



Carbon Based Agriculture and Sustainability

Agriculture Action Agenda

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Carbon based agriculture

Considerations:

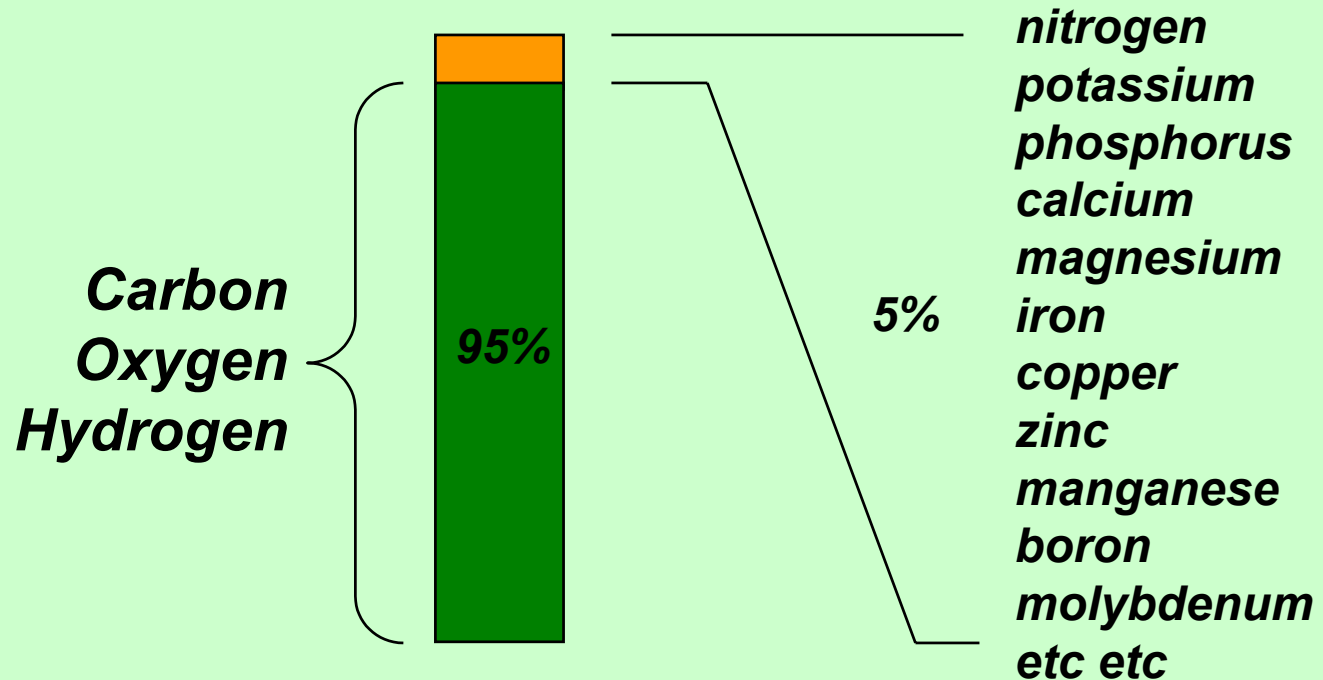
- ❖ ***Traditional research & development***
- ❖ ***Soil organic matter***
- ❖ ***Organic waste management***
- ❖ ***Community values***

Traditional Approach to R & D

**With good result,
we have focused 95% of our effort
on 5% of the plant.**

Traditional Approach to R & D

Emphasis on maximising production with limited focus on physical soil attributes. Consider crop composition:



Time to focus on the 95% and on sustainability

Soil organic matter

Its decline is a universal, growing concern for agriculture, it influences:

- ▶ **Soil structure - stability, plant growth;**
- ▶ **Soil moisture - availability and storage;**
- ▶ **Soil biota - management of pests, disease & weeds;**
- ▶ **Nutrient availability - recycling and management.**

We need to place greater emphasis on soil organic matter !

Improving soil organic matter

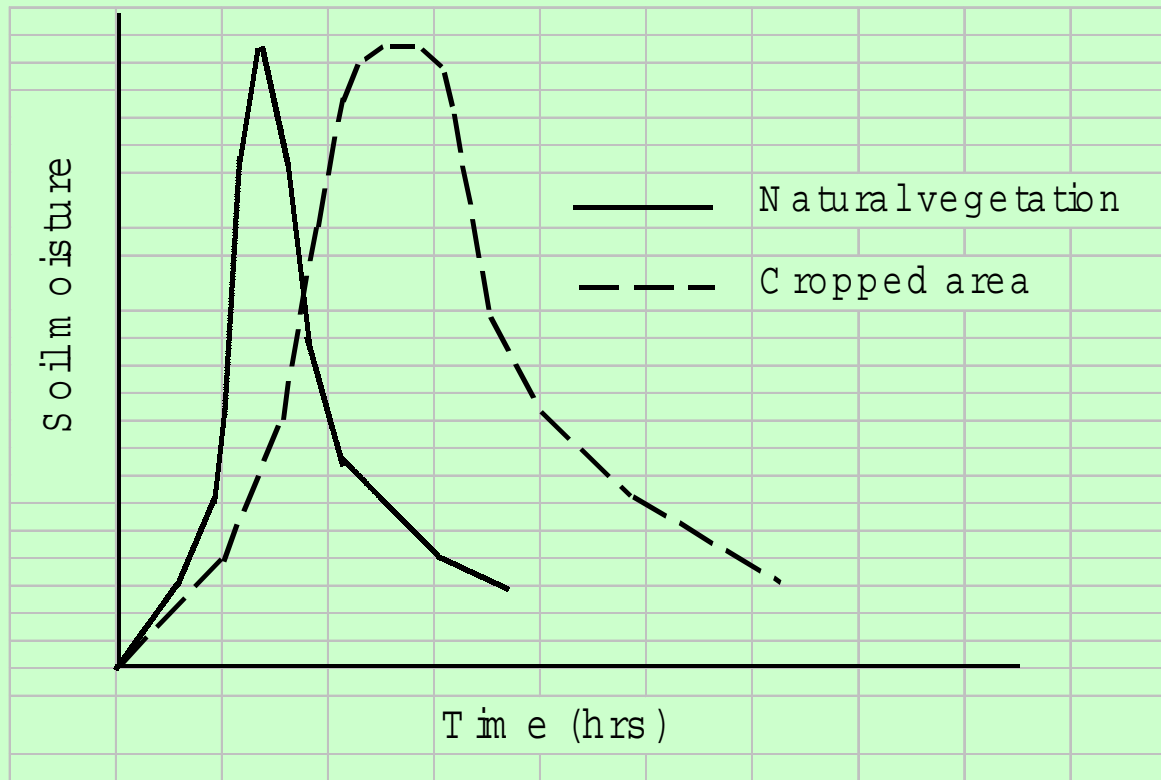
Increasing soil organic matter requires the addition of carbon and changes to current practices including:

- ▶ **Regular use of compost &/or cover crops**
- ▶ **Modified and reduced cultivation**
- ▶ **Modified and reduced crop rotation intensity**
- ▶ **Reduced, modified use of pesticides, fumigants & fertilisers**
- ▶ **Modification to physical aspects of some soils**

Management practices need to conserve soil organic matter !

Soil Organic matter

Cropping history affects soil moisture holding



Identical total soil carbon levels at both sites

Vegetable compost research site - Medina WA

Identifying benefits of Green Organics Compost on crop performance and:

- ▶ *Crop nutrition*
- ▶ *soil moisture*
- ▶ *soil organic matter*
- ▶ *nutrient leaching*

Developing management systems to maximise organic matter development including:

- ▶ *Use of cover crops*
- ▶ *Clay soil amendment*



Organic waste management

Both a challenge and a solution -

Organic residues from agriculture and urban sources are:

- ❖ **a potential source of carbon for agriculture**
- ❖ **a major challenge for the “zero waste management” objective**

Organic waste management

- ❖ **Focus on collecting clean ‘source separated’ organic streams**
- ❖ **work to increase the number and volumes of clean streams**

Apply quality assurance principals to produce consistent products

Organic waste management

Focussing on soil organic matter (carbon) will increase organic recycling and potentially contribute to solving all of the issues confronting agriculture

Composting manages:

- ▶ **pest, disease & weed contamination;**
- ▶ **contamination through blending.**

Compost is the basic mechanism for returning carbon to agricultural soils

Organic waste management

To make it work, government could provide:

- ▶ **Policy acknowledging the importance of organic matter to sustainable agriculture**
- ▶ **Appropriate legislation and planning control**
- ▶ **Generic"public" research focus**

To paraphrase Roosevelt - *A nation that neglects its soils is a nation in decline*

Community values

Carbon based agriculture:

- ▶ **Offers highly (arguably the most) sustainable approach to managing organics**
- ▶ **provides added reason for retaining productive intensive agricultural land in the face of urban expansion**
- ▶ **Add positive value and opportunity to the mosaic of the ‘urban jungle’**

Marketing carbon based agriculture

Provide compost user with:

- **information to integrate benefits of compost with best fertiliser, irrigation and pest (IPM) practise**

To achieve this:

- **develop electronic packages that can be adapted/modified by consultant and other industry support providers**

These packages could be regularly upgraded as new information develops.

Carbon Based Agriculture

A potential building block

for a

sustainable society