

DEGRADED SOIL RECUPERATION PROGRAM MINISTRY OF AGRICULTURE OF CHILE

German Ruiz
Chile
german.ruiz@sag.gob.cl

The Problem: The arable land, on the different regions of Chile, has been suffering since long time ago, changes on their physical, biological and chemicals conditions, as a consequence of climate conditions, the productive systems and the intensity use of the soil. This changes, associated an intensive and extractive production systems, had cause on the soils, among others aspects, a strong loss of their natural fertility, a continuous loss of the available phosphorus and a progressive acidification. Besides this, soils are affected by different degrees of erosion due to their intensive use and the use of inappropriate technologies.

Chile have 75.704.800 has. Only use 17,2 millones de has in agricultural production, in this 46% present some grade of degradation.

The decision: Knowing this reality, the Government of Chile, through the Ministry of Agriculture, had compromised to impulse measures that will help to diminish the consequences of these processes. These measure, will enlarge the ones that farmers has been progressively adopted, to reach the sustainability of their productive resources.

The proposit of solution: The Degraded Soil Recuperation Program (Programa para la Recuperación de Suelos Degradados, PRSD), arise as a part of the full compromised taken by the Government of Chile to recover the degraded natural resources of the country. In particular, the main objective of the Program is to revert and to stop the soil degradation process allowing farmers of the country get into state resources that promote the conservation, sustainable use and recuperation of agricultural soils.

SPECIFIC PROGRAMS

The Degraded Soil Recuperation Program has the follow work lines os specif programs:

1.- Phosphate Fertilization: Encourage the use of phosphate in soils with deficit of it, in order to recover the levels of natural fertility define it, in 15mg of phosphorus per kilogram of soil (15ppm), according to the P-Olsen method. It bonus up to 80% of the net costs (without taxes).

The phosphate fertilization for the production, over the 15 ppm of phosphorus establish as a measure of correction, meaning the quantity available on the soil that will be used by the crop to reach the yields wanted, is a producer responsibility.

2.- Calcareous Correction: Encourage the incorporation of the necessary lime dose to the soil to change the level of pH until a value of 5.8, to reduce the aluminum saturation to a level under 5% taking in consideration the effective Cation Interchange Capacity according to a soil analysis. It bonus up to 80% of the net costs.

3.- Pastures: Encourage the establishment or regeneration of a permanent vegetal cover on degraded or fragile soils, through an incentive up to 50% of the net costs, with the objective of obtain a vegetal cover that cover at least 90% of the area.

4.- Soil Conservation: Encourage the use of the agriculture practices that help to avoid physical soil losses. Among such practices are: minimum or zero tillage; dune control; contour lines; establishment of forestry covers in soils owned by small farmers with few resources; infiltration ditches; organic matter or compost incorporation; grading; and practices that contribute to have more available water in the soil profile. An incentive up to 80% of the net costs associated to the implementation of any of these soil conservation methods is given.

5.- Soil Rehabilitation: Encourage the partial or total elimination of dead trunks, bushes without any forage value, as well as others physical or chemical problems in agricultural soils, through an incentive up to 50% of the net costs associated to the implementation of these practices.

6.- Crop Rotation: The general purposes of rotations are to improve or maintain soil fertility, reduce erosion, reduce the build-up of pests, spread the workload, reduce risk of weather damage, reduce reliance on agricultural chemicals, and increase net profits. Crop rotation also means that succeeding crops are of a different genus, species, or variety than the previous crop. Examples would be wheat after lupinus, row crops after small grains, grain crops after legumes, etc. The planned rotation sequence may be for a two- or three-year.

HOW THE GENERAL PROGRAM WORKS

The degraded soil recuperation Program works with Management Plans that are developed by operators (private professionals) who must be accredited by SAG or INDAP. They must have a professional or technical degree with courses in soil survey, soil fertility, pastures establishment, and natural resources conservation.

Laboratories that are enlisted in a public register under SAG, showing that they had the necessary installations, the appropriate methods and competent professionals, conduct soil analysis.

More and more it can be seen a compromise by farmers for incorporate conservation practices for soil rehabilitation. In this sense, and without doubt, the country is pushing forward to work together, between the public and the private sector, in order to reach the sustainability of the natural resources of the country by creating, little by little, conscience in the persons about the conservation of the natural patrimony. In the same way, the country is working on the development of a preventive culture, that in the long term is cheaper than the implementations of soil recovery actions and soil rehabilitation. It is important to emphasize the contribution of the Program at the national and regional level, in setting the bases to reach an economic development together with natural resources sustainability. However, this aspect should be reinforced in the future, through a better work between private and public actors and reinforcing the participation of all the actors in the Regional Technical Committees.

PROGRAM CHALLENGES

·Program Sustainability. The exit of the Program, after the 10 years period established by law, depend largely on the technological changes and attitudes assumed by the farmers.

·Resources. In order to reach the potential surface estimated, for the 10 years period of the Program, is necessary to increment the resources. The Regional Technical Committees are required to improve and increment their participation on the definition

of regional strategies and also incorporate in their work session's others actors such as operators, agriculture representatives, academy, research institutes and others, who can contribute with their experience and knowledge.

·**Focus.** It is very important to prioritize the resources distribution against the resources deterioration. This decision is under each Regional Technical Committee.

·**Participation.** It is necessary to improve the levels of information and participation among the different actors of the Program, through the Regional Technical Committees.

· **Administration.** Consist in to reach a better efficiency of the Program, improving its legal, administrative and operational processes.

·**Training.** It is important to improve and increment the operators, farmers and public workers training related with the Program.

DEGRADED SOIL RECUPERATION PROGRAM. Evolution of the Main Program Indices

Year	Costumer	has	Million \$ US
1996	10.675	98.879	5,12
1997	15.301	144.557	10,78
1998	15.758	158.660	16,17
1999	26.584	195.658	28,19
2000	42.621	250.763	40,77
2001	39.633	267.582	46,40
2002	44.342	251.318	41,09
2003	39.992	243.490	40,32
2004	38.492	230.541	38,52
Total	277.889	1.825.046	267,36