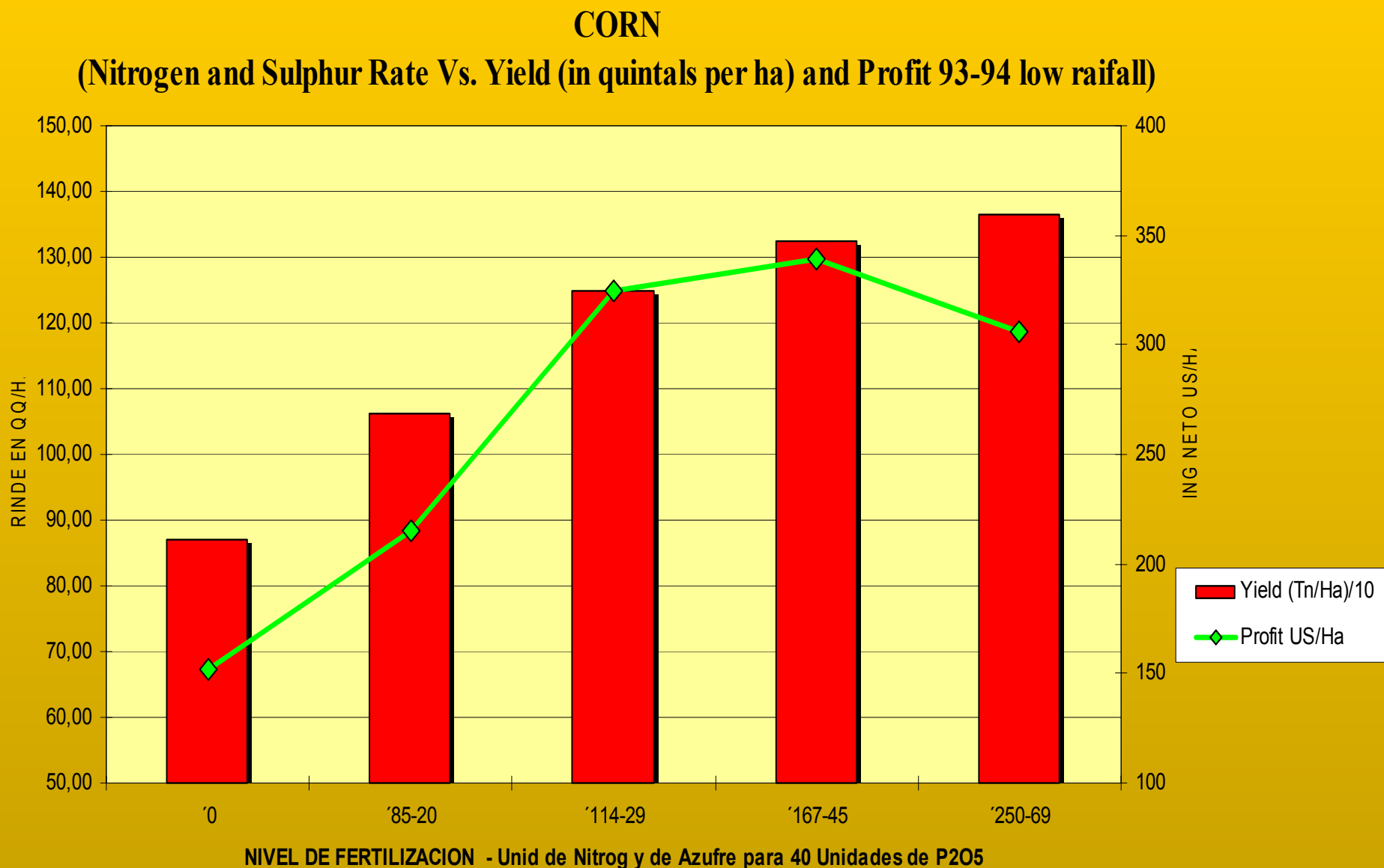
Corn Ear Sizes for the same Hybrid but for three different Nitrogen Rates : 0, 90 and 120 Units (Kg/Ha)



How do the Corn Fertilization Rate Trial looks like



At the time of selecting the level of input utilization, we should have clear in mind that our Economic Target is **To Maximize Profit and not **To Maximize Yield** !!**



We are very successful at rising the productivity of different crops by using No Till and the MOSHPA Model Principles ;;



Source: Roberto Peiretti 2004

IMPROVEMENTS ACHIEVED AT THE COUNTRY LEVEL

(ARGENTINA)

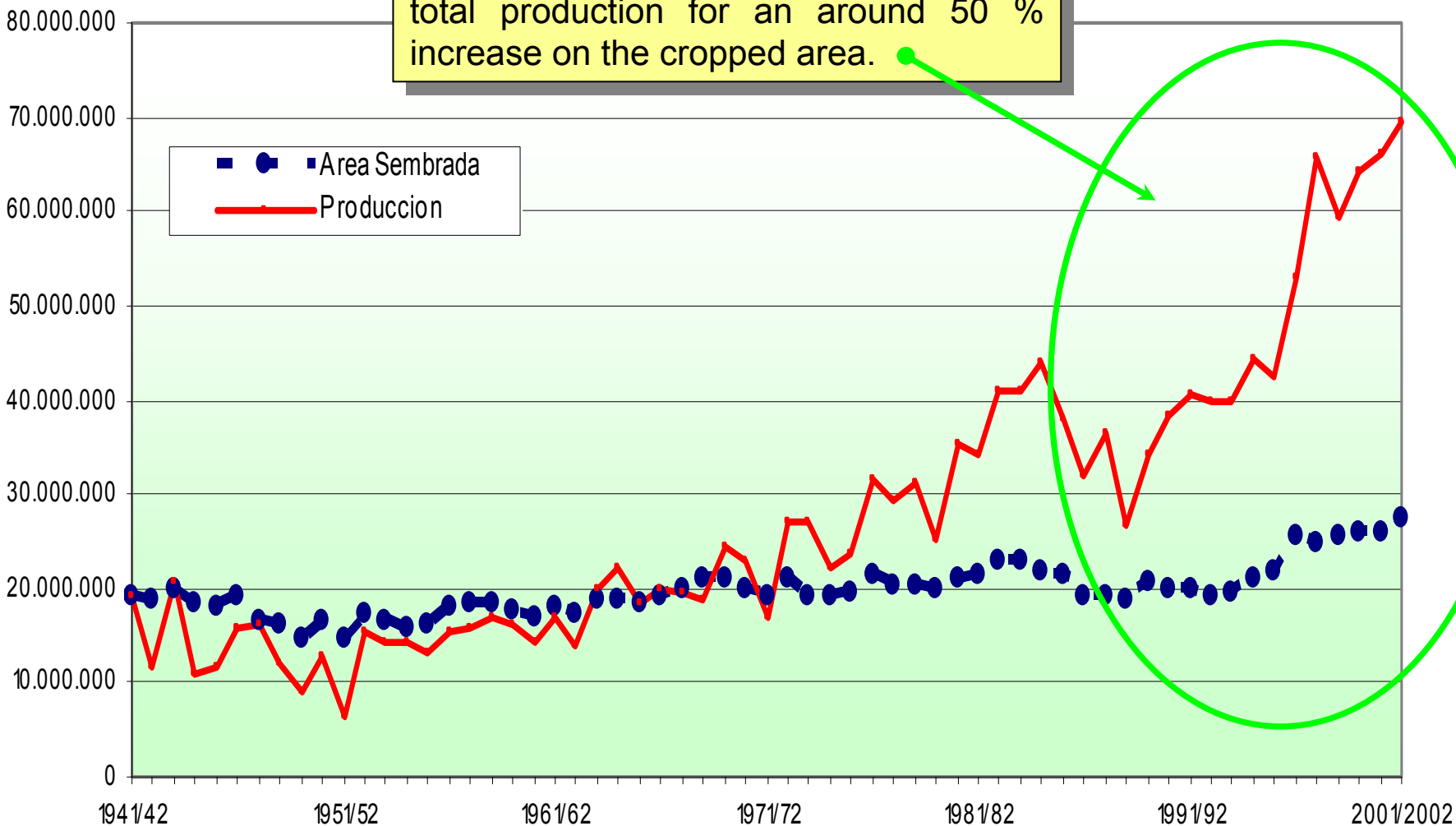
ARGENTINA Grain and Oilseeds

(Evolut. of Total Production, Area Planted and **Productivity Increase**)

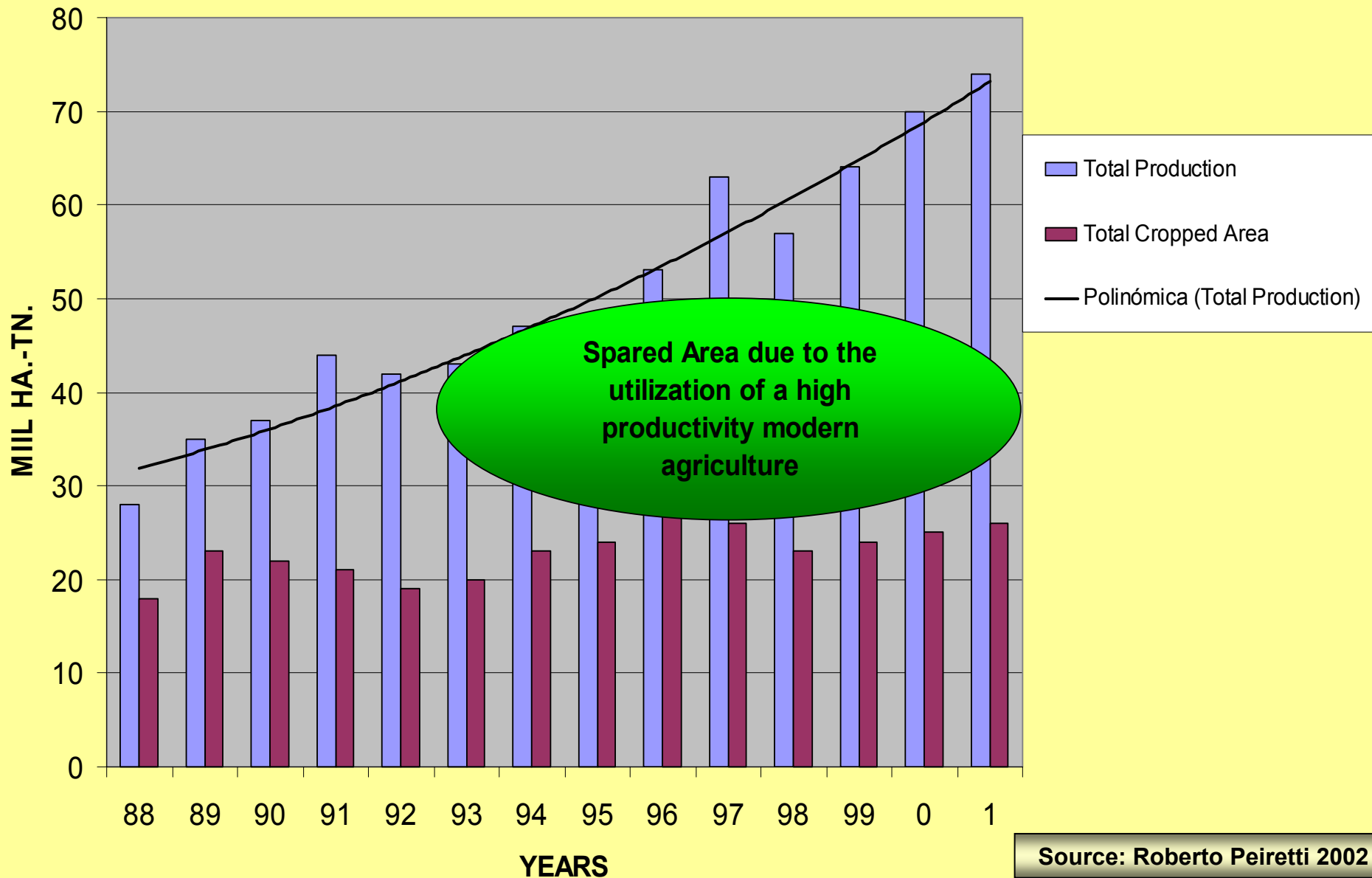
TONS-HAS
Millions

Between 1990 and 2001 we double the total production for an around 50 % increase on the cropped area.

■ ● Area Sembrada
— Production



ARGENTINA - TOTAL PRODUCTION AND CULTIVATED AREA



Source: Roberto Peiretti 2002

IMPROVEMENTS ACHIEVED AT THE MECOSUR (CAAPAS) LEVEL

Similar benefits are been achieved in Bolivia, Canada, Chile, Colombia, Uruguay, and other CAAPAS Members



CONCLUSIONS

By No Tilling and Covering our soils we effectively evolve from the “Back Situation” to the “Front Ones” that can be seen on these pictures



Improvement is a Reality!!!

**Next slides demonstrate us that we can even reach
a**

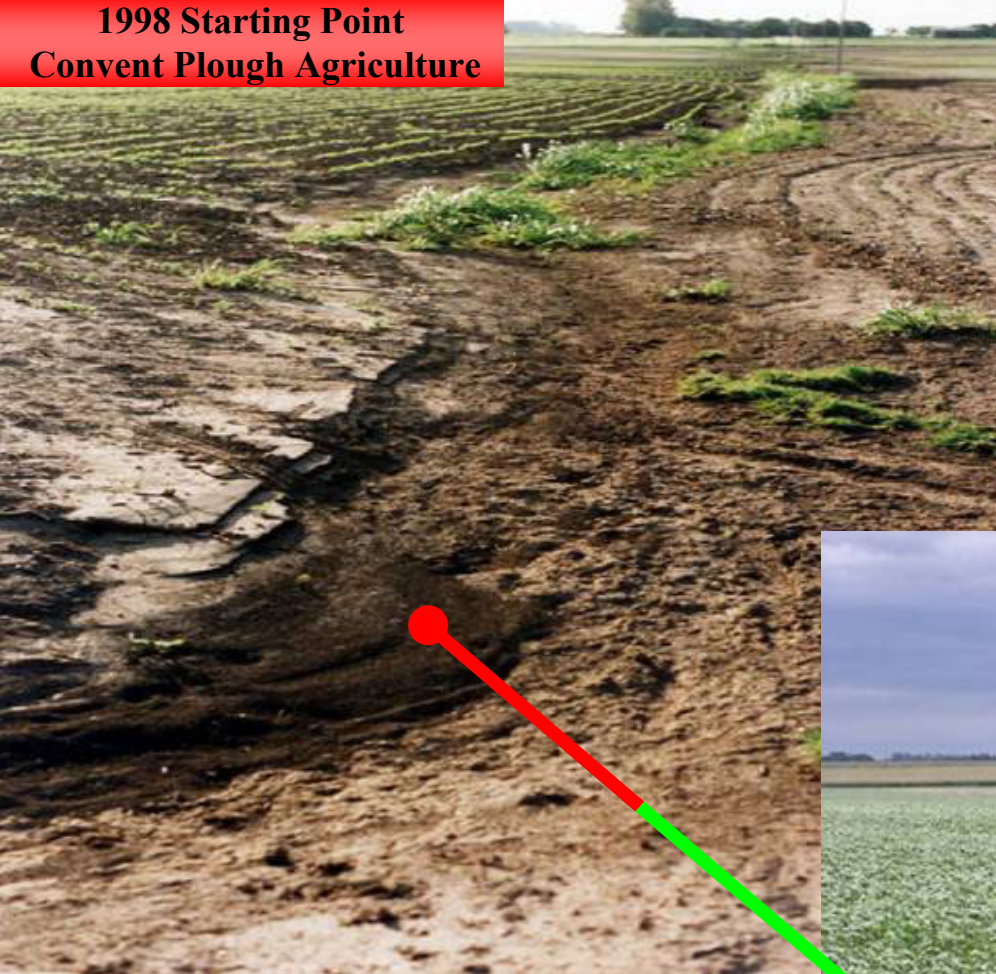
“Beyond Sustainability Stage”!!!

**I managed this “Same Paddock” since ten years ago when
it was given to me almost destroyed by erosion processes.**

The Recovery had happened

in a Ten Years Period !!

**1998 Starting Point
Convent Plough Agriculture**



**2004 Goal Achieved ;;
by applying No Till and CA
Principles**

The reasoning, facts, achievements and farming realities I had shown along this, my contribution to this meeting, constitute the arguments on which we are based when we say that

SUSTAINABILITY

should be focused not only as an Environmental and Social Issue if not also as a way to improve our

Farming Economic Performance ∴

But....

..... we have to keep devoting efforts to educate people and the whole society toward a fully recognition (including the economic recognition) to those farmers that produce utilizing the proposed, and more evolved farming model,

based on No Till ïïï

Finally, I would like to reinforce our conviction that:

the No Till development and the full utilization of the MOSHPA Model principles allowed us to simultaneously achieve a much better level of :

Productivity and Profit,

Competitiveness, and

Sustainability

for our Farming System !!!

A young green plant with several leaves is growing out of a bed of dry, brown mulch. The plant is the central focus of the image. In the bottom right corner, there is a close-up of a single green leaf.

**Thank you for your kind
attention !!**