

# Saving Seeds or Saving Face?

Seed Acquisition Mechanisms among Farmers in Jharkhand, India and *sui generis* Protection

November 2004

Janak Rana Ghose<sup>©</sup>

## ABSTRACT

Much of the debates surrounding private ownership of seed for agricultural purposes of late have focused on the need to protect the right of farmers to save, reuse, sell, and exchange seed, broadly termed as farmers' rights. However, recent changes in seed acquisition among some farmers have provided catalysts to question whether or not the debate on farmers' rights is still as relevant as previously imagined, at least to the extent that it is considered to be in the current literature. This is further based on the wide breadth of literature that claims that the majority of seed available for use by farmers are sourced primarily from farmers' own stocks; that is, saved seed. This paper argues that, based on recent trends among farmers in the state of Jharkhand, India, the amount of farmers that exclusively save seed for their livelihoods has been greatly exaggerated in the current literature. The paper further argues that the India's *sui generis* plant variety protection legislation, the Protection of Plant Varieties and Farmers' Rights Act (2001), while unique in its' balance of both farmers' and breeders' rights, is ineffective in protecting those farmers that do choose to save seed, especially those who choose to save seed that is "branded".

## 1. INTRODUCTION

The ownership of plant genetic resources has become a focal point for discussion within debates relating to mechanisms of protection over these resources. Many of these debates focus on how domestic regulation relating to intellectual property rights (IPR) should be formulated, particularly within the context of the minimum standards presented by the World Trade Organization (WTO). Concerns relating to ownership, either formal or informal, have arisen primarily because of the substantial monetary incentives that exist for the assertion of private ownership due to the exclusionary nature of IPRs. Within the context of agriculture, the ownership of seed has received a significant amount of attention within these debates. Much of the debate begins with an assumption that within developing or primarily agrarian economies, farmers save a significant portion of the seed that they plant, and that correspondingly, the majority of the seed that is used by farmers are from farmers' own saved stocks<sup>1</sup>. As a corollary to this, these parties who accept this assumption further argue that as the majority of seed is sourced from farmers' saved stock, the entrance of other seed providers within the market threatens the food security and livelihoods of farmers, as a sustainable source of food and income becomes replaced by a market driven commodity that is acquired not via saving, but via purchase. As a result, it is argued efforts should be made to ensure that this supply is protected via providing incentives to continue sowing these saved seeds, and the right of farmers to do so must also be protected. It is alleged that failure to do so with threaten two things; first, the food security of farmers, and second, the base of biodiversity that forms the basis for future plant breeding exercises, either by traditional Mendelian methods or through genetic modification.

---

<sup>©</sup> This study was conducted while the author was a Centre Intern with the International Development Research Centre (IDRC), 250 Albert Street, Ottawa, Ontario, Canada K1G 3H9, and Gene Campaign, J-235 Sainik Farms, Khanpur, New Delhi, India 110062. All comments can be forwarded to ranaghose@gmail.com.

<sup>1</sup> There are various citations in the literature that allege this figure (i.e. between 70%-85%). See for instance Swaminathan (1998), Lambrecht (1998), Shiva (2002), or Sahai (2003:5).

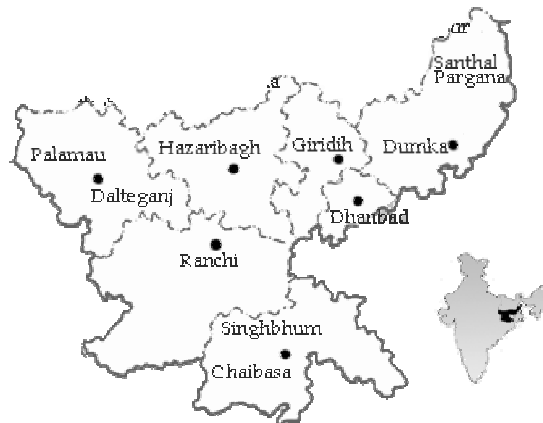
This paper does not allege that these potential consequences are not worth consideration. Indeed, if it were indeed the case that the majority of farmers' seed was sourced from farmers' fields, then surely, protection of these varieties would be of paramount concern. However, it is argued here that the underlying assumption outlined earlier is false. Recently, farmers have begun to acquire more and more seed from the private sector, primarily due to the higher yields that these varieties offer. Arguments relating to this high proportion of seed being sourced from saved stock may have been valid five years ago, but recent advances in seed technology that allow particular traits to be expressed far more successfully, the expanded breadth of markets that the private sector has been able to reach, and the demand among farmers for these newer varieties have all played a role in changing this acquisition mechanism.

This paper focuses on this acquisition mechanism in more detail, in an effort to shed light on what changes have occurred among the demand side of the seed market, why they have occurred, and what consequences this shift in consumer behavior will have on farmers in India. It also provides a pragmatic analysis of the relevant aspects of the Indian piece of legislation aimed at protecting farmers' rights, and considers its' efficacy and relevance in light on this acquisition mechanism.

## 2. SCOPE OF STUDY

Geographically, the area chosen for this study has been the newly formed state of Jharkhand, erstwhile Bihar, in India. Of the total population of 26.91 million, almost 80% of the inhabitants live in rural areas; of the total labour force, nearly half are engaged in agricultural activities. Nearly 30% of the population are tribal, or *Adivasi*; indeed, this significant minority was the catalyst for the formation of Jharkhand as an independent state in November 2000.

FIGURE 1: THE STATE OF JHARKHAND



The study was conducted in five districts; Ranchi, Palamau, Latehar (Daltonganj), Hazaribagh, and Giridih. One exception to this is the city of Hajipur, located about fifteen kilometres north of Patna, the capital of the state of Bihar. Hajipur is a major centre of seed for Bihar, as well as the surrounding states of West Bengal, Uttar Pradesh, and, of course, Jharkhand. Three hundred farmers were interviewed, either on a one on one basis or in groups of five to twenty farmers<sup>2</sup>.

<sup>2</sup> In terms of gender, explicit attempts were made to solicit responses from men and women equally. However, it must be stated that responses from women required additional effort on the part of the author, as opposed to responses from men, which came relatively easily. Women often felt less willing to participate in discussions, particularly when in the

These three hundred farmers were spread over sixteen villages. Aside from farmers, ten scientists at the state agricultural colleges, ten state and private sector plant breeders, and members of ten civil society organizations were also interviewed. Finally, the comments of various individuals from both intergovernmental (i.e. FAO, WFP) and governmental organizations (i.e. ICAR) elicited at various conferences were also taken into consideration.

Jharkhand was chosen as a geographic focus for a number of reasons. **First**, the rationale for this newly formed state was to give more autonomy to the *Adivasi* population; there are, correspondingly, a significant proportion of *Adivasi* communities in Jharkhand, and the type of agriculture practiced within these communities is, historically speaking, more rooted in traditional practice (i.e. saving seed, using little to no commercial factor inputs). **Second**, the author had been fortunate enough to work with an organization, Gene Campaign, which has extensive applied experience working in Jharkhand; making contacts both at the village level as well as at the state level was simplified, as were logistical details such as travel and translation. **Finally**, there is a dearth of literature that applies to Jharkhand, both due to its relatively recent formation, as well as the remote conditions that many of its inhabitants live in.

With this in mind, it should be pointed out that the observations stated here apply to Jharkhand, and certainly not to India as a whole. India hosts an incredibly diverse mix of agro climactic conditions, cultures, and landscapes; to extend these observations to the rest of the country would be inaccurate. However, there are certain aspects of the observations that could successfully be extended to other areas of India due to similar geography and ethnic composition (i.e. Chhattisgarh, parts of Madhya Pradesh, the Purulia district of West Bengal).

### 3. SEED DYNAMICS

Farmers acquire paddy seed from a variety of sources; from the **private sector**, the **public sector**, from **civil society organizations**, via **exchange** with other farmers, and from **saving** their own seed. Yet at the same time, to delineate it as such is somewhat misleading, as very few farmers acquire seed from only one of these sources. Most farmers (with the exception of some *Adivasi* farmers) acquire seed from a number of places. There are a number of factors which influence where seed is acquired from; proximity to the market, income, availability of seed (both new and older varieties) within the community, and the efficacy of the state agricultural extension system. The relevance of these factors will become clearer after consideration is lent to the characteristics of the four sources mentioned here.

Before discussing seed acquisition in detail, an identification of the types of seeds is required, as not all seed can be saved<sup>3</sup>.

TABLE 1: THREE TYPES OF SEED AVAILABLE TO FARMERS

Type of Seed	Characteristics
Hybrid	Cannot be saved; progeny requires constant mating of two parental varieties. Typically provides the highest yields.
Composite Variety	Can be saved, but productivity diminishes over time. Typically saved and replanted for three years. Typically provides

---

company of men. To accommodate this, women were often interviewed separately and with the assistance of a female as opposed to male translator. By this way, equal representation of both men and women was achieved. Thus, when "farmers" are referred to as a broad group, the reader can assume equal representation in terms of the analysis presented here, unless explicit mention is given to one gender or the other.

<sup>3</sup> Note that when describing the magnitude of yields, generalizations are avoided by qualifying the level with the word "typically", as all seed is subject to a wide variety of both biotic and abiotic stresses which result in some level of variation in the context of yield.

	medium to high yields.
Local/Indigenous Variety	Can be saved indefinitely, typically of lower yield.

Major changes have occurred with respect to seed acquisition within the last five to ten years. Many of the farmers interviewed had only recently given up growing local varieties of rice and vegetables; in some cases, as recently as two years. The major rationale given by farmers for ceasing to grow these varieties was based on their lacking performance compared to newer varieties. That is, the yields of hybrids and composites as opposed to local varieties are typically (but not always) greater. While local varieties are capable of producing yields on par with those of hybrids and composites, in the absence of irrigation (as is the case in most areas that source water for irrigation from the rain) it is rarely the case.

At this point, a crucial distinction requires attention; when referring to the practice of farmers saving seed, explicit mention is required of precisely **which kind of seed farmers are saving**. Much of the extant literature discusses seed saving without explicit mention of the types of seed being saved. Farmers only can save two kinds of seed; composite, high yielding varieties, or local varieties. The former are purchased regularly, anywhere from every two to three years, while the latter can be saved and reused indefinitely. Given the fact that composites are initially purchased, it would be incorrect to state that those farmers who save such seed do not buy seed. Rather, those farmers who save seed may be saving one of these two types of seed, and if they are saving the former, they still purchase them on a regular basis. Broadly speaking then, those who save seed do not necessarily depend solely on local varieties for their seed requirement; these farmers do engage in the market for their seed requirements on a regular basis, as their use of composite varieties indicates. Indeed, the majority of those farmers interviewed for this study purchase composites, and while these are indeed saved, they are not saved indefinitely as their performance becomes marginal, typically after the third year of reuse.

### 3.1 The Private Sector

In stating the private sector, reference is implied to those parties outside of the public sector that offer varieties of seed on the market. Typically, the medium by which private sector seed is made available is via stalls in villages and urban centres that sell not only seed, but also fertilizers, pesticides, and other such factor inputs. These stalls generally do not have a formal relationship with the firms who sell the seed (i.e. as an “authorized” retailer), but rather are entrepreneurs who purchase the seed either directly from the suppliers, wholesalers or farmers themselves for resale. Those who purchase from wholesalers and suppliers directly are typically larger in terms of volume and the turnover they manage; smaller sellers often purchase the seed from the larger sellers and resell the seed in smaller quantities. These smaller sellers caters to a significant portion of the market, as many potential buyers often do not want or cannot afford to buy large packets of seed. Also, these smaller sellers also sell local varieties of seed, either from their own farms or from other farmers with whom they have cultivated relationships with, by kin or by other means. Generally, these resellers add on 20% of their cost to their price (i.e. if it costs a small reseller INR 100 for the seed, he will charge INR 120 and keep INR 20).

In terms of pricing, similar mark-up practice occurs within the larger seed sellers as well; often, “branded” seed is merely seed that is purchased at a fixed rate on an annual basis from farmers with whom firms have had long term relations, and is then repackaged under their brand name. There is, however, no mention or recognition of this on the package of the seeds themselves. Profit margins in these cases are far higher than in the case of the smaller resellers; branded seed acquired at wholesale rates for this study indicated a discrepancy between cost and retail of

approximately 400%; that is, while the retail price may have been INR 120, these seeds at cost were closer to INR 30<sup>4</sup>.

This guarantee is a requirement for all “registered” varieties. However, registration within this context is distinct from any registration within the context of IPRs. Registration of seed results in a “Truthful Label” that can be found on the back of the package of all registered seed. This registration is given by the State Department of Agriculture; but all the registration implies is that the seed was germinated at State labs and determined to be of passable quality. The label states a minimum level of germination, physical, and genetic purity, when it was packaged, and a disclaimer indicating that the guarantee only applies if one stores the seeds as indicated<sup>5</sup>. Beyond this, there are no forms of IPR protection available to the seller of the seed. One could conceivably open a branded package, repack it under a different name, and sell it with no legal concerns of infringement on any “registration”<sup>6</sup>. Since the genetic blueprint of the seed is not recorded for the majority of these varieties, formal ownership often does not exist.

In terms of contracts or agreements between farmers and seed suppliers disallowing the saving of seed (as is often the case in industrialized farming), this study found none in Jharkhand. Thus, farmers are currently not subject to any penalty for saving or selling seed that was originally purchased from the private sector. Farmers are free to save and sell seed where possible, and do. Yet ultimately, excepting those farmers who only grow local varieties, seed has to be purchased somewhere along the line, and if it is not from the private sector, then the public sector.

### 3.2 The Public Sector

During the Green Revolution of the early 1970s, India adopted a program with consultation from the Consultative Group on International Agricultural Research (CGIAR) to develop high yielding, composite varieties of crops, primarily wheat, rice and maize. These varieties are predominantly of paddy, often IR-36 and IR-64<sup>7</sup>. With regards to public and private sector breeding, the different classes of seed that exist in Indian commercial seed production require some explanation.

**TABLE 4: CLASSES OF SEED AS DETERMINED BY PUBLIC SECTOR BREEDERS**

Class Of Seed	Characteristics
Breeder Seed	This is the original seed produced by the breeder, either an institution (i.e. an agricultural college) or an individual. These seeds must be genetically pure.
Foundation Seed	Using Breeder Seed, Foundation seed is then multiplied on government farms, experiment stations, and agricultural universities. Foundation seed has strict controls for genetic purity.
Certified Seed	Using either Breeder or Foundation Seed, Certified Seed is then collected and sold commercially.

Source: Singh (1993)

<sup>4</sup> This conclusion assumes the wholesale rate as a proxy for cost and does not consider the additional costs incurred in providing seed, as they were not available. Thus, it is not to say that profit margins approach 400%, but that the magnitude of the profit margin is certainly higher than that of smaller resellers.

<sup>5</sup> Ironically, the storage instructions indicate that seed should be stored at 18 degrees Celsius, and if seeds are not stored in this way the germination information is rendered invalid. Such temperatures rarely occur during an Indian summer, and, depending where in India one is, it is unlikely to occur regularly in the winter either.

<sup>6</sup> This conjecture is strengthened by similar conclusions from private sector firms interviewed here, as well as officials within the State Department of Agriculture in Bihar and Jharkhand.

<sup>7</sup> The International Rice Research Institute (IRRI) in the Philippines developed these varieties of rice. IRRI is one of the sixteen agriculture, forestry and fishery research centers that are part of the CGIAR system. The two varieties mentioned here are not only used in India however, but in many countries.

Raw genetic material in the form of local varieties grown by farmers is acquired by public sector breeders via exchange. That is, breeders, for instance those at Birsa Agricultural College in Ranchi, the capital of Jharkhand, developed drought tolerant varieties of finger millets by exchanging varieties they had developed with those grown by local farmers for centuries. These local varieties were then used to develop improved varieties of finger millet, which are then made available to farmers on the market or via block development officers<sup>8</sup>. Farmers are willing to exchange their varieties for new ones as they acquire improved varieties at no cost during the initial exchange; the exchange is done on a one to one ratio<sup>9</sup>. Breeders visit farms, select the most promising varieties from standing crops, and acquire them via exchange for new varieties. This raw genetic material is then analysed to determine its' characteristics by the breeder, and once the characteristics have been formalized, is referred to as nucleus seed. As far as the breeders interviewed here are concerned, once this identification occurs, ownership is transferred from farmer to breeder; if not technically via some formal IPR, than at least in informal practice and recognition. Nucleus seed is then directly used as a parent in creating an improved variety, is mutated via gamma rays or other methods to encourage specific traits, or is purified via further cross breeding. After this nucleus seed is improved upon by one or some combination of these three methods, the seed then is considered to be breeder seed. Nucleus and breeder seed can change hands from institution to institution, and if this occurs it is priced at a fixed rate as determined by the government on an annual basis.

Once the breeder seed has been successfully propagated, it is referred to as foundation seed. This is then handed to the department of agriculture at state levels, agricultural universities, or private sector seed firms for further propagation. After successful propagation, the seed is considered certified. This is then distributed to the National Seed Corporation as mandated by the Seed Act, and is provided to private sector seed firms, block development officers, or civil society groups for final dissemination to farmers. While breeders at the agricultural universities surveyed for this study explained that the block development officer was to offer this seed to farmers at a subsidized rate (or free of cost in the case of the varieties of finger millets developed by Birsa), the farmers interviewed here never received these seeds at the subsidized rates indicated by those breeders interviewed. More than likely, corruption at the block level restricts farmers from receiving these seeds at any subsidized rates, with block officers collecting fees for their own benefit. Indeed, farmers complained about the lack of subsidies and had diminished faith in the sincerity and effectiveness in the government due to this.

### **3.3 Farmer to Farmer Exchange, Lending, and Sale**

Farmers exchange seed within their own villages, but also outside of their villages as well. While the former is facilitated via personal relationships that may predate the age at which farmers began to practice their trade, relationships outside the village are either cultivated via similar patterns as those within the village, but more often by marriage. Women almost always marry outside the village; connections are forged between families in this way, and if the family of the bride in one village has seed that is of interest to the family of the groom in another, exchange may occur. For the most part, these exchanges are on a one to one ratio, often regardless of the

---

<sup>8</sup> The role of the Block Development Officer, or BDO, is to ensure that the development plans as directed by the state are implemented at the village level.

<sup>9</sup> There is no formal material transfer agreement between the two parties, namely breeders and farmers. While the question of formal ownership has never really been given any practical application among these varieties to date, emerging IPR frameworks may change this. Indeed, at this point, even the certified seeds developed by these public institutions are not protected by any kind of formal IPR, and they are not individually catalogued by their DNA as it is an expensive and time consuming process to do so.

quality of seed<sup>10</sup>. A bride from one village will also bring with her a quantity of rice to present to her new family; typically, these varieties are chosen on the basis of high quality, and can be composite, hybrid, or local. The amount varies depending on what the family of the bride can afford, and in this study was found to be anywhere from one to thirty kilograms.

Farmers also sell seed to each other, although less often than purchasing directly from the market. Typically, the prices of the seed are on par with the market. Wealthier farmers who have the capacity to do so will often make the trip to larger seed markets in urban centres to buy the latest varieties, and will sometimes disseminate these seeds to other farmers, by selling or lending. Farmers may lend or sell seed to each other, but not necessarily with interest or for profit<sup>11</sup>. Rates of interest vary from between 5-10% per month, or not at all depending on the agreement between lender and borrower. Often farmers will simply help each other out, and will not ask for any interest, or will request repayment in kind.

### 3.4 Saving Seed

As mentioned earlier, all seed with the exception of hybrid varieties can be saved, though generally with diminishing returns over time; composite varieties of paddy are generally only saved for three years; some wealthier farmers do not save these at all due to their limited capacity to perform over time. Thus, when considering saving seed, a distinction must be made between newer varieties (i.e. composites) and older varieties (i.e. indigenous varieties that have been saved, sown, harvested and used again for years).

With respect to traditional varieties, saving seed appears to occur as a function of two factors; one being the size of the landholding, and the other being income. Those who do save indigenous varieties lie at opposite ends of both these spectra; they either do so out of necessity (i.e. minimal financial resources), or out of some sense of “luxury” (i.e. wealthier landowners who have thirty acres of land or more at their disposal can afford to sacrifice some land which could grow higher yielding varieties to those local varieties that yield less). In addition, while those who grow them out of necessity do so because their choices are limited, the latter group of farmers grow them purely because they want to. This delineation raises the question; if a wealthy farmer can afford to buy high yielding varieties of seed on a regular basis, why would he or she choose to grow local varieties that typically yield less? There are a number of factors.

#### **BOX 1: REASONS GIVEN BY FARMERS FOR GROWING, SAVING AND SELLING LOCAL VARIETIES**

- Free of cost; no need to buy seed on a regular basis;
- Better taste; vegetables and rice are considered tastier and more fragrant;
- Pride and ownership; the seed has a long history within communities;
- The straw is preferred by farm animals, as opposed to hybrid/HYV straw;
- Additional inputs such as pesticides and fertilizers are not absolutely necessary;
- Traditional aromatic varieties of rice command higher prices at the market.

---

<sup>10</sup> The fact that exchange occurs on a one to one ratio surprised the author; a rational agent (in terms of classical economic behaviour) would presumably price the seed according to the implicit value it offers in terms of yield and other characteristics. However, as with many other aspects of seed movement, classical notions of economic rationality do not apply. Farmers often are motivated to offer seed on a one to one ratio purely due to the fact that it would help another farmer out. While it may be naïve to simply attribute this behaviour to benevolence alone, it cannot be ignored as a factor, perhaps the main factor.

<sup>11</sup> Usury is not allowed in Islam; thus Muslim farmers will not lend for money. This is not to say they do not lend; if they do they will either ask for the full amount to be paid back by a specified time, or will take payment in labour during harvest.

Beyond the fact that saving local varieties can be done at no cost to the farmer, indigenous varieties of seeds have existed since, in some cases, time immemorial. Many of the farmers interviewed for this study have had family living in the same village for upwards of four hundred years. They themselves are no longer exactly certain where the seed originally came from, but they do know that the seed belongs to their community, and that sense of ownership is a major contributing factor to their growing these varieties. There are more pragmatic reasons as well; often farmers feel that local varieties taste better, and that the animals (i.e. cattle, goats) reared by farmers prefer the chaff that results from harvest as fodder, as opposed to that which results from newer varieties.

### 3.5 Three Case Studies

In order to better characterize the observations, consider the following three case studies. These are based on three actual sets of interviews, and have been selected to represent three strata of farmers; marginal (less than 5 acres, usually on the lower end of the spectrum), medium (between 5 and 20 acres) and large (20 acres or more)<sup>12</sup>. These should be considered with the following state wide statistics in mind; 46% of all farmers own less than two hectares, 21% own between two to five, and 32% own more than five.

#### CASE 1: A SMALL LANDHOLDER

Nandalal Ekka owns three acres. He lives in Meeru village, about 15 km from Hazaribagh; about 7000 people live in his village. He grew only local varieties of paddy until about ten years ago; since then, he has stopped growing these varieties. Mr. Ekka could not support himself or his family growing local varieties alone, and would have to take up seasonal labour in lean times. Since adopting newer varieties of seed, he now claims to have more food for his family, and does not have to work outside the village. He now has a small tailor shop in his village to supplement the income he makes from selling vegetables; he consumes all the rice he harvests. For the most part, he mainly grows rice, but to a very limited extent he grows maize and wheat as well. For vegetables, he grows potatoes, cauliflower, tomatoes, spinach and coriander. He saves some of the vegetable seed for himself, but he does not sell these varieties as he feels there is not sufficient demand on the market. According to him, "they taste better, but they don't look as good as the hybrid varieties, so I don't sell them. No one will buy them." But he himself prefers his own varieties of vegetables as opposed to the hybrid varieties; "they are free, they taste better, and they are mine".

Mr. Ekka does not buy hybrid varieties of rice, as he feels that they are more susceptible to pests; also, given that hybrids cost about ten times as much as HYVs he feels he cannot afford them. He pays between INR 14-15/kg of HYV paddy seed, which is on par with what others pay for similar varieties. However, he also avails of paddy seed from the Central Rainfed Upland Rice Research Station, a state managed research institution; paddy seed here costs about INR 11/kg. He saves his HYV varieties for three years, after which he buys new seed.

He gets his information about how to grow these varieties from shopkeepers, scientists at the research station and from the Holy Cross, a Christian organization in the area. The Holy Cross gives information to farmers about how to use these new varieties, and he is happy with this. He knows the state is supposed to do this, but he is not satisfied with their efforts. He feels as though the state has abandoned him. In his village, only about 2% of all the inhabitants rent their land, the rest all own their land, as he does. About half the people in Meeru have one acre or less; a quarter have between one and five, about 10% have between five and ten, and a small remainder have more than ten. It is this latter group of larger landowners who still continue to grow older varieties.

Scientists from the research station have come in the past when he used to grow old varieties of rice and offered IR-36 on exchange for his varieties; he thinks this is fine as he gets new seed this way. He has never really questioned why the government wanted his seed. If he was certain that they were using his varieties to develop new ones, he would feel as though he should have gotten some kind of recognition for it. But he is not too bothered about it.

---

<sup>12</sup> In the interests of anonymity, the names of those farmers illustrated in these three studies have been changed.



## CASE 2: A MEDIUM LANDHOLDER

Aziz Rehman and his son live in Putrunji village, in Latehar district. His family has been living in Putrunji for over three hundred years. He does not know exactly where the local varieties he grows originated from, but, as he does and will do with his own son, he knows that seed is passed on from generation to generation. He has twelve acres between himself and his son. Of this land, eleven acres are solely for paddy; the rest are for potatoes, pulses, peas, cauliflower, cabbage, eggplant, okra, and tomatoes. He sometimes grows wheat and maize, but given the poor monsoons and his dependence on the rain for irrigation, he has not lately. He grows three local varieties of rice, and about five HYVs; he adopted these HYVs in 1978. Given that Mr. Rehman has the connections and the resources, he arranges for seed to be acquired in Ranchi, which is quite far from Putrunji; about a seven hour drive on poorly maintained roads. These roads are also often subject to lootings by the Maoist Communist Centre (MCC); the MCC is a common threat to most people living in Latehar and Palamau districts. The police have a minimal presence there (compounded by their own sense of being threatened by the MCC), so for the most part there is no law enforcement. He rarely ever makes the drive himself anymore, but rather buys the newest varieties from a middleman who brings them from Ranchi. This middleman charges an extra INR 40 per 100 kg of seed, or an extra INR 56 on the total 140 kg he has purchased last year.

Mr. Rehman feels that he does not have to rely on the government for seed; in his opinion, only small farmers and *Adivasis* need to do so. He does avail of other government services however; he uses a government seed storage facility. This facility costs INR 11 for a lifetime membership. He and others use this to save their seed, particularly maize, wheat, pulses, and paddy. However, other people in Meeru do not seem to know about this facility (as per the author's investigations). Apart from that, the government comes once a year to his block and set up a training camp on how to use new varieties; he finds this helpful. There is a Christian mission as well in Mahuadanr, the nearest town; he uses this as well. The government has not come to him seeking older varieties; if they did however, he would ask for payment as he is not interested in exchange. When asked why he thought the government would want his seed, his assumption was that it would be redistribution rather than any kind of breeding effort.

Mr. Rehman also acts as a sort of seed supplier himself; since he makes an effort to get the best seed, he offers his seed to other farmers as well. But he generally does not sell this seed; he does loan it (not for interest as he is Muslim) and expects payment either in kind (i.e. labour) or cash. He hires labour to work his farm during the pre-monsoon planting season; for every 1.5 acres, he hires forty to fifty people at a rate of INR 50 a day. These people work one day on, one day off. If any of these people have any outstanding debts, then this is cleared first in lieu of payment.

Unlike many of the other farmers interviewed, Mr. Rehman has achieved results from local varieties of paddy that are almost on par with HYVs. Specifically, planting 200 kg of local varieties yielded 5500 kg of paddy, while planting 140 kg of HYVs yielded 5000 kg. The yield ratios are 1:28 and 1:36 respectively; granted, HYVs do yield more, but also require pesticides and fertilizers, additional factor costs that are not applicable in growing local varieties. He only uses cow dung for fertilizer for his local varieties, and has minimal pest problems with these varieties, unlike his HYVs which require regular applications of pesticides. However, local varieties require more land. Of the 10,500 kg of rice he has harvested last season, he kept 6000 kg, and sold 4500 kg. Of the 6000 kg he kept, he has put aside 200 kg for saving; it should be noted that he only saves local varieties, as he would rather buy fresh new varieties every season than save HYV seed that has diminished in productivity.

Mr. Rehman has decided to grow both local and new varieties for a number of reasons. As the figures show, he does not find that the differences in yield are that significant. But, ultimately, he still prefers to grow more new varieties than older ones. He stated three reasons; first, people prefer the aesthetics of new varieties. Visually, they are more uniform in terms of the physical characteristics of each kernel and longer in length. Second, new varieties are more land efficient; one can get more yield per acre as opposed to older varieties. Third, in light of the first reason, newer varieties command higher prices on the market; he sells aromatic HYVs for INR 16/kg as opposed to INR 9/kg for local varieties. That said however, he will continue to grow old varieties, as he has the capacity to do so, and, according to him, because they belong to him and they just taste better.

## CASE 3: A LARGE LANDHOLDER

Faiz Hussein owns over thirty acres in Astha village, located in Giridih district. His brother is the *mukhia*, or village head. He is in the minority in Astha in terms of his landholding; only 10% have over ten acres. One quarter own less than one acre; about 30% have between one to five and five to ten acres each; the remaining 5% are landless. As with most farmers interviewed, he focuses his efforts on paddy

cultivation, though he does grow some maize and wheat. In terms of vegetables and other crops, he grows cucumbers, eggplant, cauliflower, cabbage, mustard and some pulses. Astha is located in a quite hilly area; thus, the two local rice varieties he grows are suited for this; he grows one lowland variety as it requires more water, and one midland as it requires less.

Mr. Hussein buys new varieties of seed from the market every three years. If not from the market, then he gets new varieties from the Block Development Officer, or BDO. The BDO offers seed every June, though often he finds that the seed is made available too late. The seed is allegedly priced competitively; it is subsidized by the state, but in reality he finds that they are more expensive than what he could (and does) pay at the market. Unlike other farmers, he uses fertilizers and pesticides on both local and newer varieties.

This farmers' relationship with the government is quite healthy; perhaps this is due to his brothers' (and by relation, his) higher standing in the community. As a result, he knows the BDO and has a cordial relationship with him; the office is seven km away, closer than in most other villages surveyed. The BDO holds a *Jan Sevak*, or people's meeting, twenty evenings a month during the monsoon season to provide instruction to farmers on how to grow new varieties. However, the attendance to these facilities is small. He argued this was because the government is trying to impose farming practice rather than working with what farmers are currently doing.

There are similar results with the governments' money lending initiatives. The State Bank of India (SBI) established a *Kissan*, or Farmers', Credit Card system. To be eligible for this service, a farmer has to show he or she has collateral in the case of default. According to Mr. Hussein however, the process is very long and drawn out, so only 5% of the farmers in Astha use it. More popular are the services of private moneylenders, as the loans can be secured immediately. Technically, private money lending is illegal. Private moneylenders are popular regardless of the fact that they charge 12.5% per month, as opposed to the SBI initiative which charges 12.5% a year. Generally, these private moneylenders are higher caste; this implies a direct class relationship between higher castes lending money and lower castes borrowing money. Caste also is a factor in the cooperative society that exists in Astha; the co-op exists to lend money, seed and other inputs at 12.5% a year. However, most of the resources of the co-op have been exploited and hoarded by the richer, higher caste farmers. As a result, the system is barely functioning. The government initially provided the funds for the co-op, with the management to be undertaken equally by members of the co-op. This, however, has not been the case. While Mr. Hussein himself is well off, he is frustrated with the state of things in Astha. But he feels that while the government is partly to blame due to its lacking interest and knowledge of the realities faced by farmers, farmers are equally to blame. Class distinctions, conflict, and in his words, "laziness" are as much to blame as anything else.

#### 4. THE PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS ACT

With the mechanism by which farmers acquire seed established, consideration can now be lent to the nascent policy that surrounds the acquisition of seed in India; namely, the Plant Variety Protection and Farmers Rights Act (2001). This act, while notified by the Indian government, has yet to actually be enacted as law<sup>13</sup>. Regardless, it is unique globally for its' treatment of farmers' rights as well as breeders' rights. The first efforts at drafting the current PPVFR began almost ten years ago; in August 2001, the current form of the act was accepted by the Indian government (Seshia 2002: 2). Before the late part of the 1980s, trade policies in India were not favourable to foreign investment; however, trade reforms in the early 1990s opened up markets in India in a manner unprecedented by previous administrations. Previous to this new economic environment, most plant breeding was undertaken by the public sector. Incentives for the private sector to provide seed to farmers were not particularly substantial, as the public sector had been filling that role during the Green Revolution (Dhar 2002: 40). There was not a prevailing need at that time to establish rules for the private sale of seed.

---

<sup>13</sup> The main reason that this law has not been enacted as law at the time of this writing has been India's application to accede to UPOV. A Public Interest Litigation has been filed by Gene Campaign against the Indian government's application to UPOV given the countering interests that UPOV presents with respect to farmers' rights. As a result, enacting the PPVFR as law has been delayed indefinitely.

After the changes in policy, it became easier for both domestic and foreign private firms to invest in seed production, as well as for non-domestic seed firms to enter India or enter into partnerships with Indian firms. The introduction of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) within the WTO in 1995 certainly acted as a catalyst for further development of policy around PGR, though it was not the sole catalyst. The emergence of TRIPS, however, did consolidate the need for India to develop a mechanism to protect plant varieties, as outlined in Article 27.3(b) of TRIPS. The objective of the PPVFR as stated in its preamble is to establish “an effective system for the protection of plant varieties, the rights of farmers and plant breeders, [and] to encourage the development of new varieties of plants.” Dhar (2002: 41) has outlined three factors as being the main catalysts for the PPVFR.

#### BOX 2: WHAT IS THE RATIONALE FOR THE PPVFR?

- The protection of Farmers’ Rights in respect of their contribution made at any time in conserving, improving, and making available plant genetic resources for the development of new plant varieties
- The protection of Plant Breeders’ Rights to stimulate investment for research and development, both in the public and private sector, for the development of new plant varieties, and;
- Giving effect to Article 27.3 (b) of TRIPS relating to the protection of plant varieties.

Note the balance between Farmers’ Rights and Breeders’ Rights; the PPVFR makes an attempt at striking a balance, thus satisfying both the concerns of farmers’ regarding their ability to save, acquire, and sell seed, but also the concerns of breeders who desire adequate protection for their research and resultant technologies. The Indian legislation models itself after UPOV with regards to the four criteria that determine a plant breeders’ right (PBR), but diverges from UPOV in two main ways; first, their treatment of what types of seed can be given PBR, and second, the inclusion of farmers’ rights to balance those rights held by breeders.

Breeders Rights as defined in the PPVFR (and largely based on UPOV 1978) detail penalties for the infringement of these rights. Specifically, these rights are most often based on the packaging of the variety itself; that is, varieties protected under this Act are given explicit recognition in terms of brand names and other such indications (but not necessarily a formal IPR) of ownership, and as such, are offered protection. To “copy” the packaging or other elements of the seeds’ outward appearance would infringe on the rights provided by the Act. However, within the context of seed that is saved from an initially branded package but disseminated after farmer propagation as a “non-branded” variety, such safeguards against “copying” may not matter. In an international context, PGR is often positively identified for IPR purposes by its’ precise genetic makeup, or DNA fingerprint, which is the responsibility in India of the National Bureau of Plant Genetic Resources, or NBPGR<sup>14</sup>. Within the context of offences, penalties and procedure (Ch. X.B), the main medium of identification is “denomination”, defined as any combination of letters in any language that identifies the PGR. However, the PPVFR also describes “essential characteristics”, which concerns the precise genetic make up of the PGR. Yet, within the context of offences, there is no mention of the infringement of rights by using these “essential characteristics” as the main determinants of prior art. This is crucial within the context of novelty claims, and affects the efficacy of the Act in providing ownership to both plant breeders and

---

<sup>14</sup> An interview with an official of the NBPGR (who asked not to be identified for this study) yielded insights on the capability of the Bureau in cataloguing and identifying varieties of seeds. Specifically, of the 250,000 varieties held by the Bureau, only 1,400 have been identified by their precise genetic composition. This lacking identification is due to, in the opinion of this official, funding constraints and the high costs involved in the process of identification. As a result, only those varieties deemed of primary importance to India (i.e. rice and wheat varieties) have been selected for identification. Other individuals interviewed for this study, however, were of the opinion that the NBPGR has the funding available, and that it is more a matter of the misallocation of resources. Regardless of which perspective is indeed correct, the current state of the Bureau provides little defense in terms of countering claims of novelty by not being able to present sufficient evidence to prove the existence of prior art.

farmers. Prior art often hinges on information that would allow someone skilled in the art to reproduce the invention, which would be achieved by disclosure of the “essential characteristics” as per the wording of the PPVFR. In light of this, and the PPVFRs focus on “denomination” over “essential characteristics”, the efficacy of the PPVFR in providing claims of prior art in an international context is weak. It is not well suited in countering instances of “biopiracy”<sup>15</sup>.

## 5. CONCLUSIONS

In light of the experiences faced by farmers and the nascent policy that surrounds their acquisition of seed, certain conclusions can be made. **First**, the emergence of farmers purchasing seed on a regular basis has often only been within the past three to five years. Farmers can afford to buy these new varieties as the increased yield that results from them allows higher amounts of both income (if they choose to sell portions of their harvest) and personal consumption, thereby providing the food security that was lacking with older, local varieties alone. The current state of play regarding this acquisition of newer varieties is changing very quickly, if one considers the experiences of the past five years as proxy for what the future holds. In short, one can safely assume that more farmers will follow suit and abandon older varieties of seeds in favor of newer ones. Thus, any law aimed at protecting the ability of farmers to save seed may be rendered superfluous in the not too distant future.

**Second**, a distinction has to be made regarding the rationale for those who do continue to grow local varieties of seed. On the one hand, there are those farmers who do not have recourse to growing newer, high yielding varieties, either due to income constraints or distance from a market offering these seeds, and grow predominantly local varieties as a result. On the other hand, there are those farmers who, due to the fact that they have excess income or land, choose to grow local varieties primarily due to personal satisfaction. This latter group of farmers typically consume these local varieties, with the exception of aromatic local varieties of rice that fetch higher prices on the market than HYVs and are thus sold.

**Third**, instances of farmers saving seed have been greatly exaggerated in the literature. It has been often stated that over 80% of seed used by farmers are from farmers’ own saved stocks. The experiences of farmers considered in Jharkhand do not reflect these statistics; this study found that for every two farmers who grew, and most importantly, saved local varieties, there were three who did not. Also, those who grow local varieties rarely grow only local varieties; typically, they grow new varieties as well. However, claims alleging that the vast majority of seed in India is available due to farmers saving and disseminating them cannot be immediately discarded; rather, they must be interpreted as not being entirely specific in their treatment of exactly which seeds are saved. These claims often do not make the distinction between local varieties of seed that have been saved over generations and those varieties that have been initially purchased and then saved (i.e. composite varieties). Certainly, the evidence provided in this study does point to the fact that farmers do save composite varieties. But to utilize this saving behavior as a basis for an argument that the main source of seed in India is from farmers’ saved stock is misleading. composite varieties of seed are purchased, on average, every three years, and this has been the case since their introduction. However, to reiterate the first conclusion, it must be said that these instances of farmers purchasing seed on a regular basis are relatively recent.

---

<sup>15</sup> The aim of the PPVFR from the outset was not to counter “biopiracy”; such concerns have been addressed within the Biological Diversity Act (2002). This Act explicitly deals with access issues, albeit in a very complicated, cumbersome, and ultimately untenable manner. These shortcomings (and successes) cannot be given the attention required here; interested readers are invited to refer to <http://www.grain.org/docs/india-biodiversityact-2002.pdf> for the full text of the Act.

**Fourth**, while India's *sui generis* legislation succeeds in balancing the interests of both farmers and formal breeders, the section on those who violate the primacy of protected seed via "copying" or repackaging seed is problematic. In terms of violations, the main vehicle by which seed is identified in the PPVFR is by its "denomination" (i.e. the name of the seed given by the brand) rather than its "essential characteristics" (i.e. genetic makeup). Given that firms have pursued and do pursue those who use their protected varieties without their prior permission, and that these firms identify these varieties by their "essential characteristics", simply implicating those who "copy" seed by the identifying the seed by its "denomination" will prove insufficient. Prior to the PPVFR, seed could freely be repackaged, as the registration process at the state level did not identify the seed by anything except the outward physical appearance of the standing crops. This will not change with the PPVFR now being in force.

If one accepts as a premise that the amount of seed that is saved is decreasing, the question that arises is whether or not the PPVFR will become dated in its treatment of farmers' rights. If farmers are acquiring more and more seed from the private sector, then more focus should be lent to ensuring that proper mechanisms are in place to ensure farmers have the correct information on how to use these new seeds, and to provide some form of protection for farmers against spurious seed. Based on current trends, concentrating efforts on protecting the ability to save and sell a resource that is entering more and more into the realm of the formal market may prove to be of limited utility in the near future.

## **BIBLIOGRAPHY**

- Dhar, B (2002). "Sui Generis Systems: Options Under TRIPS." Quaker United Nations Office Discussion Paper. April 2002. Quaker United Nations Office. March 23, 2003. <<http://www.geneva.quino.info/pdf/sgcol1.pdf>>.
- Lambrecht, B. (1998) "Critics Vilify New Seed Technology that Monsanto May Soon Control - "Terminator" Would Prevent Saving Seeds by Making them Sterile". St. Louis Post-Dispatch, November 1, 1998, A1.
- Sahai, S. (2001). "Plant Variety Protection And Farmers' Rights Act, 2001". Gene Campaign. Delhi: 2001.
- \_\_\_\_ (2002). "India's Plant Variety Protection and Farmers Rights Act". Consumers International Asia Pacific Office. Gene Campaign. March 10, 2003. <[http://www.ciroap.org/food/documents/PVP\\_SUNS.PDF](http://www.ciroap.org/food/documents/PVP_SUNS.PDF)>.
- \_\_\_\_ (2003). "Oppose UPOV! Save Farmers! Gene Campaign's Legal Action Against The Indian Government". Gene Campaign. Delhi: 2003.
- Shiva, V. (2002). "Free Trade Industrial Agriculture Rules Threaten The World's Farmers", in International Forum on Globalization. Does Globalization Help The Poor?. San Francisco: IFG. 2002.
- Swaminathan, M.S. (1998). "Farmers' Rights and Plant Genetic Resources," *Biotechnology & Development Monitor*, 36: 6-9.