

● KRISHNA NAUDIN
krishna.naudin@cirad.fr
CIRAD, IRU Direct Seeding
and Cover Crops
BP 853, Ampandrianomby,
Antananarivo (101)
Madagascar

MICHEL RAUNET
michel.raUNET@cirad.fr
CIRAD, IRU Direct Seeding
and Cover Crops
Avenue Agropolis, TA 74/09,
34398, Montpellier Cedex 5
France

HERVÉ GUIBERT
herve.guibert@cirad.fr
CIRAD, IRU Cotton
Farming Systems
Avenue Agropolis, TA 72/09,
34398 Montpellier Cedex 5
France

OUMAROU BALARABE
oumarou.balarabe@sodecoton.cm
IRAD, SODECOTON,
Eau Sol Arbre (ESA) project,
Garoua
Cameroon

LUCIEN SÉGUY
lseguy@zaz.com.br
CIRAD, IRU Direct Seeding
and Cover Crops
c/o Tasso de Castro, CP 504
Agencia Central, 74001-970
Goiânia GO
Brazil



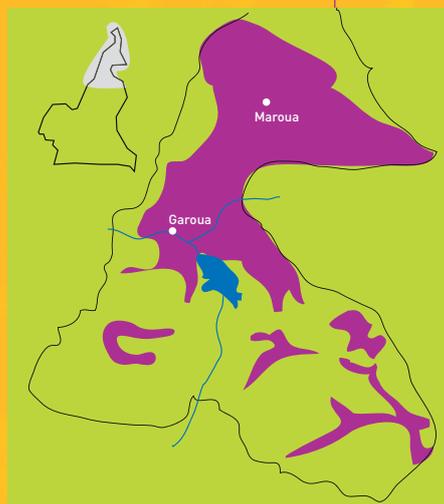
Direct seeding mulch-based cotton cropping systems in Cameroon

In the cotton-growing region of northern Cameroon, CIRAD, IRAD and SODECOTON are conducting research, in both the station and on farms, on direct seeding mulch-based cropping systems (DMC). The focus is on specific cropping techniques and on merging these cropping systems with traditional land, farm and livestock management practices.

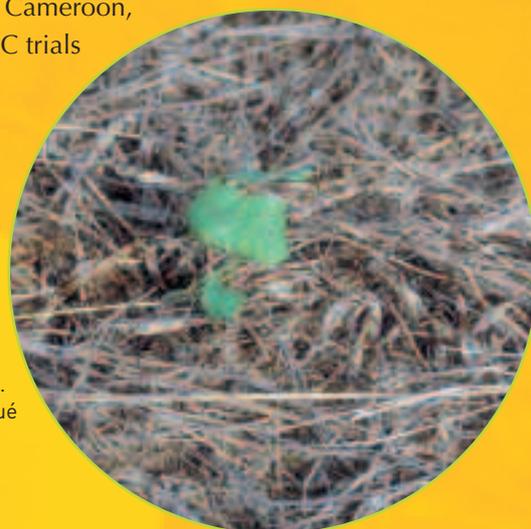
DMC features

Direct seeding mulch-based cropping systems are unique as they do not require tillage, the soil is permanently protected with mulch or a special live plant cover, and the main crop is grown in rotation with an improvement crop. These cropping systems are designed to achieve high sustainable crop yields, preserve and enhance soil fertility by reducing erosion and generating organic matter and, finally, alleviate heavy labour.

Brazil is currently the most advanced country with respect to DMC adoption, with over 20 million ha under such systems. In Cameroon, CIRAD and partners initiated the first DMC trials in 2001.



Cotton-growing region of northern Cameroon.



Cotton plant emerging from mulch.
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Better yields with a cotton-cereal crop rotation

Cotton-cereal crop rotations are common in northern Cameroon. The first DMC were based on this rotation. In the first year, the cereal (sorghum, maize or millet) is intercropped with a cover crop, e.g. *Brachiaria ruziziensis*, *Mucuna pruriens*, *Dolichos lablab*, *Crotalaria retusa* or *Vigna unguiculata*. The generated biomass is left in the field or partially grazed by livestock and serves as mulch for the subsequent cotton crop.



Manbang village. 2003. A DMC is shown on the left—biomass production is greater and *Brachiaria ruzisiensis* inhibits witchweed (*Striga* sp.) growth. On the right, the sole sorghum crop is almost completely overrun by witchweed (pink-blossomed parasitic plant).

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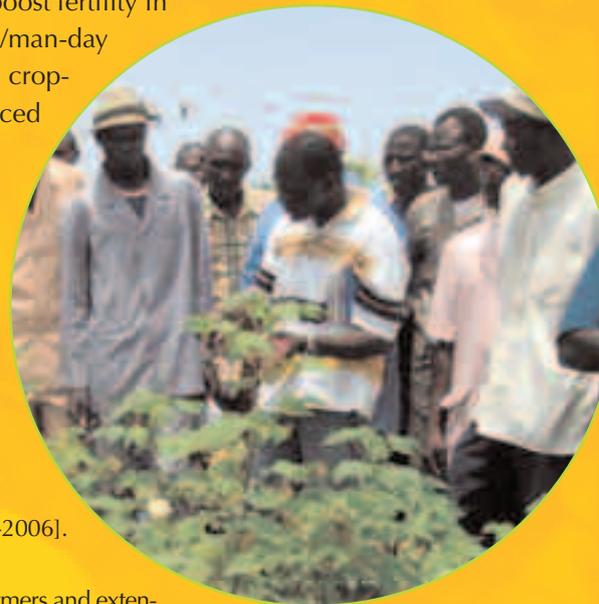
The same plot in 2004. On the left, cotton was direct seeded on sorghum + *Brachiaria ruzisiensis* mulch. On the right, cotton was sown after tillage. The DMC cotton crop is at a more advanced growth stage than that grown in the tilled area since it was sown 15 days earlier (as no tillage was required) and since soil moisture was higher under the mulch.

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In 2004, in the northernmost part of Cameroon, where drought is most severe, DMC cotton fields had a mean seed cotton yield of 1.8 t/ha, while conventionally cropped cotton fields yielded 1.5 t/ha. This yield gain was mostly due to enhanced rainwater infiltration and more efficient water use by the crop.

These techniques reduce labour time. Direct seeding mulch-based cotton cropping systems require less labour and cultivation than conventional cotton cropping systems, i.e. no tillage or ridging, no weeding if there is an adequate mulch layer. The overall results are better under cotton DMC, even when herbicide spot treatments are necessary because the mulch layer is not sufficient and when urea has to be applied to boost fertility in the first 2-3 years, e.g. labour productivity is €3.5/man-day as compared to €2.3 under a conventional cotton cropping system. Soil structure and fertility are enhanced in addition to the higher crop yields.

Farmers being trained on cotton DMC techniques.
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Partners

Cameroon: IRAD, Institut de recherche agronomique pour le développement • SODECOTON, Société de développement du coton

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For further information

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<http://www.act.org.zw>
Email: training@iirr-africa.org



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