

**Flachs, Andrew. 2019. *Cultivating Knowledge: biotechnology, sustainability, and the human cost of cotton capitalism in India*. Tucson: The University of Arizona Press. Paper ISBN 9780816539635, US\$29.95.**

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Seed selection and supply is the first decision a farmer makes, triggering a series of inter-connected decisions on planting time, irrigation, the use of pesticides and fertilizers, etc. Seeds involve important decisions because they will also affect a farmer's financial and social standing in her community. It will also determine whether her field is looked at with pity, or envy.

How do farmers make decisions on access to seeds, and seed sourcing and supply? What are the informational and normative bases of their decisions? Are these bases agnostic or sensitive to whether or not these seeds contain the latest technology, or to their being organic? These questions have interested social scientists of a varied hue over the past decades. The conventional view, following rational choice theory, is that farmers weigh in the evidence before them and select the seeds that promise the largest profit. Andrew Flachs' latest book *Cultivating Knowledge* challenges this view by showing that farmers' ability to make evidence-based seed choices is severely constrained in neoliberal economies as farmers have progressively lost knowledge – and control – of seed production.

Set in the context of the introduction of genetically modified (GM) cotton seeds in India in 2002 by the multinational Monsanto, and the almost synchronous launch of organic farming programs that by definition have to be non-GM, Flachs' is a brilliant, nuanced, well-researched and theoretically informed account of how farmers learn about new seeds and how farmers make planting decisions. *Prima facie* the GM and the organic cotton seeds appear different. One is the product of multinationals and is linked to a package of industrially-produced chemicals; the other is supposedly the exact opposite – seeds that farmers can save and grow using cow manure. Flachs shows that their differences are cosmetic in most respects. Seeds used for producing organic cotton are merely the non-GM versions of the usual hybrids that are marketed by seed companies. They are not farmer-developed and saved seeds. Instead, these seeds are provided to the farmer by the companies that have recruited organic farmers for their projects. As such, farmers' choice is limited (Flachs 2016).

More importantly, argues Flachs, both types of seeds deskill farmers. When farmers save seed for the next planting, they carefully select from the available diversity in their fields. To do so, they have to know and understand seed characteristics and must have an advanced ability to predict their seed's performance in the next season from its phenotypic characteristics. But what happens when farmers no longer save seed and instead source it from companies or development programs? Since 2002, around 1,200 'new' GM seeds have been marketed by seed producers in India. This 'choice overload' leads farmers to quickly move from one seed to another. Even popular seeds are replaced after a year or two of planting. Farmers do not spend enough time with a seed to permit careful evaluation. Thus, instead of relying on their own experience, farmers end up choosing seeds based on company advertisements and seasonal fads.

Flachs distinguishes between environmental and social learning and argues that it's the latter that dictates farmer's seed choices. Based on hundreds of interviews and field observations during four consecutive planting seasons in Warangal district of Telangana state in India, he observes that a seed's yield in the previous year is a poor predictor of whether or not it will be planted this year because farmers do not keep yield records, and switch seeds quickly. Instead, a seed's presence in the neighbor's field, or a recommendation from the local vendor is a good predictor of its continuing use. Thus, farmers have a disengaged relationship with their seeds. Ultimately, their seed choice becomes a matter of hope more than anything else.

The case of seeds in organic production is hardly different. Far from being products of years of farmer experimentation and observation, they too are selected for the farmer by organic certifiers and development projects. Flachs' farmer respondents were provided with only two hybrids to choose from. Actual cultivation was also subject to a rigorous auditing regime. Since organic value chains are based on trust, organic certifiers ensure that farmers' praxis corresponds to the standards and norms of organic cultivation. A process of deskilling and loss of autonomy is discernible here as much as it is in the case of GM seeds. Flachs notes that

"Farmers in both contexts, for different reasons, have learned to interact with cottonseed as branded commodities outside their expertise" (p. 42). Organic farming in Warangal district was equally integrated into global value chains. Like so much else, it has become yet another example of capitalism's remarkable capacity to transform its critiques and its critics into opportunities to make money.

Both types of seeds have a sustainability claim, and promise to address the Indian agrarian distress popularly associated with farmer suicides. Flachs, however, demands a clearer and more precise definition of sustainability before these claims can be settled and promises can be evaluated. He rightly asks the question: sustainability for whom? In other words, what is the social referent and the temporal horizon of sustainability in the case of GM and non-GM seeds? Is sustainability to be measured merely in terms of a stable yield year after year, or is farmers' autonomy and knowledge about seeds also relevant? This knowledge is not something that reproduces itself automatically. It has to be sought, acquired, cultivated, refreshed, calibrated and internalized through practice before it lends itself to use. It is this knowledge that is lost in both GM and organic agriculture.

Farmers know this, and still they continue to buy new GM seed brands every year and source their non-GM versions from development programs for organic cultivation. "What else, farmers have told us, can they do?" (p. 30). Flachs thinks they live in bad faith. But is this an example of Sartrean 'bad faith', or an expression of farmer helplessness and resignation in the face of inescapability? I think it is the latter.

Flachs does not frame his discussion of GM and organic seeds in terms of what Claude Levi-Strauss calls 'the binary opposites', one of which is privileged over the other (1955). Instead he situates GM and non-GM organic seeds at different locations along a spectrum of farmer deskilling, loss of autonomy and integration into global value chains in a neoliberal framework. There is nothing about GM or organic seeds *per se* that is damaging to farmers' knowledge or environmental management. Nevertheless, the neoliberal reorganization in rural India systematically devalues farmer knowledge in favor of commodified knowledge coming from Western laboratories and farms.

*Cultivating Knowledge* is a continuous dialogue between the local and the global. Frequently, a quote from a low-caste farmer in Warangal is followed by a reference to Monsanto's global business strategy. The latter provides the context to the farmer's action (or distress) and thereby illustrates how the global translates into the local. Farmer suicides are similarly not reported as an individual's response to agrarian distress but as a performance to local, national and international audiences.

In telling the story of GM and organic seeds in India, Flachs presents a beautiful mix of anthropology and political ecology. He takes a dialectical approach. There are no heroes or villains. Each turns into the other sooner or later. He doesn't take sides. Instead he traces a contradiction: the contradiction between technological fixes and the quest for sustainability, however it is defined. In doing so, he uses the denaturalizing lens of political ecology while examining aspects of farmer practice that appear logical, necessary, inevitable and material, and uses anthropology's attention to detail and the ordinary, and the nuance of human-human and human-environment interaction.

One wonders, however, if Flachs' yield comparisons of GM and organic farming are useful given that (as he himself notes) farmer costs are different in either case. Wouldn't farmer profitability, rather than yield or productivity, be a better criterion to judge farmer wellbeing? Occasionally Flachs invites his readers to move away from a yield-centric economic view of GM and non-GM crops and to understand them in the context of farmers' knowledge, choices and autonomy. But even here he anchors his argument on yields rather than profitability.

Flachs' ultimate objective in writing this book is to initiate a larger conversation about fundamental questions, such as: Do we really need to produce so much cotton? Does the search for sustainability mean anything in a neoliberal framework? Why should India spend public money to develop hybrids when they do not confer any advantage other than to discourage farmer's seed-saving? Is it good policy to promote hybrid seeds that respond well to irrigation and fertilizers in a country where most farmers are smallholders with limited access to either? Why is suicide, rather than rioting, the dominant – in fact exclusive – response to agrarian distress?

*Cultivating Knowledge* thoughtfully concludes as follows:

If the ultimate goal of farming is to produce as great a quantity of agricultural commodities as possible, then organic agriculture is a failure. If the ultimate goal of agricultural development is to uplift precarious farming communities, then it is reasonable to suggest changes that incentivize rural stability over yields. Organic cotton agriculture is one pathway to accomplish this in Telangana, although it is not the only solution, and not always the best. Bt cotton sold through cooperatives and planted as part of an IPM system may be another. (p. 192)

## References

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