

**We Can, and
Must,
End
“the Worst
Humanitarian
Crisis Since
World War II”**

Roland Bunch





When droughts were caused by a lack of rainfall,

1. There was nothing much we could do about the lack of rainfall, and


2. The droughts were self-terminating.



Now,

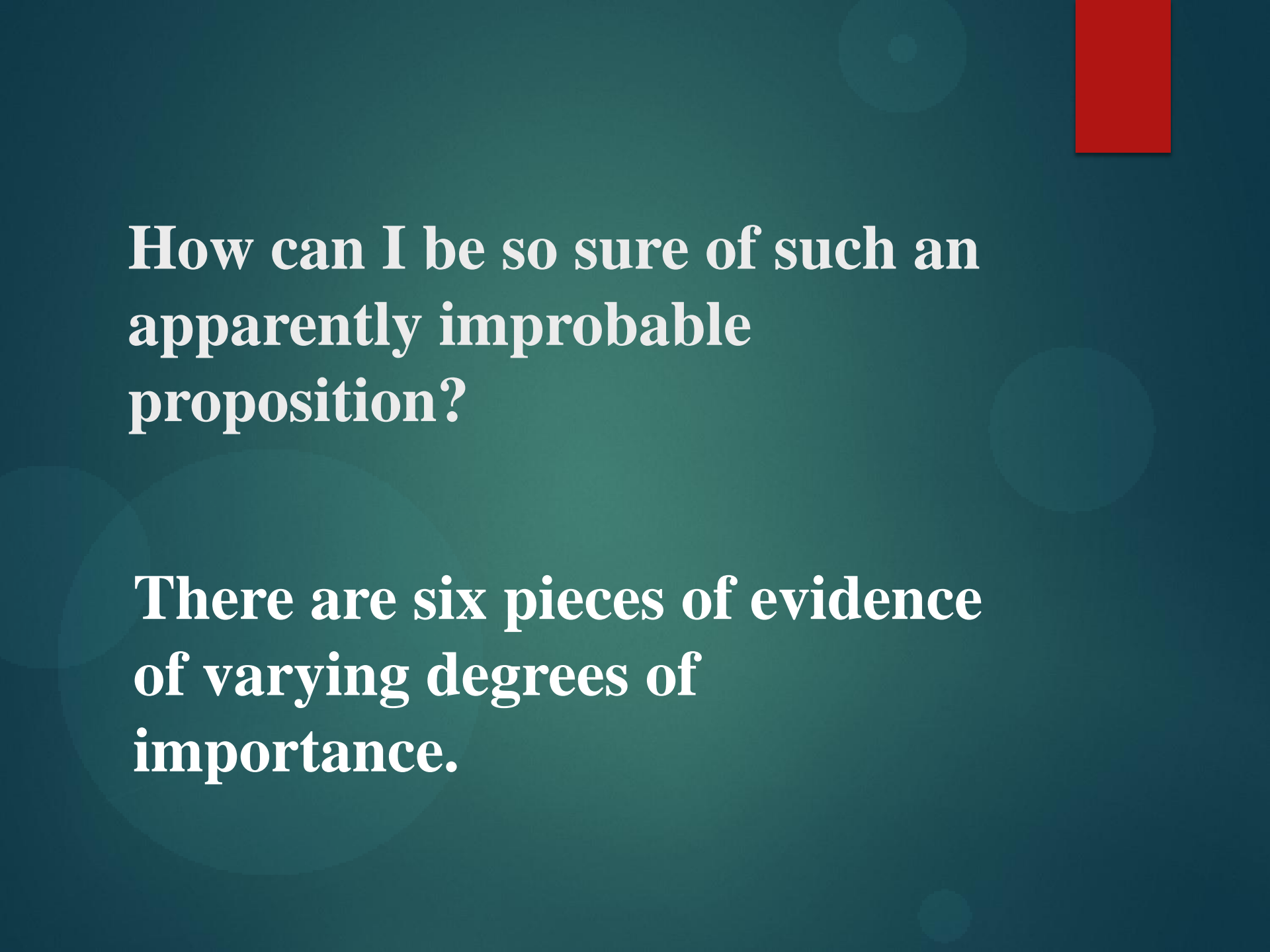
1. The droughts will just get worse and worse, for decades, unless dealt with, and

2. We can prevent that from happening.




**Soil
is the Cause of the Droughts--
the lack of Soil Organic Matter
and the resulting
hardening and crusting of the soil**

**For 2,000 years African farmers kept
their soil fertile by fallowing. But since
the 1980s, population pressure has
reduced farm sizes to the point that
fallowing is no longer possible.
Fallowing is now in its death throes.**



**How can I be so sure of such an
apparently improbable
proposition?**

**There are six pieces of evidence
of varying degrees of
importance.**

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1. Simultaneous start of the loss of organic matter and more frequent droughts in the 1980s.
 2. The penetration of rainwater in the soil after a 3- to 4-hour downpour.
 3. Rainwater infiltration reduction from about 60% to between 10 and 20%.
 4. My prediction, both in *The State of the World, 2011*, and in my last ECHO Conference here.
 5. Occurrence of both droughts and floods occurring in the same years, from Kenya to Malawi and Mozambique.
 6. Most important evidence is the impact of green manure/cover crops use.





What Can We Do?

The only solution is to build up the soil organic matter in farmers' fields.

There is not enough animal manure to do this, and compost takes far too much work. Green manure/cover crops, however, can produce over 25 t/acre of fresh organic matter each year. Have you ever in your life heard of any smallholder farmer producing even 10 t of compost in one year?



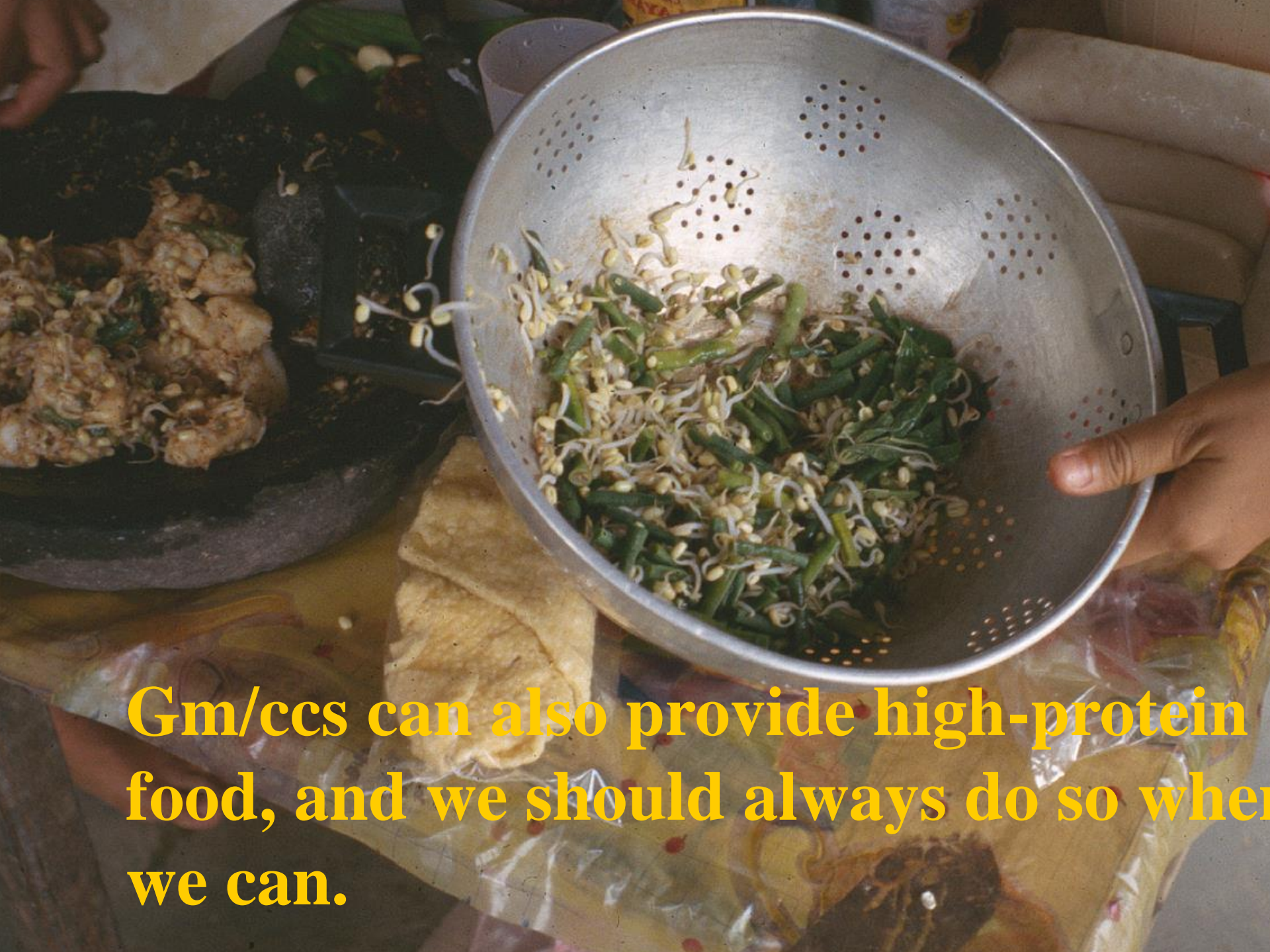
**What large amounts of
biomass can do.**

Advantages of Gm/ccs:

- 1) More soil organic matter and increased soil nitrogen, meaning greater soil fertility: up to 4 t/ha of maize, at virtually no cost (with no fertilizer).
- 2) High-protein food for people,
- 3) Dry-season fodder for animals,
- 4) Help in controlling weeds,
- 5) “Prohibition of droughts,”
- 6) Sequestration of atmospheric carbon, reducing climate change.

**Tropical
gm/ccs fix a
tremendous
amount of
nitrogen.
These nodules
are from one
single mucuna
plant!**





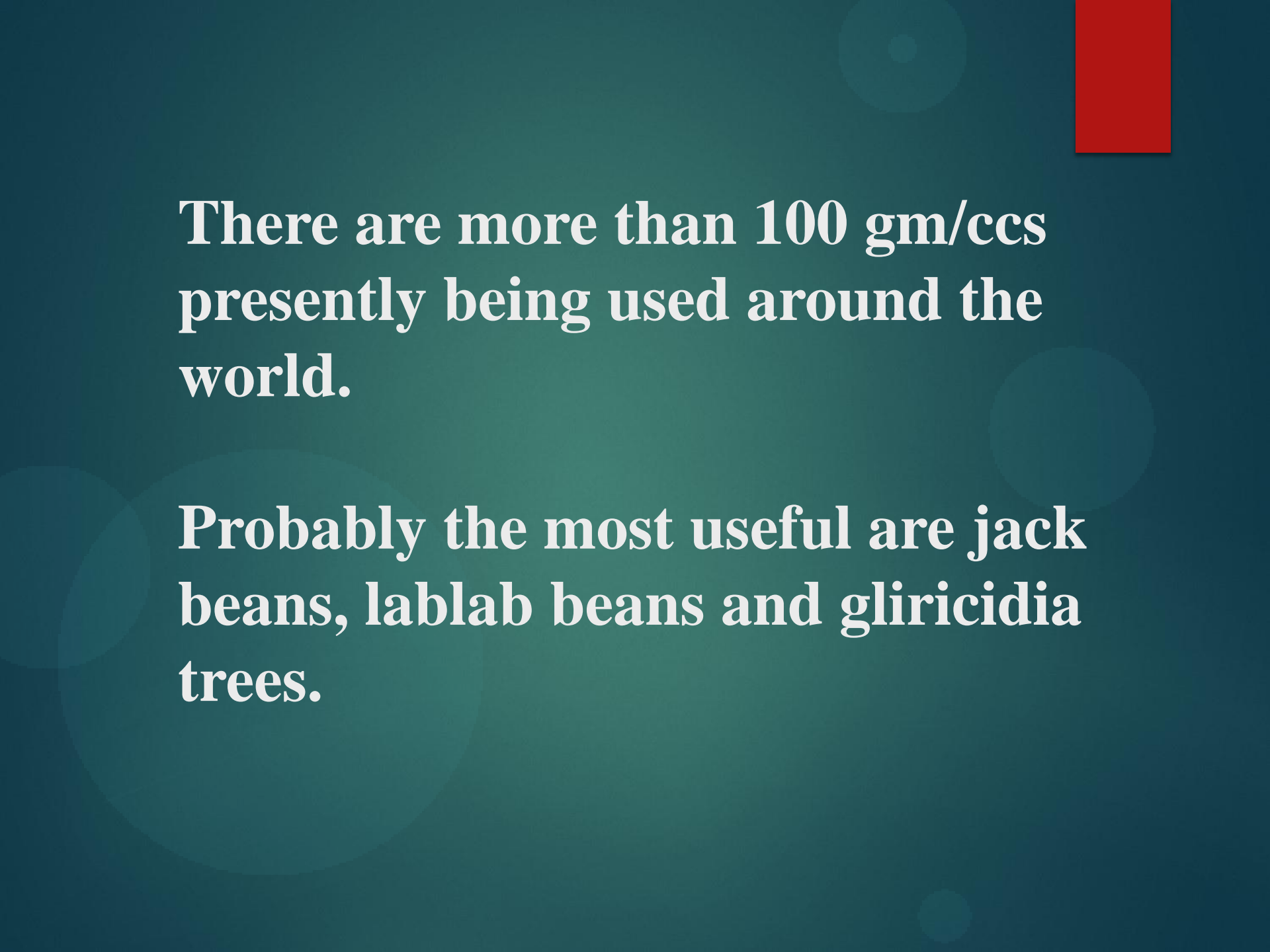
Gm/ccs can also provide high-protein food, and we should always do so when we can.

Conservation Agriculture and Gm/ccs

Why CA is almost never practiced on more than 1/2 ha:

1. Hauling organic matter to mulch the fields involves way too much work.
2. Weeds become more problematic.
3. Yields do not increase much unless there are droughts or fertilizers are used.

In Brazil, individual farmers plant tens of thousands of hectares of C.A. With Gm/ccs.



**There are more than 100 gm/ccs
presently being used around the
world.**

**Probably the most useful are jack
beans, lablab beans and gliricidia
trees.**

**The jackbean,
highly resistant to poor soils and
drought, is our best species for
recuperating wastelands.**




**It can also be intercropped
with maize, sorghum, millet
and cassava.**






Very drought-resistant, lablab beans can produce food and fodder right through the dry season. Fresh and dry beans, as well as the leaves, are edible and tasty.




Gliricidia can provide plentiful dry season animal fodder. It's dispersed shade will protect crops from increased heat for at least a century.



**We don't need to settle for ¼ ha of
Conservation Agriculture per farmer.
We don't have to settle for farmers'
experiencing painful droughts and
hunger every other year.**

**A group of us is establishing “Better
Soils, Better Lives,” which has as its
goal the doubling of basic grain
productivity of 70% of the smallholder
farmers in sub-Saharan Africa over the
next 30 years.**

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- ▶ **The most difficult part of introducing green manure/cover crops is deciding which species are best used, given the local diet, farming systems, markets, land tenure patterns, etc. For more information on these issues, come to the session this afternoon. Also, see my book, *Restoring the Soil*, 2nd edition, soon to be published by ECHO.**