



No-till and direct seeding into the mulch of legume prunings as a sustainable land-use alternative for the humid tropics.



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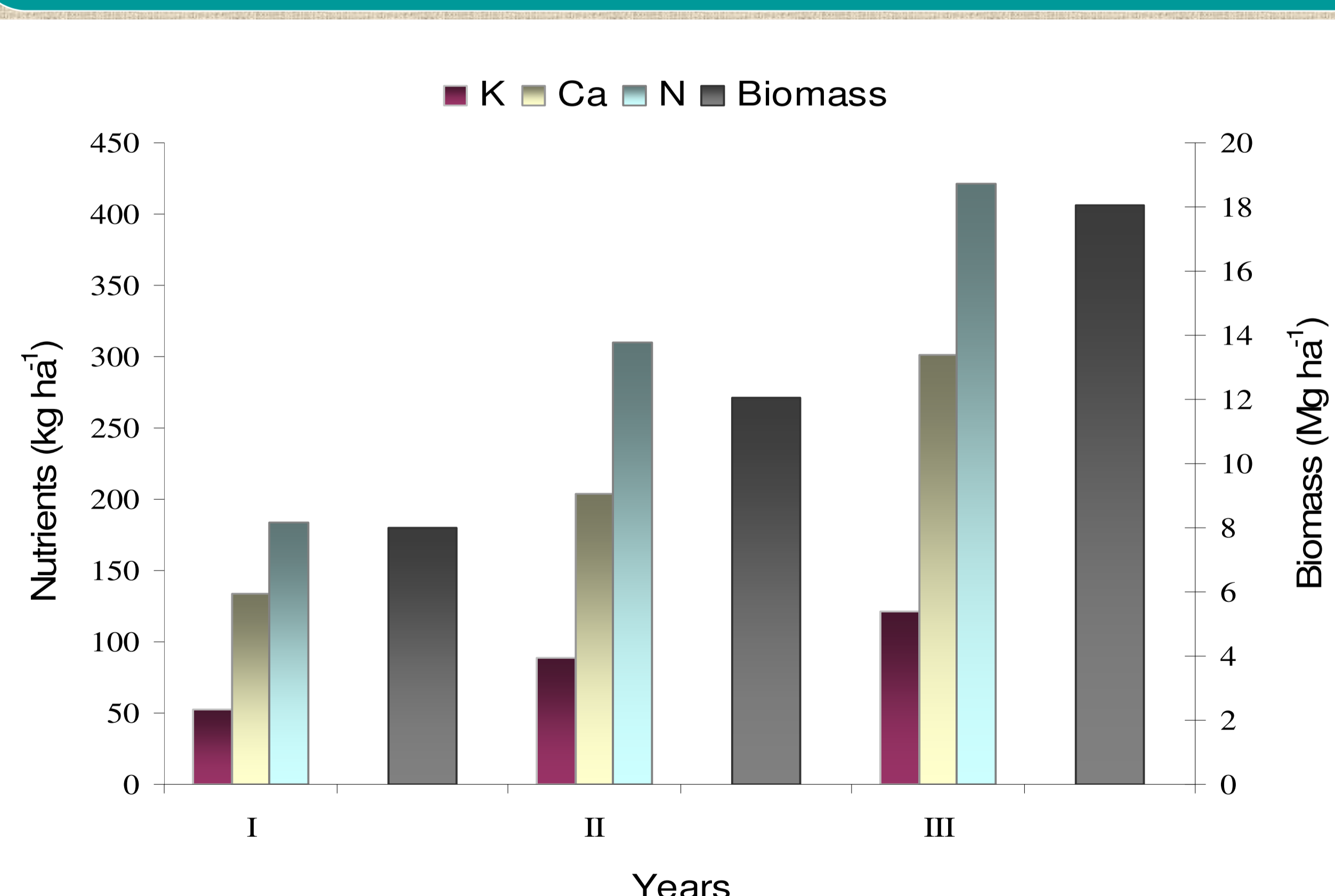
In northern Brazil and in other tropical regions of the world small farmers still rely on fire for land preparation, thereby causing negative impacts on global and local environment, mainly on biodiversity.



"No-till in alley cropping system using leguminous mulching" takes advantage of rapid tree growth and brings together in the same space and time the process of cultivation and the regeneration of soil fertility.



The system allows leguminous plants of high and low residues quality to be combined aiming soil protection and nutrient recycling.



Vegetable biomass, nitrogen, potassium, and calcium brought to the soil by a combination of Leucaena and Acacia, in three years of cultivation.

Table 1 - Comparative effects of percent base saturation and of soil cover with 3 Mg ha⁻¹, on the parameters of corn production in the pre-Amazonian region.

Yield parameters	Bases Saturation Percentage				CV
	73		28		
	Cover	Uncover	Cover	Uncover	%
Mean ear weight, g	134.0a	89.9c	112.3b	79.5c	11.6
100-kernel weight, g	26.2 a	21.6b	24.9ab	20.7b	14.3
Biological yield, kg ha ⁻¹	8,854a	6,121b	7,070b	4,674c	13.7
Total grain weight, kg ha ⁻¹	4,281a	2,837c	3,501b	2,238c	13.6

Table 2 - Evolution of the content of Ca, Mg, bases saturation percentage, ear size and total grain mass in soil cultivated with residues of Leucaena mixed with Acacia (L+A) and uncovered soil (US) .

	Ca		Mg		Bases Saturation Percentage		Mean ear weight		Total grain weight	
	mmol _c dm ⁻³		mmol _c dm ⁻³		%		g		Mg ha ⁻¹	
	US	L+A	US	L+A	US	L+A	US	L+A	US	L+A
2003	14.5	14.4	10	10.2	68.0	67.0	53	48	1.32	1.24
2004	14.5	14.7	10	11.0	67.5	66.0	32	41	1.54	2.58
2005	11.5	15.5	2	2.5	35.0	39.5	72	89	1.84	2.66
2006	6.0	16.0	1	2.5	21.0	46.5	68	110	1.50	3.20

In regions where the rainy season is not interrupted by Indian summers no-till in alley cropping systems may be used to replace slash-and-burn cultivation and in doing so offer solutions for food shortage small farmers face. In addition, it can produce a positive effect on ecological dimensions of sustainability, reducing CO₂ emissions and helping regional biodiversity conservation.