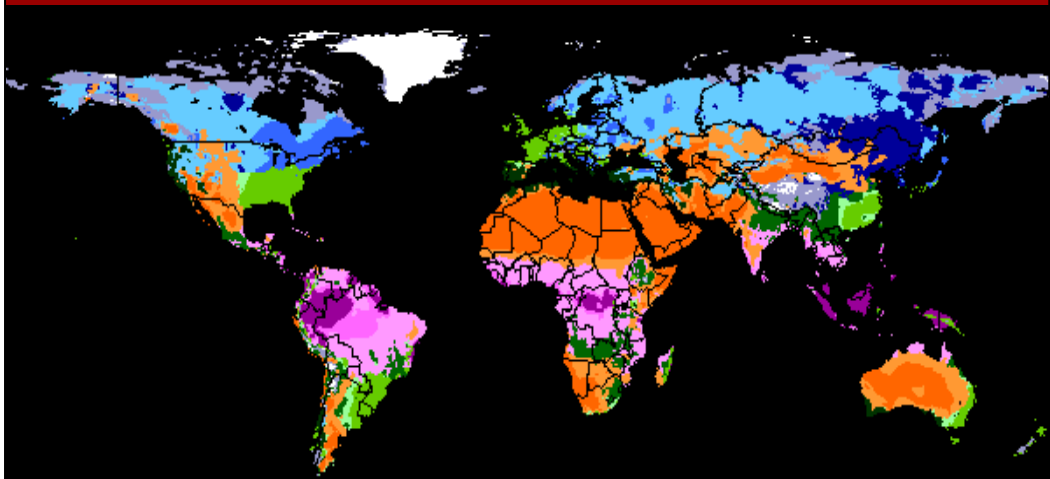


Conservation agriculture adapted to specific conditions No tillage for smallholder farmers in semi-arid areas (Cameroon and Madagascar)

NAUDIN K.¹, HUSSON O.², ROLLIN D.³,
GUIBERT H.⁴, CHARPENTIER H.⁵,
ABOU ABBA A.⁶, NJOYA A.⁴, OLINA J.P.⁴,
SEGUY L.⁷.

Semi- arid area



Koeppen's Climate Classification
by FAO - SDRN - Agrometeorology Group - 1997

A	B	C	D	E
Tropical	Dry	Temperate	Cold	Polar

Semi- arid area

Les définitions des zones semi-arides sont nombreuses.

Elle se caractérisent toutes par a negative water balance a large part of the year.

Specific constraints of the semi-arid areas for CA

- **Shortness of the growing season,**
- **Heavy competition for the limited biomass** between farmers and cattle raisers
- **Farmers' limited investment capacity** and poor access to market.

SCV : Direct seeding on permanent plant cover

- Soil is never tilled, permanently kept covered by a dead or living mulch.
- Mulch comes from plants that are used as "biological pumps". These plants have strong and deep root systems, can recycle nutrients and have a high and fast biomass production.

3 main ways of implementing SCV

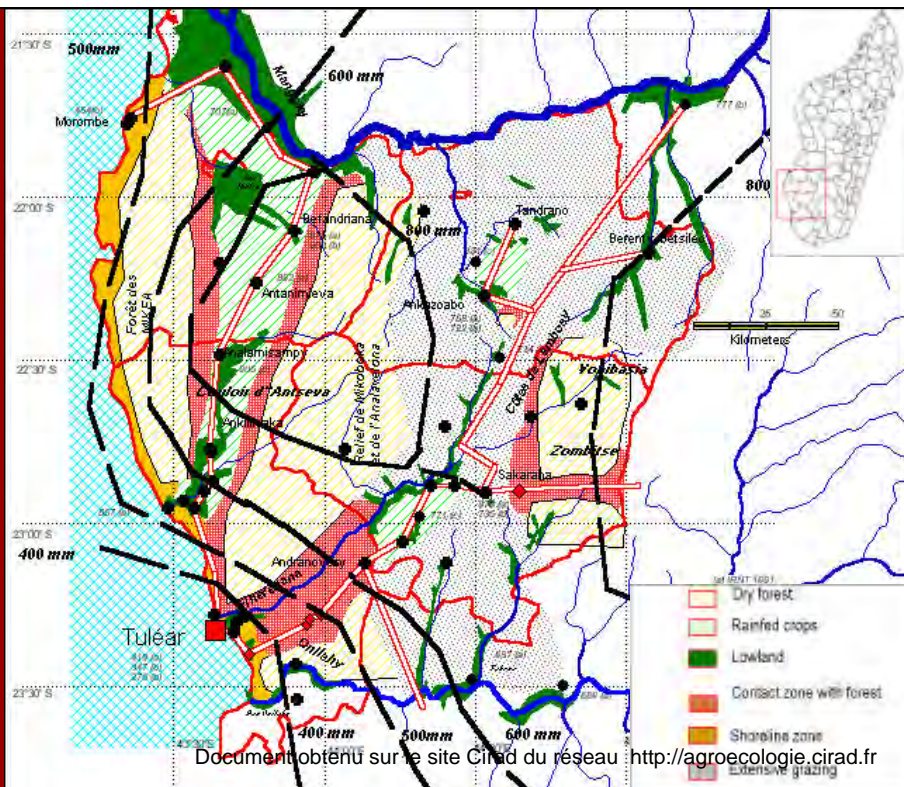
- **Importing a mulch from surrounding areas.**
- **Producing the mulch locally**, using natural vegetation, crop residues or a cover crop grown in the field.
- **Using a cover crop kept alive** but controlled during the main crop cycle.

SCV in semi-arid areas

3 main options

- **Reclaiming fallow land**, using natural vegetation
- **Improving the fallow lands** with, or cultivating, for at least one year, perennial legumes or grasses
- **Associating**, at least one year over two, a cover crop to the main crop.

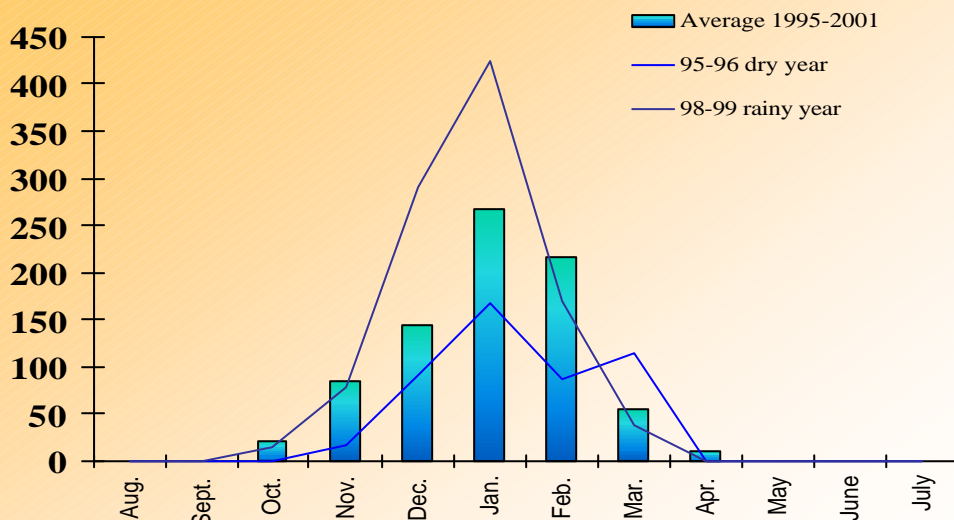
Madagascar



Madagascar

- Carte avec zone semi-arides de Mada
- à trouver cf D. Rollin

South West Madagascar Rainfall Sakara (1995-2001)

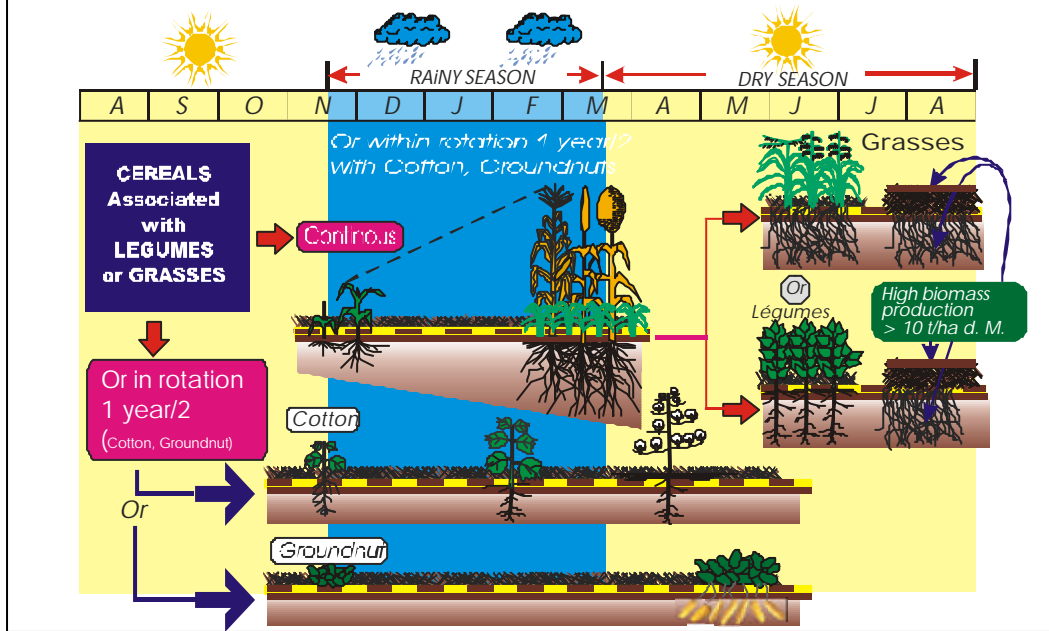


Average : **800 mm**

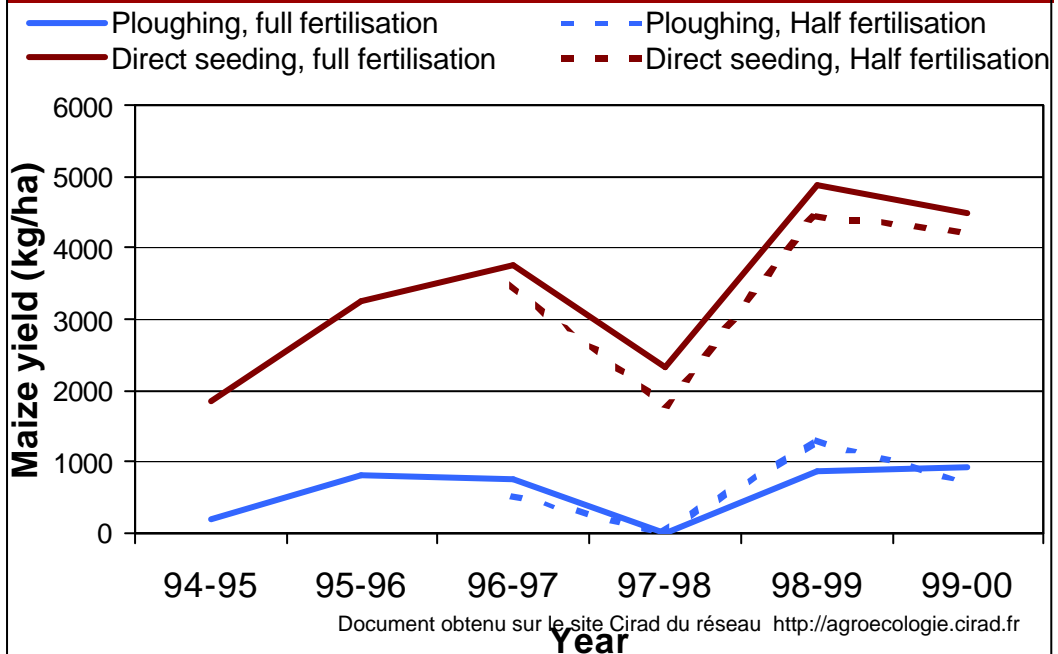
Dry year (95-96) : **475 mm** - Rainy year (98-99) : **1 015 mm**

Madagascar

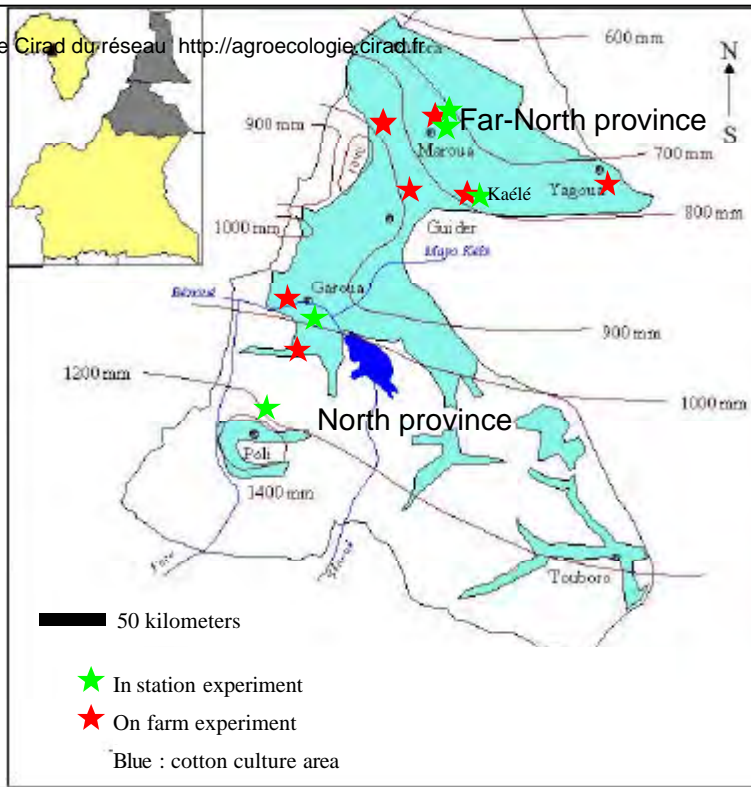
Association and rotation



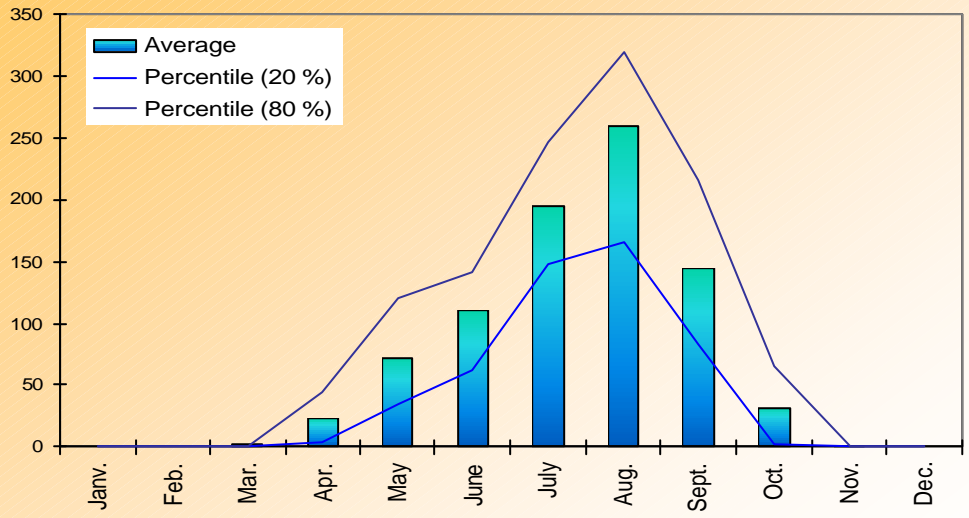
Madagascar results



Cameroon



North cameroon Rainfall Kaélé (1950-2001)



Average : 840 mm

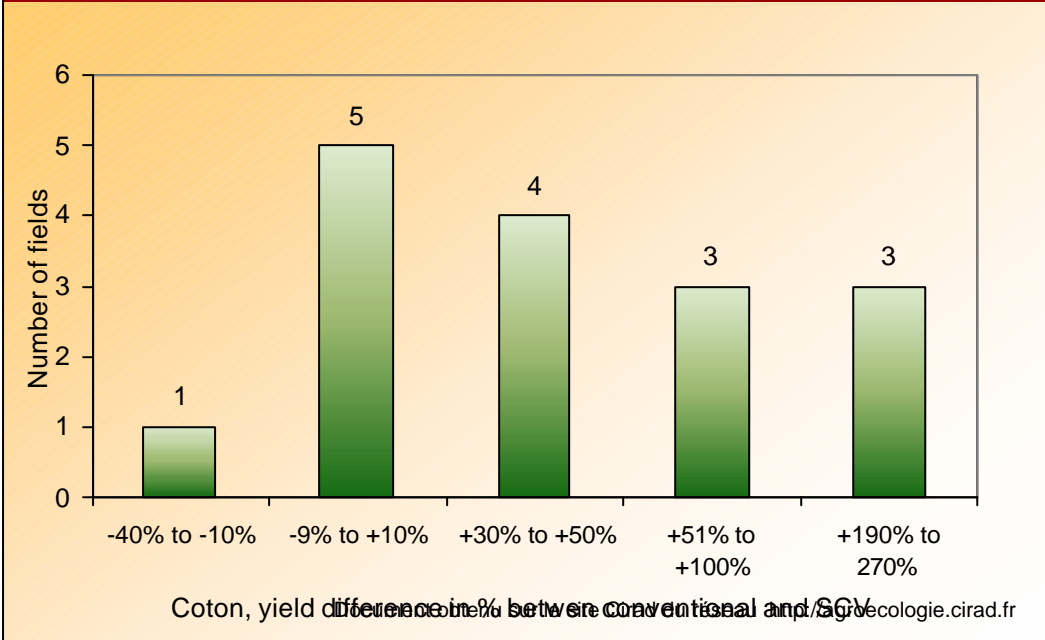
Dry year (1/5 year) : 700 mm Rainy year (1/5 year) : 930 mm

Cameroon Rotation

(exemple)



Cameroon On farm experiment 2002



Conclusion

SCV :

- Early sowing,
- Reducing labor force bottleneck,
- Reducing production costs,
- Weeds control,
- Increasing water use efficiency,
- Stopping soil fertility degradation,
- Better integration between crops and livestock,
- Improving the quality and the quantity of the produced biomass.