



Cover Crops and Sustainability

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Goal for agriculture

Improve:

- Global productivity
 - Resource use efficiency
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- Improving efficiency without improving productivity increases pressure to produce more on other lands
 - Squandering resources to maximize productivity puts more pressure on other lands to reduce environmental impact

No-Tillage Cropping Systems

Conservation Agriculture



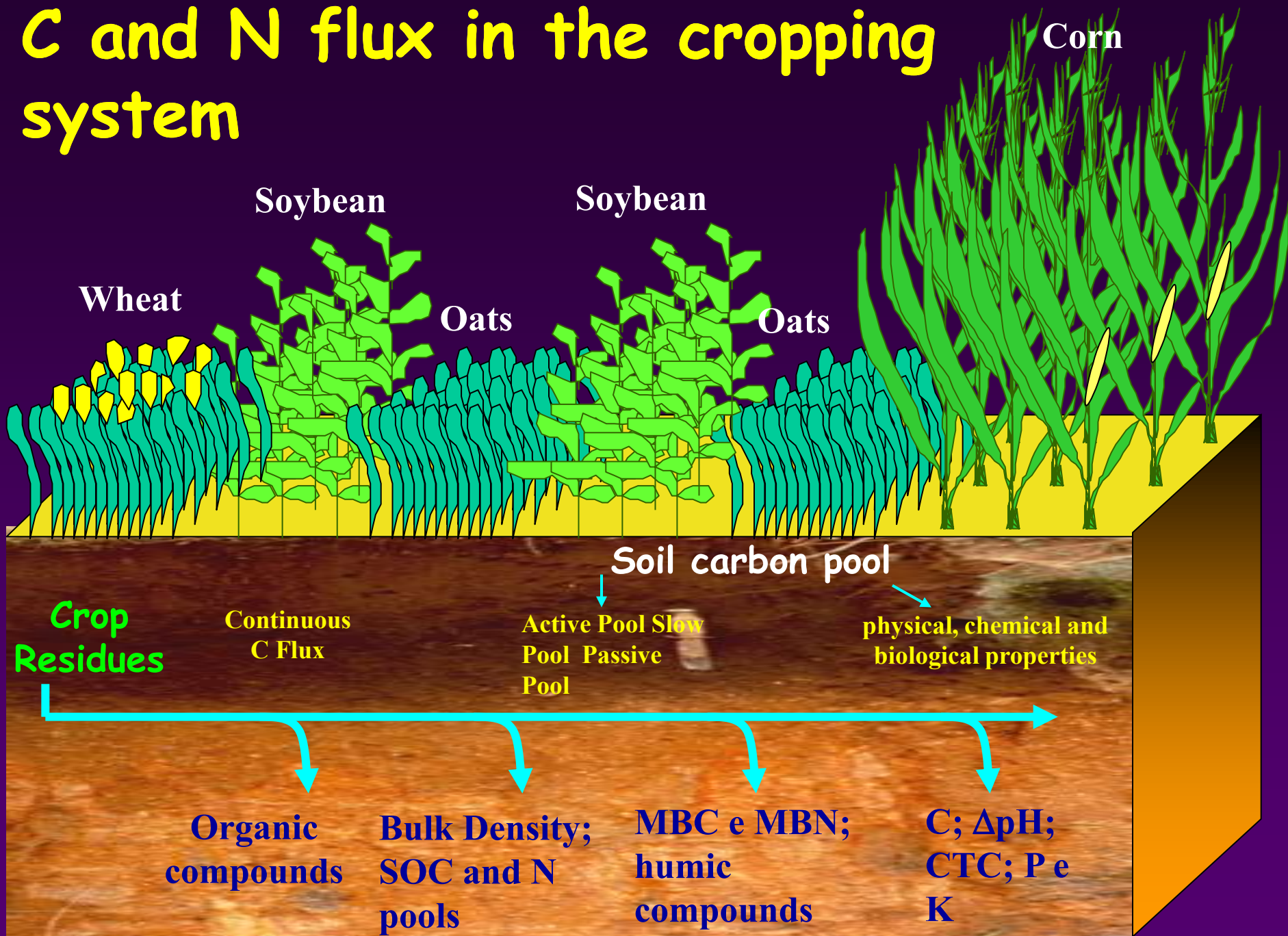
- Restores soil carbon
- Conserves moisture
- Saves fuel
- Saves labor
- Lowers machinery costs
- Reduces erosion
- Improved soil fertility
- Controls weed
- Planting on the best date
- Improves wildlife habitat

Rotations

Intensify

Diversify

C and N flux in the cropping system



Opportunities

- Erosion control
- Recycle nutrients
- Feed soil biology
- Soil C sequestration
- Moisture conservation
- Weed control

Barriers

- Seed costs
- Water loss
- Limits herbicide options

Cover Crop Selection

- Nitrogen fixation
- N capture
- Other nutrient recycling (K, P)
- Reduce compaction

Capítulo 2 – Resultados e discussão

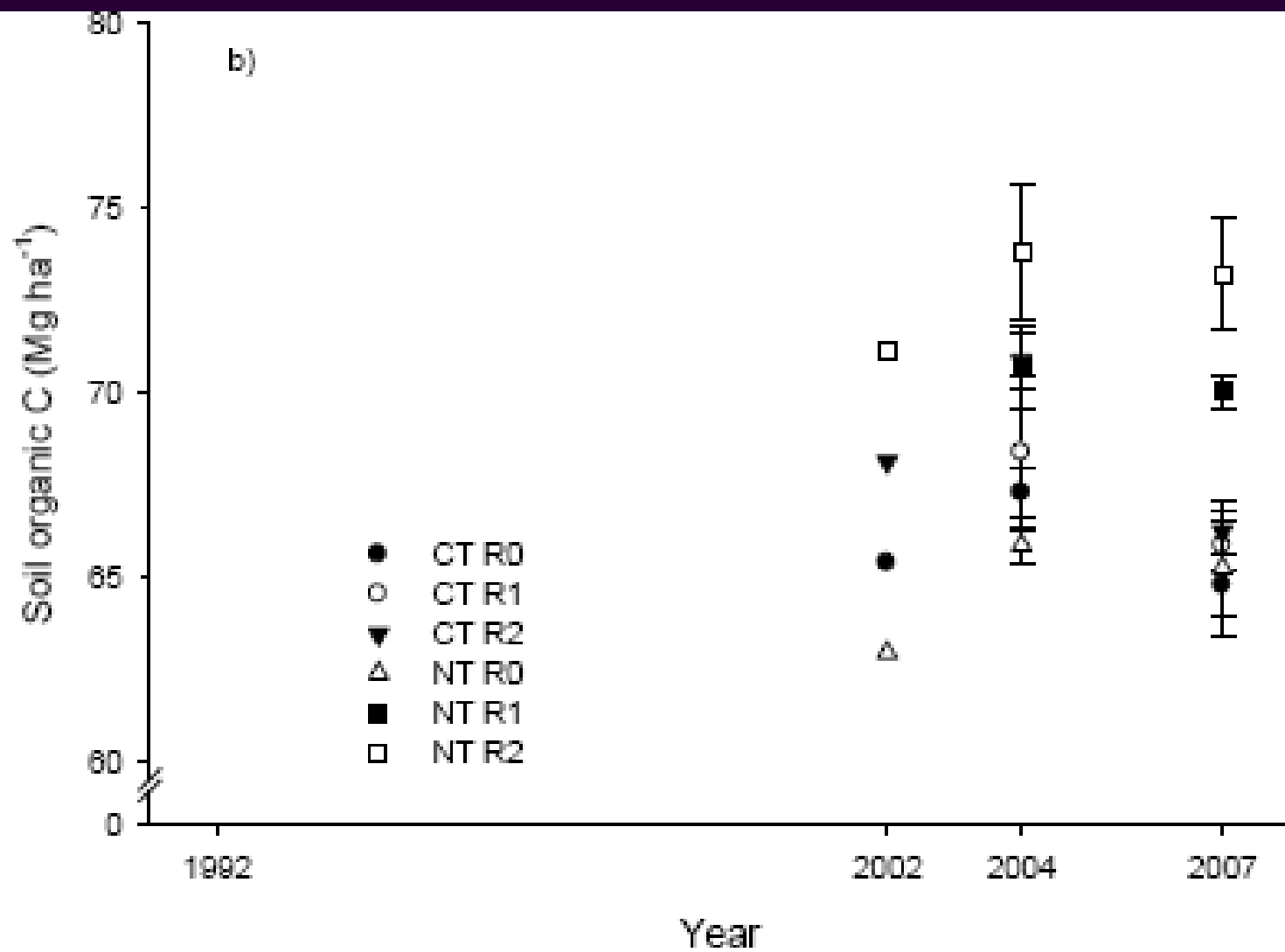
Oxisol

Table 2.4. Average annual aboveground carbon input to the soil between 1985 and 2007 as affected by no-tillage (NT), conventional tillage (CT), and crop rotations (R0 and R2).

Source	CT R0	CT R1	CT R2	NT R0	NT R1	NT R2
	----- Mg ha ⁻¹ y ⁻¹ -----					
Soybean	2.36	2.87	2.53	2.57	2.57	2.80
Wheat	1.23	1.73	1.43	1.34	2.00	1.58
Oat	-	2.21	2.12	-	2.63	2.46
Corn	-	-	3.84	-	-	4.68
Oat+Vetch	-	-	2.61	-	-	2.94
Radish	-	-	1.51	-	-	1.51
Total	3.59	4.84	5.31	3.91	4.88	6.05

¹ Means with different letters between nitrogen sources within corn or total C inputs are significantly different (Tukey test, P<0.05). R0: soybean/wheat; R1: soybean/wheat/soybean/oat; R2: soybean/oat/soybean/oat+vetch/corn/radish/wheat.

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