

Industry Activities for Technology Transfer

The positioning of GM crops

Most governance of agricultural biotechnology works on the premise that biotechnology is about:

- Big science
- Applied by big industry
- To benefit big farmers
- In need of supervision by big government

The reality of Ag-biotechnology

- Most of ag-biotechnology research work is done in public institutions
- More than half the countries having ag-biotech capability are developing countries.
- Yet almost none of this publicly available technology has made it into the farmers hands.

➡ **It is not primarily a matter of technology**

Capacity gaps and capacity building

- Technology transfer is not a matter of technology push but of needs assessment.
- It is much broader than the natural science part. It includes creating the capacity to:
 - Manage the transfer of materials, methods and resources through research, product development, production and dissemination
 - Provide public governance of the use of the technology
 - Provide the information resources to allow informed acceptance of technological innovations that are seen to be relevant.

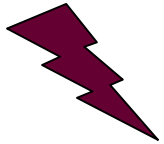
 **Tech transfer works better if it is demand driven!**

The role of industry

- What are the particular fields of unique expertise that the private sector can contribute?
- Do they meet gaps in the framework for developing country agriculture?

Gap analysis

- While there is a lot of good biotechnology **science** in the developing world, it does not seem to make its way to the farmer.
- The exception to the rule: CAAS in China.
- The causes for failure are multiple:
 - Lack of institutional infrastructure
 - Lack of management experience
 - Lack of link to the needs of the agricultural system.



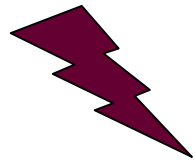
Human resources are usually NOT the problem!

Training people is important

- There is no shortage of people with extensive training in the developing world, **but**:
 - While they all have academic qualifications,
 - Most have good to excellent scientific knowledge,
 - Almost none have been trained in project management under the conditions relevant to their society

Are IPRs the limiting factor?

- The private sector has transferred a lot of technology **rights** to developing country projects:
 - Golden rice
 - GM applications in cassava, sweet potato, rice, potato, etc...



IPRs are not the constraint on tech transfer

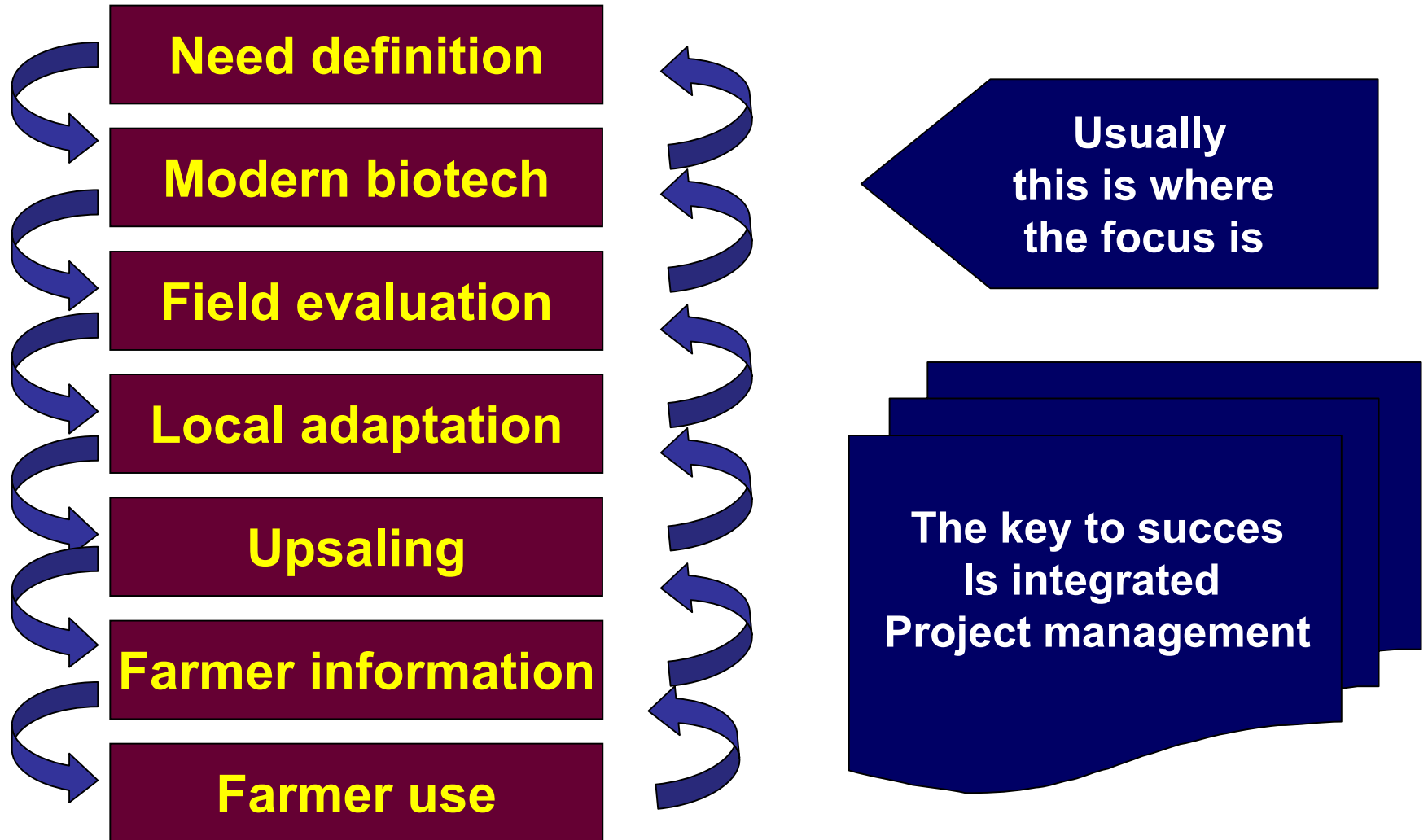
Barriers to success

- Most R&D in the developing world is institutionally fragmented:
 - Modern biotech is usually hosted by departments of S&T
 - Universities are usually hosted by ministries of education
 - Most agricultural research is hosted by ministries of agriculture
- The link between institutions **within** sectors is usually weak: they compete for very scarce resources.
- There is usually a negative bias towards public-private partnerships.

Creating successful projects

- A successful technology transfer project has to meet the following criteria:
 - Fill an unmet need in the receiving environment
 - Be sustainable in the local farming environment
 - Have a fully managed development path to the farmer
- Most transfer projects start from the other end: they represent solutions looking for a problem
- They lack a development plan through to the end user.

Elements have to fit together!



Can it be done?

- The key elements of successful technology transfer by the private sector are:
 - Product oriented project definition
 - Integrated project management
 - Technology elements

More work is needed to include the first two elements in project approaches!