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**BROWN
REVOLUTION**
SAVE OUR SOILS, SAVE OUR FUTURE



Slash-and-burn is used in many countries throughout Central America and Africa. It has a devastating impact on the environment.

One farmer's story of

CONSERVATION AGRICULTURE

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HITTING PAYDIRT IN THE SOIL

Tomás Cruz has farmed maize and tomatoes for most of his life. Since the only extension support that he had received over the years was from local input providers, Tomás focused on applying synthetic fertilizers and pesticides in order to ensure yields. In recent years, however, he had been facing declining yields and profits. That was until a water-smart agriculture program called ProSoil exposed him to an alternative set of farming solutions. When it came to soil management, Tomás learned how he could increase his yields and profit through the restoration of his soil by eliminating tillage, maintaining continuous ground cover, and rotating his crops. These principals of conservation agriculture are the foundation of the ProSoil program.

After just 18 months, Tomás can already see for himself that this new focus on his soil leads to results. He has achieved both increased yields and production savings by decreasing fertilizers, input, and labor costs. By eliminating tillage, he has also saved time and effort.

“I saw that the plot’s yield was good and that the cost of production went down. The first thing is to see to it that you do not move the soil around too much or turn it over. The average yield here is about 3.9 MT/ha, and we have achieved approximately 6.6 MT/ha applying these new agricultural practices. On top of that, using cover crops helped me to get certified by the Ministry of Agriculture as a farmer with Good Agricultural Practices (GAP), which will help me sell my products on the market.”

Lowering input costs while increasing yields as a result of implementing conservation agriculture practices resulted in an impressive net income increase. On the land where he used conventional practices he netted \$5,800/ha, while on the area where he applied conservation agriculture practices he was able to net up to \$20,000/ha.

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SOIL AND WATER MANAGEMENT

The integration of good soil management practices has helped Tomás manage his farm as a productive system in which he can optimize the use of inputs such as fertilizers. Cover cropping, for example, has helped him with weed control, while integrated pest management practices have helped him to minimize his use of pesticides. Moreover, he now limits the use of supplementary irrigation water by using a drip system only when soil moisture is low and only in the specific areas of the field that need it.

“I have now put the irrigation equipment away since the plants are greener than before. Wherever the crop coverage is greater, it stays moist. We used to use plastic to cover the soil for moisture and pest control—this practice allows us to produce 8,500 lbs. of tomatoes per hectare more than with conservation practices (without plastic). But the cost of plastic for a conventional system costs us \$680 per hectare, and that is usually worth much more than the small loss in tomato yield, not to mention the time it takes to lay the plastic! So we come out winning. We have also reduced fungicide applications from 70 times per crop cycle to 20.”

Tomás’s successful use of water resources on his farm is particularly noteworthy considering that his farm is located in the Department of Madriz, one of the most drought-prone regions of Nicaragua.

FARMER TO FARMER AND A NEW GENERATION

Tomás has begun renting out his farm to his son, but not before setting down some clear conditions.

Tomás does not want to go back to conventional agriculture. *“My son wanted to drive a tractor through, but I told him he couldn’t.”* Tomás cannot bear the thought of watching more soil erode from his farm.

Neighboring farm families, having seen Tomás’s success first hand, have also started to implement better farm management practices. *“Everybody used to plant all at once,”* Tomás says.

“This farmer over here planted tomato, and the other one next to him did the same at the same time. This meant that we were flooding the market with tomatoes at the same time, lowering prices. We can avoid this by planning the succession of our crop rotations better. The rotations also reduce problems related to pests and diseases. With diversity, we have more stability in our farming systems.”

Tomás believes that water-smart agriculture practices will spread quickly in his community and beyond. *“There are other farmers in neighboring communities who are already talking about adopting these practices. It really changes the way they see things when you show them how the soil quality has improved.”*

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ABOUT THE HOWARD G. BUFFETT FOUNDATION

The Howard G. Buffett Foundation is a private family foundation working to catalyze transformational change to improve the world and the lives of the most impoverished and marginalized populations. The Foundation has invested over \$150 million in research to improve agriculture and an additional \$350 million in agriculture-related programs globally.



Clearing land in Central America by hand is difficult work. Establishing permanent cover and planting into it rather than hoeing is better for the soils and reduces labor hours.