

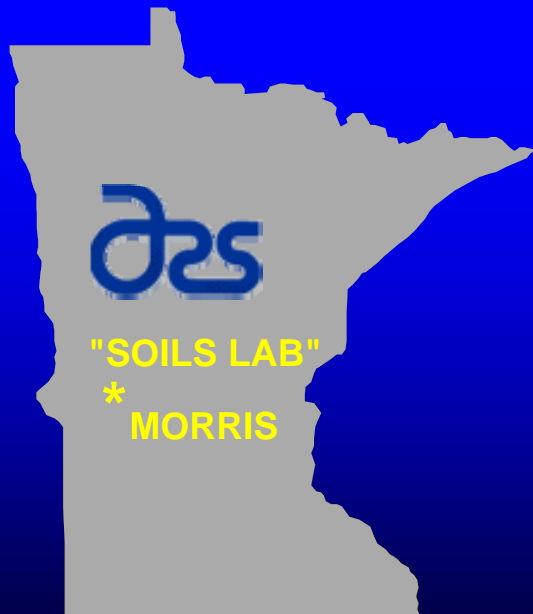
IAD - Institute for Sustainable Agriculture

8 DEC., 2009 Paris, France

“Carbon and ecosystem services for sustainable agriculture.”

by

D.C. Reicosky



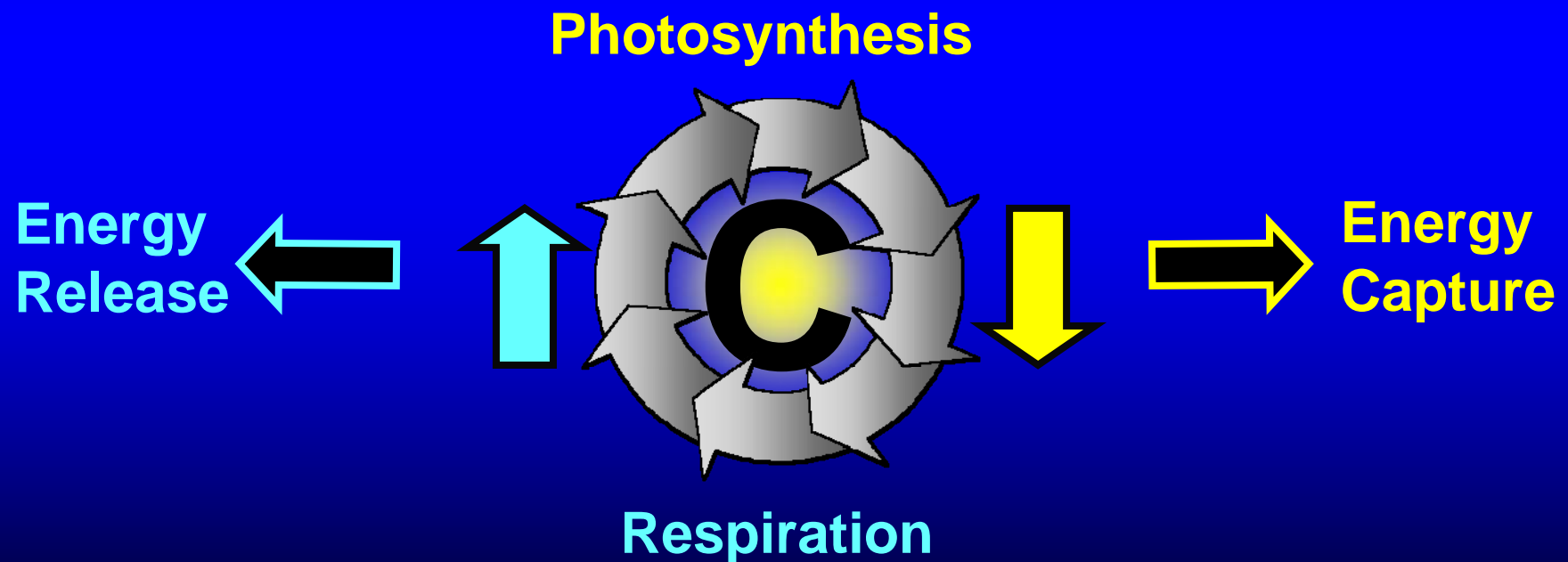
USDA-ARS-MWA

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USA**

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Sustainable Agriculture Requires Management of the Carbon Cycle



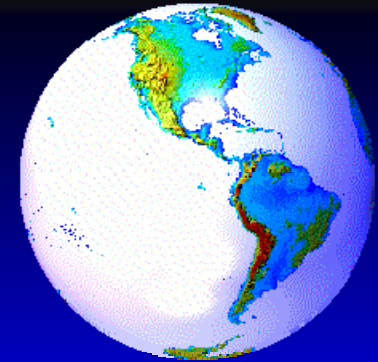
OUR HUNGRY WORLD

OUR THREATENED PLANET

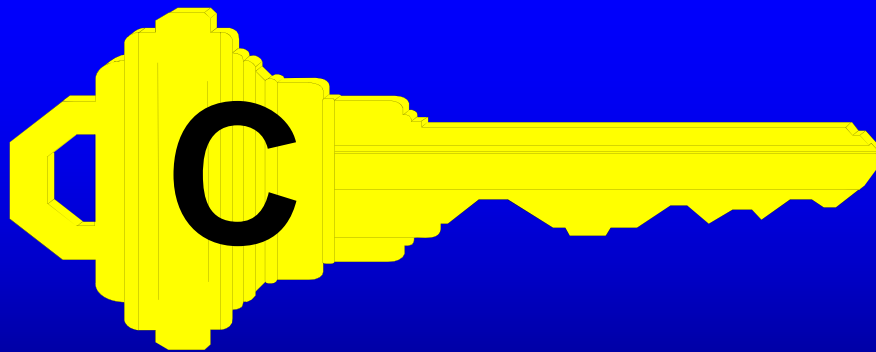
OUR CHILDREN'S FUTURE

OUR ONE CHANCE... Conservation Agriculture

**All rest on "OUR LIVING SOIL" that depends on
soil carbon!**



The "key" component is:



c a r b o n !



**Sustainable
Agriculture**

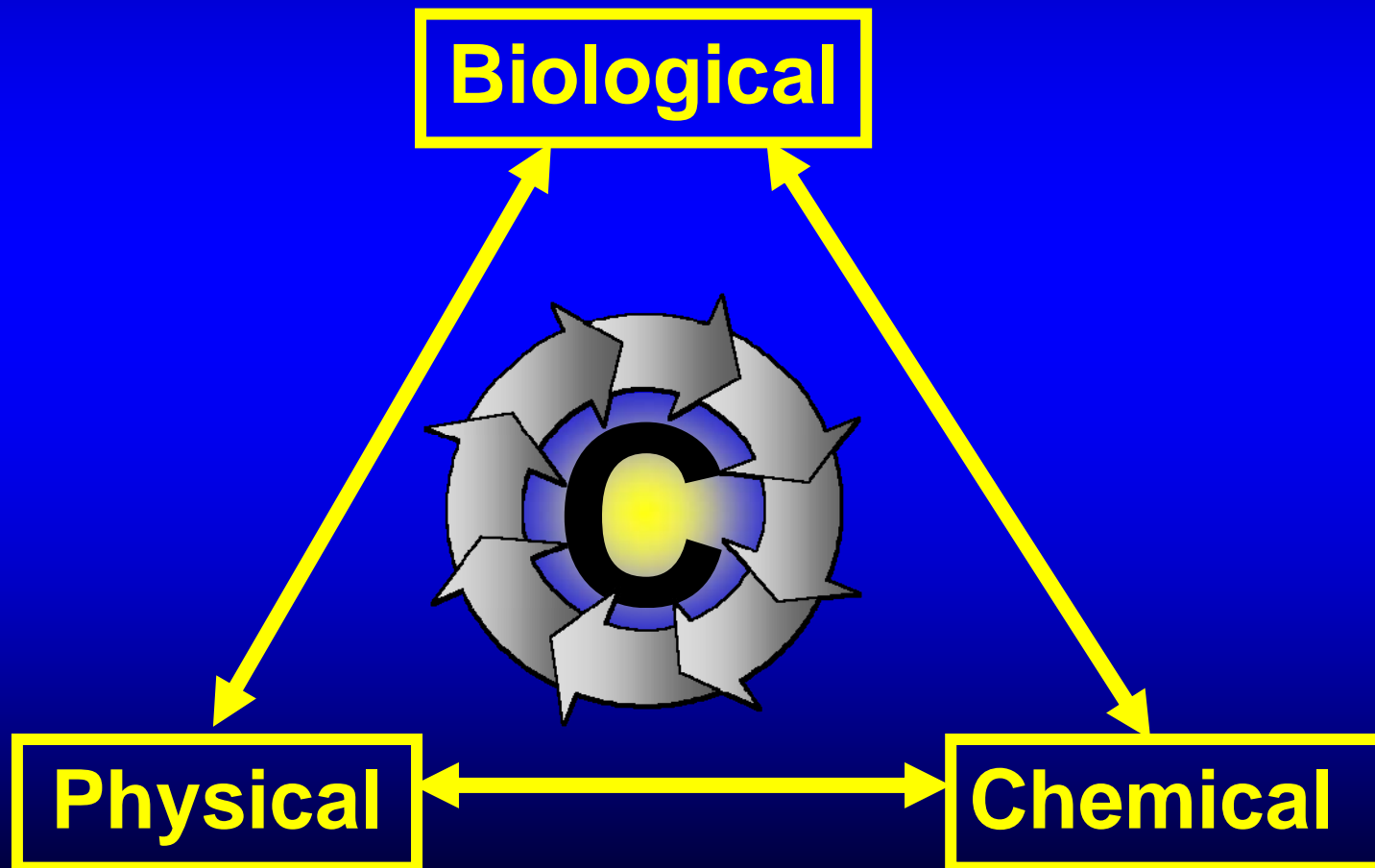
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**Conservation
Agriculture**

Conservation agriculture (CA) encompasses a set of complementary agricultural practices that revolve around carbon:

- **minimal soil disturbance (through reduced or no-tillage) in order to preserve soil structure, soil fauna and organic matter;**
- **permanent soil cover (cover crops, residues and mulches) to protect the soil and contribute to the suppression of weeds;**
- **diversified crop rotations and crop combinations, which promote soil micro-organisms and disrupt plant pests, weeds and diseases.**

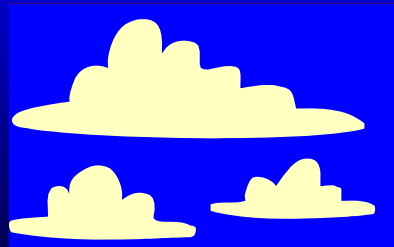
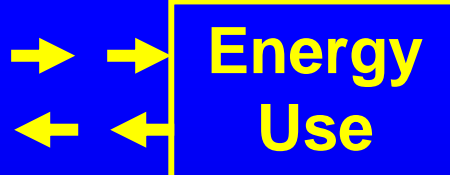
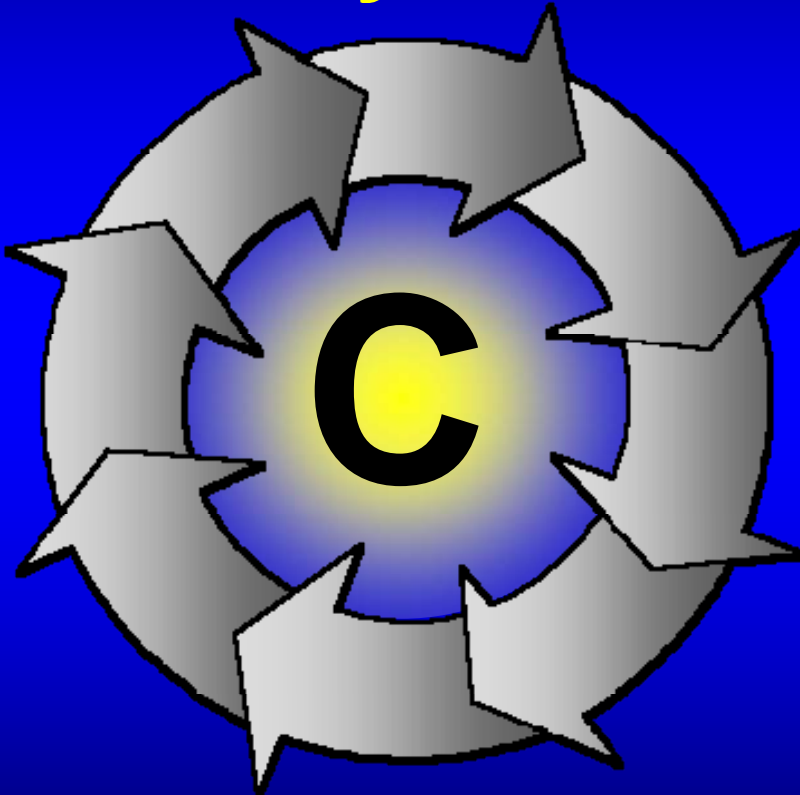
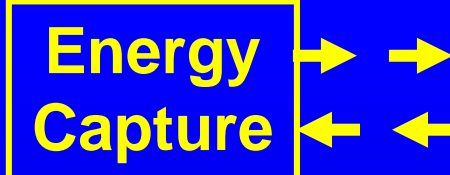
**Carbon is the center of the
“Soil Magic Triangle”.**



The carbon cycle is critical for producing food for humanity and food for nature.

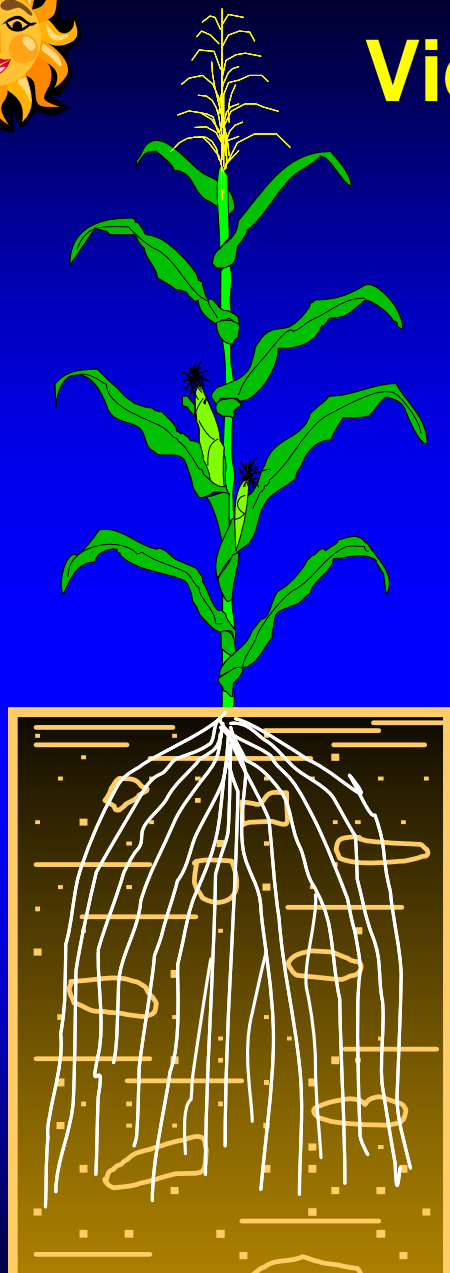


Photosynthesis



Respiration





View the plant as carbon!

(~ 45% C)

Plant Power

Carbon capture

Carbon storage

Energy storage

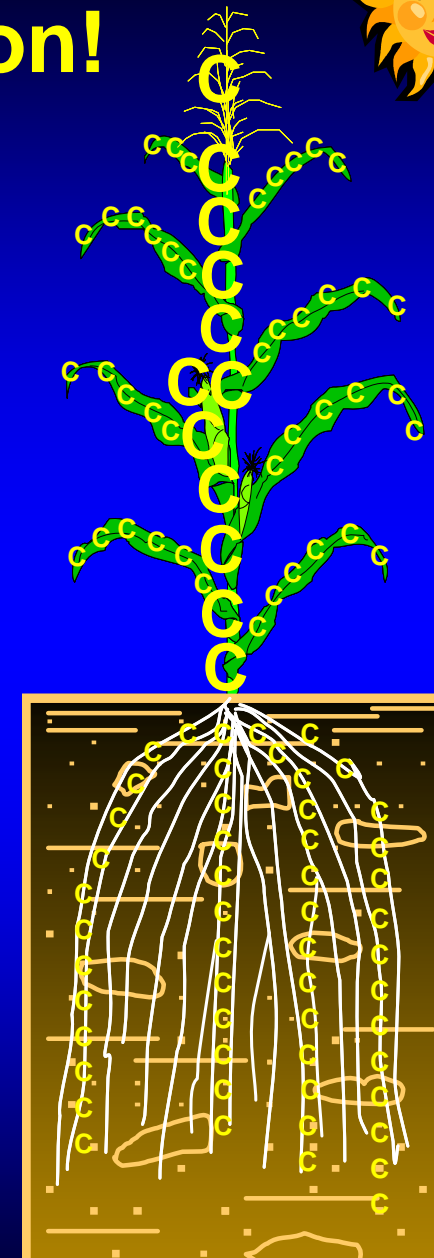
Food source

Energy source

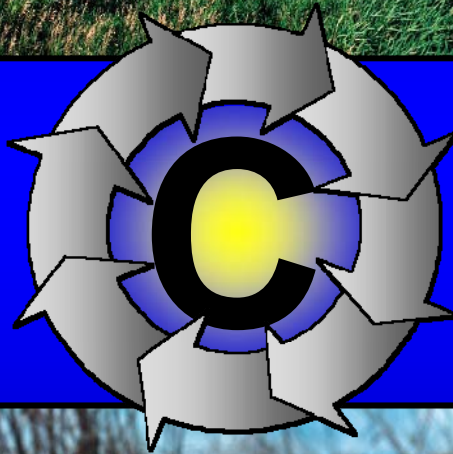
Soil carbon input

Environmental
benefits

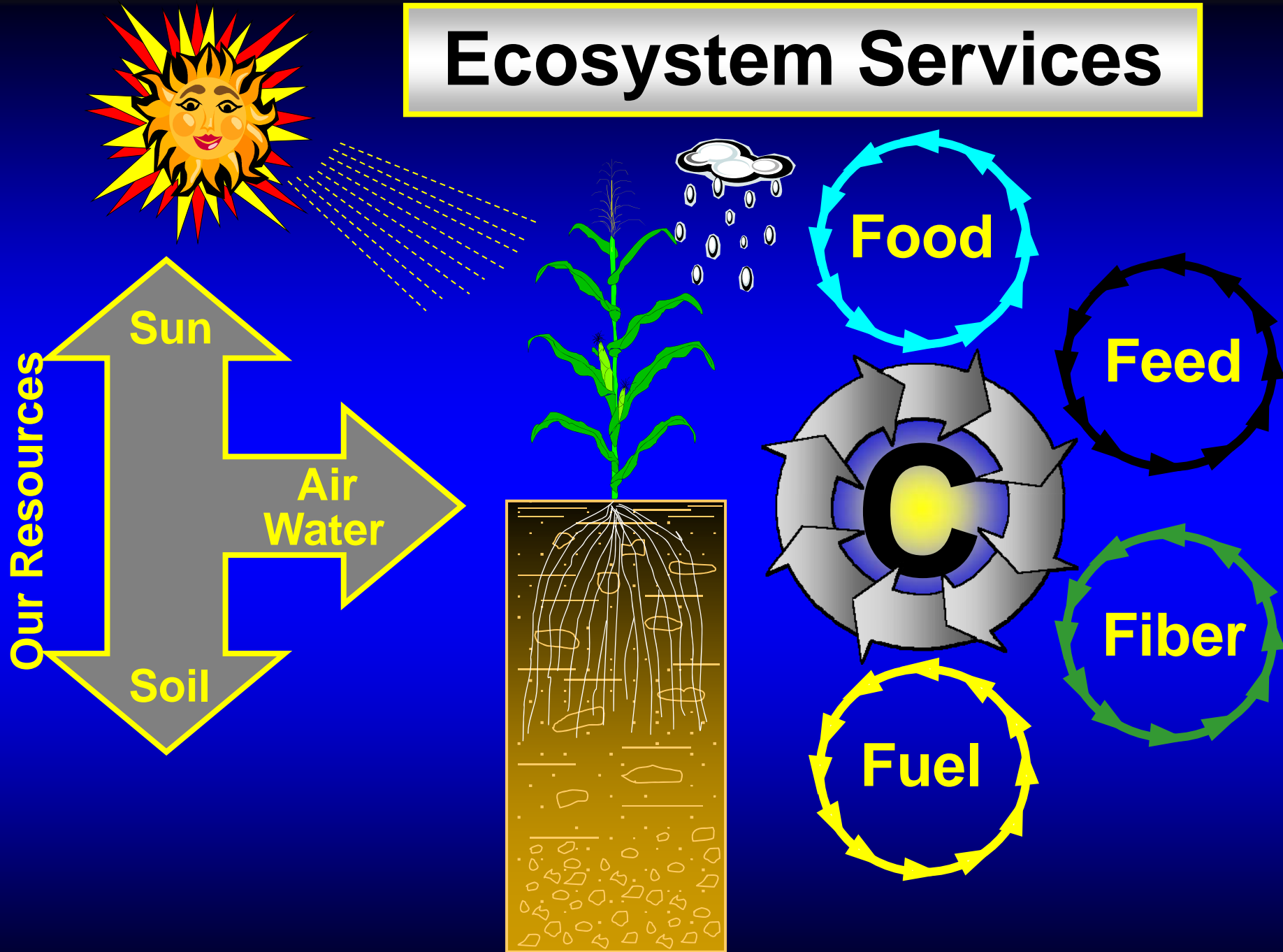
Quality of Life



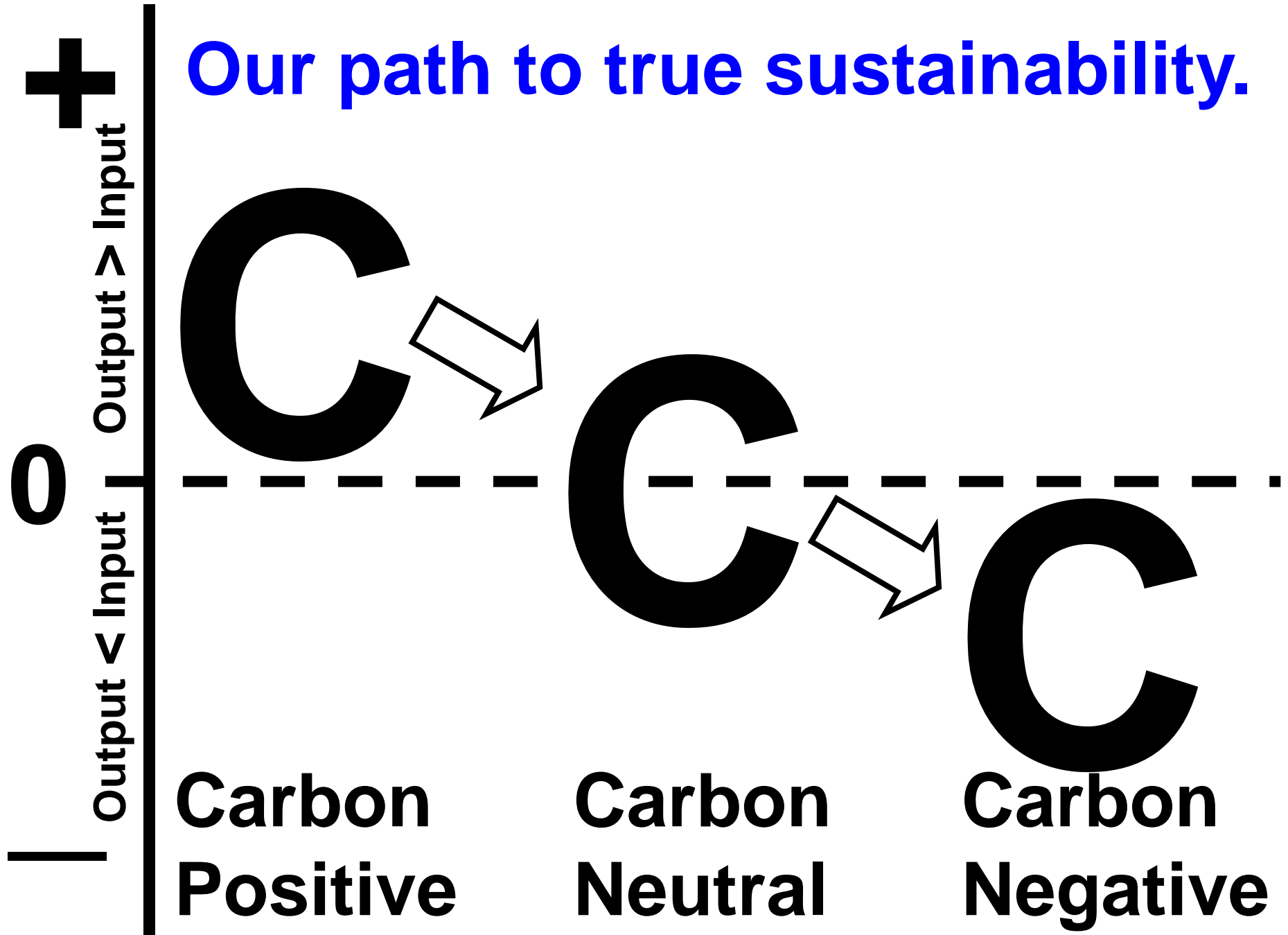
Carbon is the “C” that starts “C”onservation!



Ecosystem Services



Our path to true sustainability.



Opportunities with Carbon Markets

Although not one size fits all, there are synergetic effects of climate related actions in agriculture:

- Alleviating poverty
- Sustainable development
- Food security
- Energy security
- Improvement of environmental quality

New Carbon Finance Projection

If the US does introduce a federal cap and trade scheme in line with the latest proposals New Carbon Finance expects the global carbon market to increase significantly in the post 2012 period turning over of the order of **US\$2.1 trillion (2.1×10^{12}) per year by 2020.**

\$2,100,000,000,000

New Carbon Finance info@newcarbonfinance.com

http://www.google.com/search?q=carbon+market+values&hl=en&rls=com.microsoft:en-us:IE-SearchBox&rlz=117GGLD_en&start=10&sa=N

Soil Carbon Sequestration

Ecosystem services are spokes that emanate from the Carbon hub.

- increased water holding capacity and use efficiency
- increased cation exchange capacity
- reduced soil erosion
- improved water quality
- improved infiltration, less runoff
- decreased soil compaction
- improved soil tilth and structure
- reduced air pollution

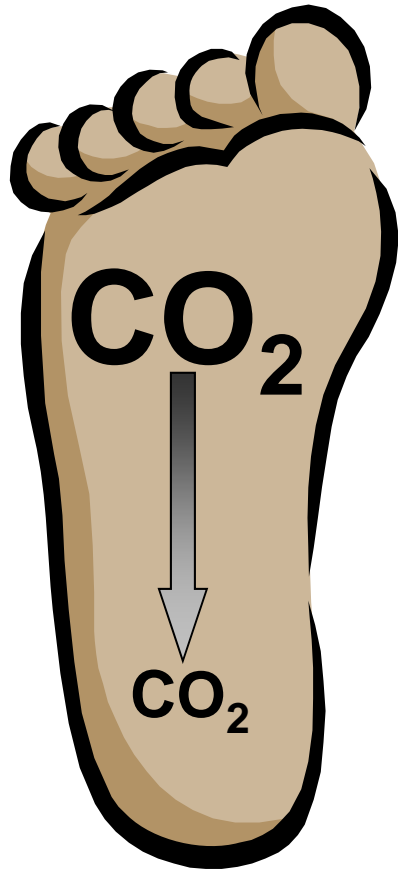
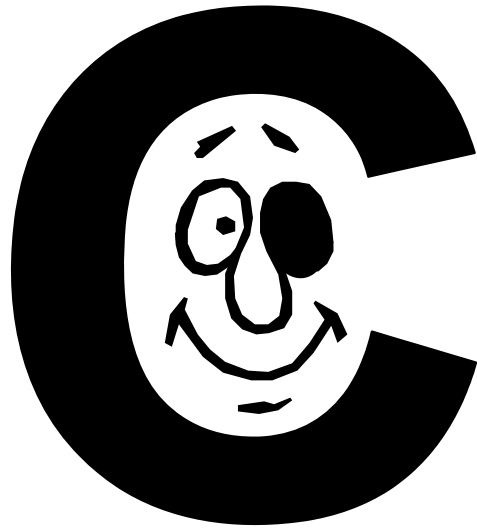
Carbon



- reduced fertilizer inputs
- increased soil buffer capacity
- increased biological activity
- increased nutrient cycling and storage
- increased diversity of microflora
- increased adsorption of pesticides
- gives soil aesthetic appeal
- increased capacity to handle manure and other wastes
- more wildlife

Agriculture's Wheel of Fortune!

Carby Carbon



Keep your carbon footprint small and manage carbon for ecosystem services!

