

Data as Social Product:
Whose Numbers on India's Bt Cotton Count ?

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Overview

- Some, but not all, central questions in the global rift around “GMOs” should be amenable to empirical treatment
 - Studies of agro-economic performance have generated divergent numbers.
 - Studies from India come to diametrically opposed findings about Bt cotton: either the technology is scale-neutral and profitable for farmers of all size classes, or produces rural catastrophe – reaching the characterization “genocidal” in one prominent critique. Why?
- Method:
 - Meta-analysis impracticable
 - Alternative: Investigation of data volatility in the most controversial district in India by a multi-disciplinary team concentrating on plausible mechanisms at the field level.
- Conclusions: that widespread reports of “the failure of Bt cotton in India” – on agronomic, economic and environmental grounds – are not sustainable scientifically
 - But do have plausible connections to of actors
 - And may not be entirely instrumental
- Implications: Data from the field are social products, their connection to reality contingent on the social conditions – interests, relations, cognitive frames – in which their production is embedded.
 - Implications for the global debate about adoption of transgenics
 - Implications for barefoot distal positivism

Indian Context: Why Bt Cotton Matters

- Agrarian Crisis and Suicides
- India's cotton investment, and comparative failure
- Water, globally rigged markets, bollworms



The Official Narrative:

- Formal Sector Studies Studies:
 - Technology works in the fields
 - Reduced pesticide application for bollworms
 - Less damage to crops by bollworms
 - Is Economically Attractive
 - Higher profits
 - Scale neutrality or inverse relationship
 - Consistent with comparative findings

Table 1: State-wise Comparison of MMBL (Bollgard) Bt Cotton Outcomes

State	Bollworm Pesticide Reduction		Yield Increase		Increase in Net Profit	
	%	Cost (Rs)	%	Q/ac	%	Rs/ac
Andhra Pradesh	58	1856	24	1.98	92	5138
Karnataka	51	1184	31	1.36	120	2514
Maharashtra	71	1047	26	1.48	66	2388
Gujarat	70	1392	18	1.20	164	3460
Madhya Pradesh	52	889	40	2.2	68	3876
All India Weighted	60	1294	29	1.72	78	3126

Source: (ACNielsen 2004a:1)

Informal Sector Studies: Local Knowledge, Shallow Pockets

- Widespread rejection of formal-sector studies as instrumental and missing local variance
- Small-scale studies dictated by resources find failure
 - “every study in India carried out by citizens groups and government shows that Indian farmers are losing not just incomes but lives. In Madhya Pradesh, in Badwani, Khargaon, Dhar and Khandwa districts, almost half the 42 farmers visited reported that their crop had failed. Khargaon farmers faced total crops failure. In the other districts only one expected a yield of 12.5 quintals, the average yield expected by the others was 4.01 quintals, as compared to the 15 quintals promised by Monsanto-Mahyco. In Karnataka, 15 of the 40 farmers visited in Bellary, Sirippupa and Haveri/Dharwad districts, expected a total failure of their crops.” V Shiva 2006

Mechanisms

- Agronomic failure
 - Wilting, boll drop, staple length, root rot, etc
 - Externalities: Livestock deaths [2006-08]
- Economic failure
 - “High costs of cultivation and low returns from genetically modified seeds have trapped Indian peasants in considerable debt from which they are escaping by taking their lives. More than 40,000 farmers have committed suicide over the past decade in India—although the more accurate term would be homicide, or genocide.”

Farmer Behavior as Poxy

“Operation Cremate Monsanto” Failed

- Rapid and universal spread of Monsanto’s specific Bt technology (Cry 1 Ac) > wide-spread licensing
- Illicit appropriations of Bt technology by small seed firm Navbharat [“Robin Hood”]
- “Cottage industry:” farmer-bred Bt seeds > agrarian anarcho-capitalism
- Expansion of Bt technologies, indigenous and foreign (Fusion from China, eg): 137 legal hybrids, 4 events > intensively competitive market
sharp price reductions @ 60%
administered price for “trait value”

The Puzzle: Yield Measurement is not Rocket Science ...is it?

- Interests > Instrumental Science
 - Irreproducible results, non-transparent method vs distal science [Kandlikar 2007; Herring and Kandlikar 2008]
- Germplasm Roulette: Casual Measurement of the Independent Variable
 - Biological
 - Market
 - Regulatory

Counterfeit Seeds, Stealth Seeds

- Diffusion of illicit, unauthorized, unapproved transgenic seeds in informal sector
- Spread beneath the radar of both states and firms
 - Capacity? Winks and nods?
- Counterfeit vs Stealth Seeds: agency
 - Implications for
 - Biosafety
 - Bioproperty
 - Political feedback: biopolitics
 - Empiricism and Social Science: Naim; *Illicit*; Schendel and Abraham: *Illicit Flows*



LABEL

LOT NO.		CROP	1 HY COTTON
DATE OF TEST		GERMINATION (Min.)	80%
VALG. #/100 TO		WEED SEEDS (Max.)	10 / Kg
PURE SEEDS (Min.)	98%	OTHER CROP SEEDS (Max.)	10 / Kg
GENETIC PURITY (Min.)	90%	NET WEIGHT (DELUNTED)	450g

SEED COATED WITH POISON
DO NOT USE FOR FOOD, FEED OR OIL PURPOSES



WARNING
As per Seeds Act-1966, Section 24 custom farmer having transaction to produce any kind of Bawarandi
Multiplier sowing either in soil sowing directly, Seed content of this bag is solely produced by
Government for use only through sowing framework only all kind of commercial purpose

LABEL

TEST	CROP	UNIT
GERMINATION (Min.)	COTTON	100%
WEED SEEDS (Max.)		100 / Kg
OTHER CROP SEEDS (Max.)		100 / Kg
PURITY (Min.)		99%
	NET WEIGHT (DELETED)	500g

SEED COATED WITH POISON
DO NOT USE FOR FOOD, FEED OR OIL PURPOSES



गोल्ड
कवच

F1 हाईब्रिड कपास



153
400g.

गोल्ड





Are Bt Farmers Growing Bt Cotton?

- Dr. K.R. Kranthi [India's Central Institute for Cotton Research] found from their small-scale studies:
 - “on average, 28 per cent of the illegal seed brands are non-Bt. Among samples collected and tested by the CICR, only 26 per cent of the Bt cotton was true first-generation hybrid, while 46 per cent was contaminated with non-Bt cotton [Padma 2006].”
- Stone's ethnographic study of Warangal: “Bt cotton craze”

Consequences of Stealth Seeds: India

Destabilizing the Terminator Hoax.... But...

Incapacity of Biosafety/GEAC/Cartagena
institutions exposed dramatically

Puzzle of Movement Rationality

Conformity to Global Pattern:

Cp China, Brazil, Pakistan, Vietnam,
Thailand, etc.

Conclusion that social-institutional regulation
of agricultural biotechnology unlikely

Conclusion of Warangal Probe

- Bt cotton universally adopted
- Crop Failure predictably agronomically: thin soils and lack of irrigation in semi-arid area
- Adoption rates > 95%
- Large reduction in pesticides
- Higher net incomes
- Bt does not kill sheep.....

Data Slippage Specific to Warangal District -- Hypotheses

- Path Dependency
 - 2002 Excel cash compensation for cotton
 - Naxalite activity > Concessionary administration
 - Cash payments for farmer suicides resumed
- NGO density on the ground

Charitable Hypotheses: How the Opposition Got it Wrong

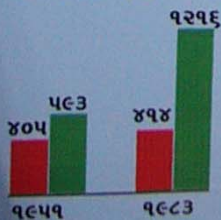
1. Advocacy Network Characteristics and Knowledge Flow

- Social relations: The *neta-chamcha* character of relations > Communicative Incapacity
- Class: Radical Freedom of Movement Leaders from the Dull Compulsion of Economic Facts: Controversy As Mode of Production
- Cultural Urban Bias: Distance of MC Activists from Agriculture and Agriculturalists > Agency

ખેડૂત : બજાર પરિબલોની કઠપૂતળી



કૃષિ અને
બિનકૃષિ ક્ષેત્રમાં
માથાદીઠ વાર્ષિક
આવક (રૂપિયા)



■ કૃષિ ક્ષેત્ર
■ બિનકૃષિ ક્ષેત્ર

Explaining Error cont'd

2. International Coalitional Dynamics:

- Reciprocal but Asymmetric Interests
 - The double authenticity dynamic
 - Brokerage: Indigeneity of “3rd World Intellectuals” > authenticity rents > audience shift and resonance
- Reciprocal but Asymmetrical Authoritative *Knowledge* [e.g. “Monsanto’s terminator gene”; Dead Sheep]
 - Combined with neta-chamcha trap > double-edged sword of excessive autonomy
- Global Rejection of Enlightenment Values/Science [Peer Review, Settled authoritative knowledge]
 - Celebration of Local Knowledge [s!] – with deep irony

THANK Q

CHEMICAL FREE VILLAGE

VILLAGE: **EENABAVI**

MANDAL: LINGALAGHANPURAM

DISTRICT: WARANGAL

IMPLEMENTING ORG: **CROPS** JANGAON

SUPPORTING ORG: AEI-LUXEMBOURG AND

CSA SECUNDERABAD

HIVDS

Master Frame: The “GMO”

- Bioproperty and Biosafety
 - Interdependent constructs
 - The latter a function of a cultural conjuncture
 - Enables state discretionary authority that is essentially arbitrary
 - Provides focal point: danger, risk, needful of special regulatory measures, surveillance and control
 - Cp MECH 12 below

The Terminator Cycle

- Patent on GURT 1998 [USDA/Delta PL] >
- Mobilization around “Terminator Technology” >
 - Addition of symbolic target: “Monsanto’s gene”
- No commercialization >
- Predictable failure of IPR >
- [Stealth] Pressure to enable GURT >
- New global movement to ban the Terminator > ?
- ? Terminator Technology, ironically

Movement Framing

- **Bija Yatra (2006): “Protect Seed Sovereignty and Community Rights to Biodiversity”**
 - “...resist globalisation and assert people's **sovereignty**”
 - Declare your region a **Freedom Zone** - make agriculture in your area **`patent-free'**, **`chemical-free'** and **`free from genetic engineering'**.”
 - “Form **seed sovereignty watch committees** to prevent the entry of hybrid and genetically-engineered seeds in your area.

Hypotheses/Puzzles

- Stealth seeds alter the *distribution of gains from technological innovation*
- Signal the *inability of governments to regulate biotechnology* > altering the biopolitics of opposition via biosafety
- Manifest *contradictions within opposition* on grounds of bioproperty
- Increase *opportunities for spurious seed hucksters*; authenticity in seeds more critical but less obtainable [agronomic anarchy]
- Illustrate *functional interdependence, hence alternatives*, to IPR in framing transgenics > quasi-monopoly rights if enforceable.
- Increase *developmental dilemmas* given segregation of global markets by GM-nonGM-organic distinctions
- Increase pressure for biological solutions to IP/Biosafety problems [GURT] aka *The Terminator*
- Decrease *knowledge of incidence, diffusion, effects* of rDNA crops as well as simple positivism: data as social product

Oppositional Conclusions: The Suicide-Seed Coalition

- “These seeds kill biodiversity, farmers, and people’s **freedom**—for example, **Monsanto’s Bt cotton**, which has already pushed thousands of Indian farmers into **debt, despair, and death**. Bt cotton is based on what has been dubbed “**Terminator Technology**,” which makes genetically engineered plants produce sterile seeds....High costs of cultivation and low returns from genetically modified seeds have trapped Indian peasants in considerable debt from which they are escaping by taking their lives. More than 40,000 farmers have committed **suicide** over the past decade in India—although the more accurate term would be **homicide**, or **genocide**.”
- **[Lok Swaraj Movement (2006) : “Giant seed companies like Monsanto enslave farmers and drive them to suicide by introducing seed that forces farmers to use their chemicals. Seed corporations like Monsanto are unleashing genetically-engineered seeds like Terminator, Bt Cotton, genetically engineered rice varieties, which could ...totally destroy agriculture and food security. Together, we can halt this catastrophe.”**

[RH emphasis]