

Reconciling Poverty Eradication and Quality of the Environment:
What are the Innovative Solutions?
AFD & IVE, Maison de la Chimie, Paris, France, 27-28 June 2011

Conservation Agriculture: Global Perspectives and Developments

Amir Kassam OBE, FSB, PhD

Plant Production and Protection Division (AGP)
Food and Agriculture Organization (FAO) of the UN

www.fao.org/ag/ca



Ecological Sustainability: now not a desirable option but a necessity

Therefore:

- Need to link/integrate Production with Sustainability**
- One new strategic goal of FAO: Sustainable Crop Production Intensification (SCPI)**
- Conservation Agriculture is the core strategy of SCPI
= applied sustainable agriculture**

The “promised land” today: view from mount Nebo towards Jordan Valley



(suggested reading: **Dirt** – the erosion of civilizations by David Montgomery)

Tillage has an unacceptable environmental footprint

degradation/
erosion

>

natural
soil
formation

=

**NOT
sustainable**

therefore:

tillage is incompatible with sustainable agriculture!

→ further promotion of tillage based agriculture is not a wise strategy anywhere

The Current Dominant Paradigm

Low soil carbon farming paradigm of intensive tillage (disrupting and debilitating many important soil mediated ecosystem functions) and leaving the soil and the landscape exposed/unprotected and starved of organic matter is the root cause of our degradation (loss of soil health – soil agro-biodiversity, soil structure, compaction, runoff and erosion, and weed/pest infestation).

This is being exacerbated by: (a) applying excessive mineral fertilisers on to farm land that has been losing its ability to respond to inputs due to degradation, and (b) reducing or doing away with crop diversity and rotations (which were largely in place around the time of WWII).

The above situation is leading to further problems of increased threats from pests, diseases & weeds against which we are applying even more pesticides & herbicides & further damaging agro-biodiversity and polluting the environment.

Now dangerous point: Solution for sustainable farming has been known for a long time

FAO definition: www.fao.org/ag/ca

Conservation Agriculture (CA)

is an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base & the environment. CA is characterized by three linked principles, namely:

- 1. Continuous minimum mechanical soil disturbance.**
- 2. Permanent organic soil cover.**
- 3. Diversification of crop species grown in sequences or associations.**



Land Preparation

**Conventional:
regularly full tillage**

**CA: planting holes, ripping
or mulching**

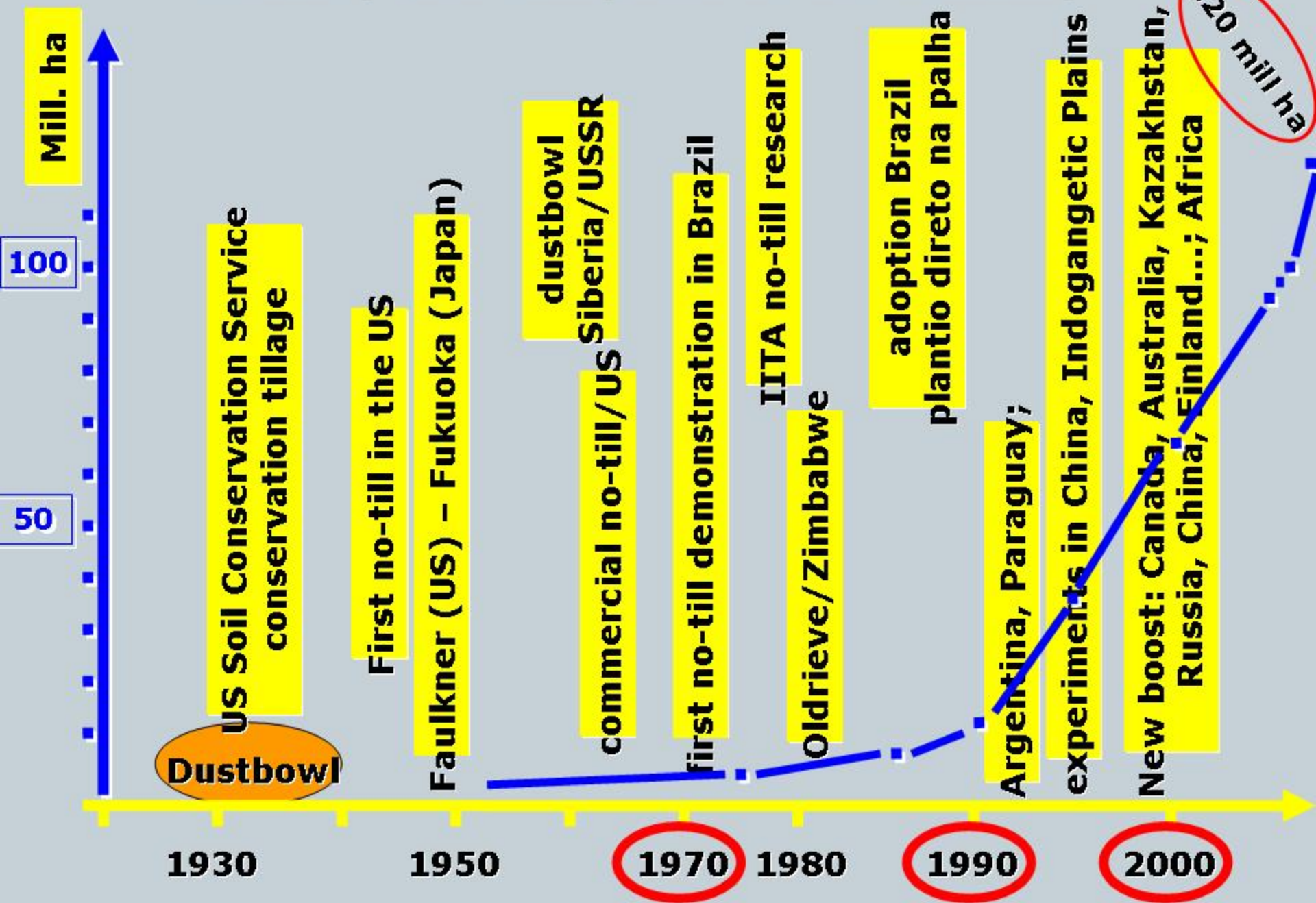


CA: more than just no-till: “never till”

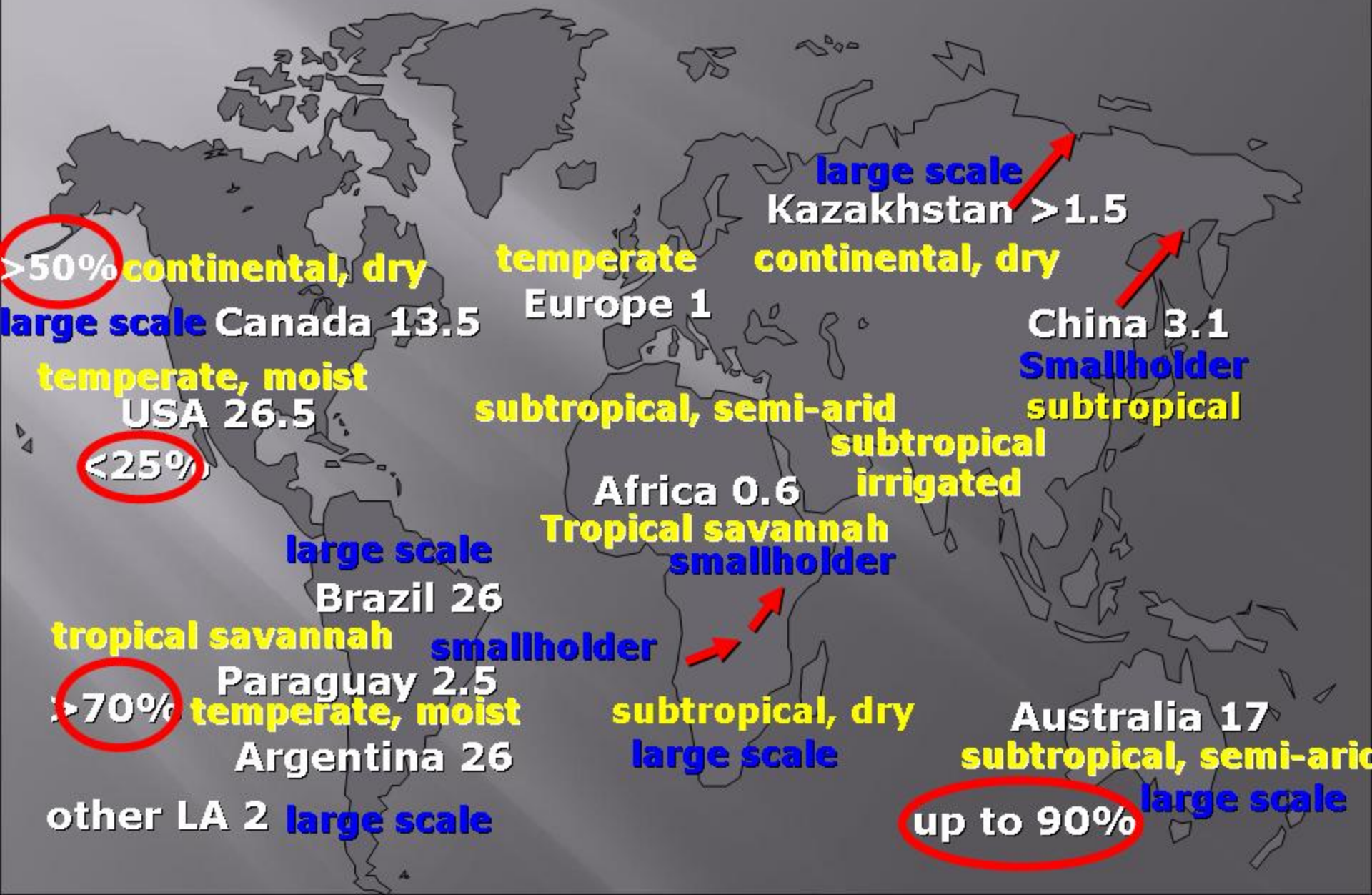
- **with other best practices (IPM, IPNM, IC-LS, agro-forestry, ...) it is sustainable agriculture and ecosystem management with reduced inputs & costs, & higher profits**
- **Saves 50% labour for small farmers, less drudgery, food security**
- **organic matter and carbon recycling**
- **biodiversity
(rotation, soil life)**
- **biological processes**
- **stops erosion, reverses degradation, aquifer recharge (bio-pores)**
- **improved water quality**
- **climate change adaptation and mitigation**



History and Adoption of CA Globally



CA worldwide >120 M ha (8% cropland)



Support to Adoption

- **Intellectual hindrances – the embedded current paradigm & support structures.**
- **CA is knowledge and management intensive and perhaps a complex system to learn and adopt.**
- **It requires a facilitating learning environment for the farmer to gain experience in his/her own context.**
- **Farmer Field Schools/farmer associations offer an effective mechanism to set up a process of farmer discovery, adaptation**
- **Policy and institutional support for win-win public-private-farmer organization partnerships necessary**

This is how CA actually works?

Relaxed Tillage

