

# SAFE-World Project/Initiative Summary

**Country: Brazil**

Project/Initiative Title: Zero Till - Santa Catarina state. (Land Management II Project (Bird) or Projeto de Recuperação, Manejo e Conservação de Recursos Naturais.) Brazil  
1991 -1998

Scale: Regional

Nos. farmers: 106,000

Hectares: 880,000ha

Agro-Ecological Zone: III

Improvement types

1x	2	3x	4x	5x	6x	7x	8	9
----	---	----	----	----	----	----	---	---

## A. Key Impacts

### ***A1 - Productivity***

	Before/Without	After/With	% change
Corn	2830 kg/ha	3700 kg/ha	31
Soya	1600 kg/ha	2640 kg/ha	65
Maize	2549 kg/ha	3750 kg/ha	47
Wheat	1166 kg/ha	2125 kg/ha	82
Soyabean	1489 kg/ha	2726 kg/ha	83

### ***A2 - Impacts on natural capital***

?? Reduced soil erosion

?? Improved soil health

?? Large increase in carbon sequestration

### ***A3 - Impacts on local community (social capital)***

The project has made impact on the development of little farm equipment industries (especially for minimal tilling, direct raising, cover crops, green manures, etc.).

### ***A4 - Impacts on households and individuals (human capital)***

The survey has measured the use of household sanitary equipment, protection equipment for pesticides application, pesticides garbage destination. The preliminary results show little progress in handling with pesticides and good improvement on sanitary infrastructure. The project shows great improvement on household equipment\_s like color TV set, telephone, and so on.

### ***A5 - Key changes in farm / regional system***

Society and farmers have now got better knowledge of erosion and pollution risks and are learning to solve problems together

## B. Types of Sustainable Agriculture Improvements

Type 1: Better use of available renewable natural capital

- Type 2: Intensification of single sub -component of farm system
- Type 3: Diversify by adding new productive natural capital and regenerative components
- Type 4: Better use of non-renewable inputs and technologies
- Type 5: Social and participatory processes leading to group action for making better use of natural capital
- Type 6: Human capital building through training-learning programmes
- Type 7: Access to Finance
- Type 8: Add value by processing to reduce losses and increase returns
- Type 9: Add value by direct or organised marketing of produce to consumers

	Yes/No	Narrative
Type 1	x	Cover crops, Zero till and direct seeding
Type 2		
Type 3	x	Green manuring
Type 4	x	More effective use of inputs
Type 5	x	Participatory methods, group organisation Some institutional partnerships (not enough)
Type 6	x	
Type 7	x	A financial fund to induce farmers to adopt new land management technologies was an important component of the project
Type 8		
Type 9		

### **C. Key Lessons: Success, Spread and Constraints**

#### ***C1 – Key Lessons Learned***

Ensure that farmers gain greater participation on project design, for better definitions of problems and solutions and for minimise focus deviation. Made resources transfers to local farmer's organisations for local project execution.

#### ***C2 – Aspects of local/national context contributing to success***

The great inundation that occurred in the years 1983 and 1984 influenced the state authorities to obtain a loan with World Bank. The local authorities became also more favourable to land management measures that could minimise flooding problems. The farmers have adopted the most important technologies proposed by the project for the reason the technologies made possible yield increases with less inputs and less work (its not easy to find such technologies!). Other reason was the loan itself: generally we suffer of lack of continuity in government resources allocated to projects. The loan obligates the counterpart and assures a minimal continuity in the execution.

#### ***C3 – Limitations preventing spread***

First the high inflation rates in the beginning of the project. Then the high rotation of technicians of the technical assistance component and the high political influence over the project rationale. In the last years of the project execution, the lack of counterpart resources made great prejudice over the project impact.

#### ***C4 – Policy issues***

The high loan taxes for farm investments, the political influence over the official technical assistance service and the relative small scale farmer training component. The democratisation of the municipal microcatchment commission (should be in majority composed by farmers) could be a great help for spreading results.

#### ***C5 – Scaling-up***

To spread to a much larger numbers of households a similar project should be more decentralised, at the local level. It should also be under greater control by farmers.

### **D. Contact Point for Project/Initiative**

Maurélio Correia da Silva - Project manager

Secretaria do Desenvolvimento Rural e da Agricultura  
Rodovia Admar Gonzaga, 1486  
Cep 88034-001  
Florianopolis  
Santa Caterina  
Brazil

### **E. Project Narrative**

Brazil: Microbacias (watersheds) and zero-tillage (ZT) programme in Santa Caterina

The state government extension and research service, EPAGRI (Empresa de Pesquisa Agropecuária e Difusão de Tecnologia de Santa Catarina), works with farmers in the southern Brazilian State of Santa Catarina, from the flat coastal areas in the east to the rolling highlands and mountains of the centre and west. It is involved in working at a microwatershed level with local farmers to develop low-input and productive systems of agriculture. Each member of staff works in about four microwatersheds of about 150 families for a period of two years, playing an important social as well as technical role. Farmer experimentation is encouraged, and there is a large amount of decision-making at the level of these local extensionists.

**The technological focus is on soil and water conservation at the microwatershed level using contour grass barriers, contour ploughing and green manures. Farmers use some inorganic fertilizers and herbicides, but there has been particular success with green manures and cover crops. Some 60 species have been tested with farmers, including both leguminous plants such as velvetbean, jackbean, lablab, cowpeas, many vetches and crotalaris, and non-legumes such as oats and turnips. For farmers, these involve no cash costs, except for the purchase of seed. These are intercropped or planted during fallow periods, and are used in cropping systems with maize, onions, cassava, wheat, grapes, tomatoes, soybeans, tobacco and orchards. Farmers use animal-drawn tools to knock over and cut up the green manure/ cover crop, leaving it on the surface. With another farmer-designed, animal-drawn instrument, they then clear a narrow furrow in the resulting mulch into which the next crop is planted. As a result, most farmers no longer plough.**

The adoption of ZT in Santa Caterina is significant because farm structure is considerably smaller than in the neighbouring states of Paraná and Rio Grande do Sol (where hectareage

under ZT has too seen extraordinary growth in the past decade). It is estimated that some 106,000 farmers have adopted ZT on about 880,000 hectares through the microbacias programme. There have been substantial improvements in yields: maize up 47% over eight years (to 1999) to reach 3750 kg/ha, soya up 83% to 2730 kg/ha, and wheat up 82% to 2125 kg/ha.

Like other ZT programmes, EPAGRI has documented improvements to water quality, soil health and water retention. Soils are darker in colour, spongy to the step, moist and full of earthworms. The reduced need for most weed ing and ploughing has meant great labour savings for small farmers. From this work, it has become clear that maintaining soil cover is more important in preventing erosion than terraces or conservation barriers. It is also considerably cheaper for farmers to sustain.

A highly significant component of the microbacias programme has seen the transformation of whole watersheds and the attention to social capital formation. In Santa Caterina, some 7700 groups have been formed in 559 microbacias, and these have become engaged in a wide range of activities. EPAGRI has also worked to involve local municipalities fully in the process of participatory technology development and extension, and now many municipalities employ their own agronomists to help in the process.

*Sources: Rubens Altman, Alicides José Molinari, Hercilio de Freitas, Airton Spires, John Landers, Francis Shaxson; de Freitas, 1999; Landers, 1999*

There was not a important focus on adding value. But this focus is a growing up behavior between little farmers due to globalisation of the economy.

The universe of the survey represents about 80.000 farms in 559 microcatchments. For some practices the project shows adoptions of about 30% of the crop surface in the survey. For others practices the adoption was not so good, as follows:

ÁREA E PERCENTUAL DA ÁREA DE LAVOURAS COM A ADOÇÃO DE PRÁTICAS DE CONSERVAÇÃO DE SOLO

PRÁTICA ADOTADA	Adução verde	Cobertura morta	Enleiramento	Cultivo mínimo	Plantio direto	Plantio em faixas	Faixas de retenção	Patamares de pedra	Patamares vegetados	Terraceamento
1991 (ha)	361,0	161,7	0,0	12,5	228,1	51,0	14,0	24,8	65,4	419,7
(%)	14,5	6,5	0,0	0,5	9,2	2,0	0,6	1,0	2,6	16,9
1995 (ha)	2.330,2	2.020,5	96,1	404,5	1.479,2	02,2	137,3	215,8	546,4	1.683,5
(%)	36,1	31,5	1,5	6,3	22,9	3,1	2,1	3,3	8,5	26,1
1998 (ha)	3101,4	4971,8	132,8	2162,2	5090,6	64,0	60,1	170,6	652,2	1933,3
(%)	23,9	38,3	1,0	16,7	39,2	0,5	0,5	1,3	5,0	14,9

FONTE: Instituto Ceba/SC.