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Neither corporate, nor family: the Indian "patronal" farm

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Abstract: *After the disappearance of socialist State farms and cooperatives, the diversity of farms in the world seemed to have been reduced to a simple dichotomy: family farms on the one hand and corporate farming on the other. The former category, the dominant model on the planet, includes undertakings where labour is provided by the family, while corporate farming that was long limited to South America, is exclusively based on hired labour. This reading grid however, turns out to be particularly problematic when looking at the Indian case. Despite their small size, the vast majority of Indian farms make use of a combination of family and hired labour. Based on an analysis of national statistics and fieldwork in thirteen small regions, this article characterises agricultural work and the ways in which family and hired labour function together on Indian farms. It shows that alongside family farms where wage labour (either hiring or being hired) serves to ensure full employment for family labour, we find another type of farm, called "patronal farms" where the aim of hiring agricultural labourers is to increase income produced by family labour. For these patronal farms to exist, the wage paid to the labourers must be lower than the total farm labour productivity, and this is systematically the case for irrigated agriculture. After describing the characteristics of this original model, the article discusses its coherence with India's political economy and questions its durability.*

Keywords: *patronal farming, family farming, hired labour, India, comparative agriculture*

Introduction

Following the collapse of most of the socialist regimes that extolled State farms and production cooperatives, the diversity of agricultural holdings in the world seemed to have been reduced to a simple dichotomy: family farming on the one hand and corporate farming on the other (Purseigle, 2012).

There is a wide consensus on the latter category of farms, both in terms of the definition and the risks it provokes. While they are marginal in the agricultural sector, these companies are predominant in other sectors: investors tie up their capital to rent or buy land, equipment and inputs, and employ workers to make a profit from these investments. While it remained limited to South America for a long time, this corporate form of agriculture has recently spread to other continents, attracting media attention to what is sometimes described as "land grabbing" (Cochet, 2018).

Family farming, on the contrary, has been largely celebrated in recent years. The year 2014 was declared the international year of family farming, and was marked by numerous seminars and academic articles dedicated to this type of farm. The multiple benefits of this type of farm (particularly in terms of employment and food security) are widely recognized, and the United Nations General Assembly declared the period 2019-2028 "the decade of family farming". This wide academic and political consensus is paradoxical as, while we are capable of demonstrating the benefits of family farming, we have few tools to actually define it today. There is a range of definitions and all of them are not unanimously accepted. Thus, Garner and de la O Campos (2014) have recorded and compared 36 definitions taken from the academic, political or associative worlds. The authors show that despite the great diversity of forms, the family continues to be involved in the working and management of the farm.

Nonetheless, this family labour is generally described in a vague or arbitrary manner. Thus, in Brazil or Mexico, to be classified as a family farm, the majority of the work has to be done by the family. This is

also the definition accepted by the High Level Panel of Experts on Food Security and Nutrition (HLPE, 2013). In Argentina, a family farm can employ temporary workers, but no permanent staff. In Uruguay, there can be no more than two permanent employees (Graeub *et al.*, 2016). Beyond the definitions, the national agricultural censuses are problematic: the type of labour is rarely recorded and even more rarely measured (Lowder *et al.*, 2016). As a result – and although the type of labour involved is central to the definition – most studies seeking to assess the numerical importance of family farms are based on the physical size of the farm. This criterion raises a certain number of issues. Firstly, because this changes the object of study, as the farms in this category are no longer family farms, but small farms. Then, because this criterion varies from one country to another. Thus, according to the definition applicable in Chile, family farms have less than 12 hectares, while in Uruguay the threshold is set at 500 hectares. In Brazil, the threshold is based on modules, fiscal units whose surface varies from one state in the federation to another. It is hence difficult to carry out international comparisons and researchers are obliged to make choices: 2 hectares is now seen as the most commonly accepted threshold (World Bank, 2003; Hazell *et al.*, 2010; Salami *et al.*, 2010; Conway, 2011; Lowder *et al.*, 2016). Such an approach is far from satisfying. Indeed the quantity and nature of the work invested in a farm does not depend solely on the cultivated area, but also on the way in which it is cultivated, and the production system implemented, which can be more or less labour intensive (Mazoyer and Roudart, 2006; Dorin, 2017).

These semantic and statistical issues are particularly pertinent in India. Not only because of the demographic scale of the country, which is home to 24% of the world's farms (Lowder *et al.* 2019), but also because, in 2015, 86% of the farms in the country occupied less than 2 hectares. As a result, on the maps created by Graeub *et al.* (2015), the Indian territory seems to be covered with family farms. This conclusion may be somewhat hasty. Indeed, the number of agricultural labourers has steadily increased since the 1950s, and today their numbers surpass those of the farmers themselves (Dorin and Aubron, 2016). On the other hand, although the national agricultural policy has been encouraging corporate farming for the last few years, this form of agriculture remains the exception in India (Singh, 2006).

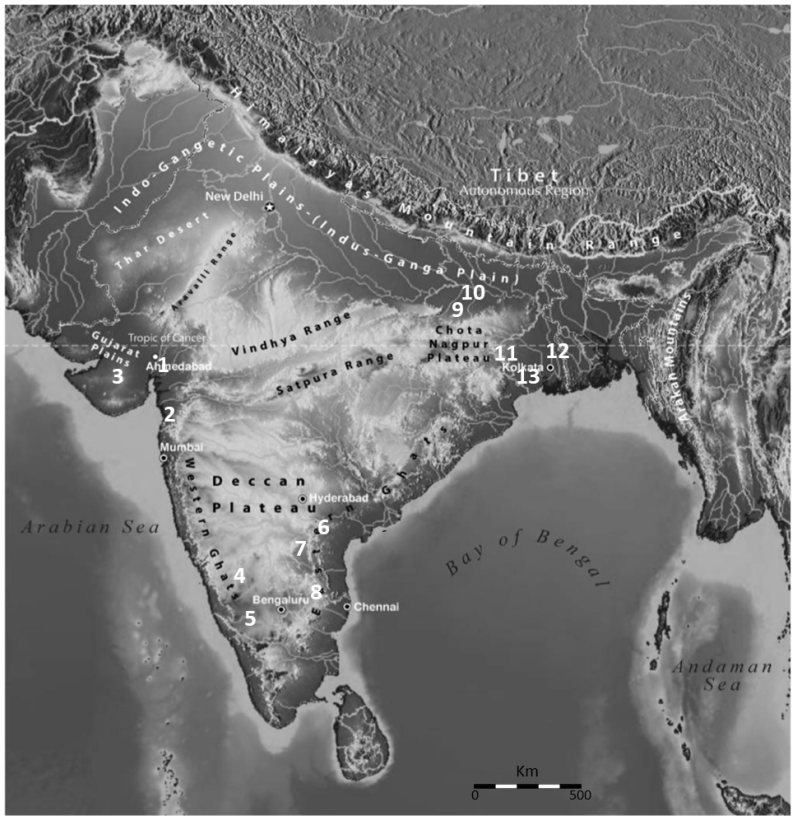
Indian farm holdings hence seem to evade the usual nomenclature. Their size, and the family labour invested, could lead them to be included in the "family farm" category. However, since they employ numerous labourers, we could also place them in the "corporate farm" category, but yet again, their size and the family labour invested prevents this. A third category, more rarely considered, seems better adapted to this situation: the "patronal farm", in which a family works, but also employs labourers. Based on research carried out in the UK (Gasson *et al.*, 1988), Australia (Pritchard *et al.*, 2006; Weller *et al.*, 2013), Brazil (de Souza *et al.*, 2018) or Argentina (Chaxel *et al.*, 2018), various authors come to a similar conclusion about the inadequacy of the "family farming" and "corporate farming" categories to refer to some of the farms they study. To name this in-between, we prefer the term "patronal" to the sometimes used "family business farming" (Gasson *et al.*, 1988; Sourisseau, 2018), because "patronal" better reflects the focus on labour relations we adopt in the study of these farms. The works cited are indeed more concerned with the specificities of the management of farms by a family entity, in terms of intra-family working relationships, investment planning and attitude to risk, articulation with off-farm activities, intergenerational transfer of assets or evolution of the farm over the family's life cycle.

Based on the Indian case and labour focused, this article aims to analyse the way this type of farm holding functions, in order to understand what fundamentally distinguishes it from family farming, without making it any more similar to corporate farming.

Data and method

To tackle this subject, we first looked at the available secondary data. The secondary data used in this article are taken from the national censuses, ten-yearly for the population, and five-yearly for agriculture, as well as major national surveys carried out occasionally on smaller samples: the NSS (National Sample Survey) and the IHDS (India Human Development Survey). As in most countries, the statistics available in India have certain limitations when it comes to a subtle analysis of agricultural work, hence here we sought to combine this secondary data with fieldwork.

The aim of the fieldwork was to go beyond the farmers' cultivated areas and to understand the production systems implemented and the work they involve. It also sought to measure the latter, to assess the proportion of work entrusted to labourers and the proportion the family itself carries out, depending on the seasons. We also attempted to assess the economic results of the different production systems, in order to understand why labourers are hired and to evaluate the impact of this.



GUJARAT
1. Petlad *(Anand District) 2014*
2. Dharampur *(Valsad District) 2014*
3. Gondal *(Rajkot District)* 2016

KARNATAKA
4. Gundlupet *(Chamarajanagar District) 2016*
5. Channagiri *(Davangere District) 2019*

ANDHRA PRADESH
6. Vinukonda *(Guntur District) 2016*
7. Banagana Palli *(Kurnool District) 2017*
8. Palamaner *(Chittoor District) 2018*

BIHAR
9. Bodhgaya *(Gaya District) 2015*
10. Ekangarsarai *(Nalanda Dstrict) 2015*

WEST BENGAL
11. Hirbandh *(Bankura District) 2018*
12. Bangaon *(North 24 Parganas District) 2018*
13. Debra *(Medinipur District) 2019*

Figure 1. Location and year of the field studies. *Source: O. Philippon 2020.*

Surveys of this type take time, and can only be envisaged for a limited number of farms, which implies being capable of building a purposive sample. To do this, we carried out what is call an "agrarian diagnosis", using the conceptual framework of comparative agriculture (Cochet, 2015), in thirteen small study regions in India (Figure 1). The thirteen small regions were gradually selected in the framework of a research project dealing with the role of livestock farming in Indian agriculture (IndiaMilk project) so as to cover a range of contrasting situations in terms of biophysical environment, land tenure and historical development of irrigated agriculture and dairy farming. Thanks to a characterisation of the

biophysical milieu and a reconstitution of the recent agrarian history based on interviews, the agrarian diagnoses allowed us to grasp the diversity of the cultivated land in each small study region, within a limited time period, and also to capture the historical circumstances that led to the way land is divided between the farmers in each area (Cochet and Devienne, 2006; Lacoste *et al.*, 2018). This led to a first typology of farms.

In a second series of interviews with a purposive sample comprising 30 to 60 farmers in each of the small regions, we were able to carry out an in-depth study of the work on these farms. The farmers surveyed were selected so as to cover the diversity of farms identified during the first phase of the fieldwork, which was gradually refined. We thus recreated *work calendars* for the different crop and livestock activities, by identifying the operations and tasks carried out, and the workload associated with each operation (in days or hours, with a day representing eight hours of work), and the type of labour used (family or employee). We also assessed the *daily (or hourly) labour productivity*: this is equal to the added value divided by the number of days (or hours) of total work required to create it (Aubron *et al.*, 2009). It can then be usefully compared to a local labourer's daily or hourly wage. For farms that employ hired labour, we used another supplementary indicator: the *gross margin* (equal to the added value, minus the salaries paid to the labourers) per day of family work. Finally, we assessed the agricultural income obtained per farm. When the family running the farm also works as labourer on other farms, the income from wage work is included in the total income.

The aim of this article is not to describe Indian agriculture in general, but to understand its diversity from a work perspective. The agrarian diagnosis data presented in this article are chosen from different regions in order to illustrate this diversity, but in no way seek to be representative of Indian agriculture at a national level. Rainfed agriculture, for example, is underrepresented, because the "patronal" agriculture we seek to understand is mainly present in irrigated zones.

Farming marked by land inequality and high labour intensity

The size of farms clearly plays a role in structuring their labour requirements. With an average size of 1.08 ha in 2015, Indian farms are extremely small in size (Figure 2). This is a well-known feature of Indian agriculture, which is reinforced over time due to land division as a result of inheritance and division between generations. The other key characteristic of the Indian land structure, which is less often highlighted, is a result of the unequal distribution of land between agricultural workers. While the agrarian reforms introduced in the decades following India's independence undoubtedly ended the taxation system that existed earlier and allowed farmers and former tenants to formally own private property, there was no large-scale distribution of land, and numerous families remained landless. Cultivated land is hence very unequally distributed between cultivators (Figure 2) and landless households represent a considerable weight in Indian rural society: on the basis of NSS data the proportion of landless households in Indian rural areas is estimated at 40% (Rawal, 2008), and in the 2011 Census, for the first time, the number of agricultural labourers (144 million) with no, or very limited, access to land surpassed the number of cultivators (111 million) (Dorin and Aubron, 2016: Figure 3).

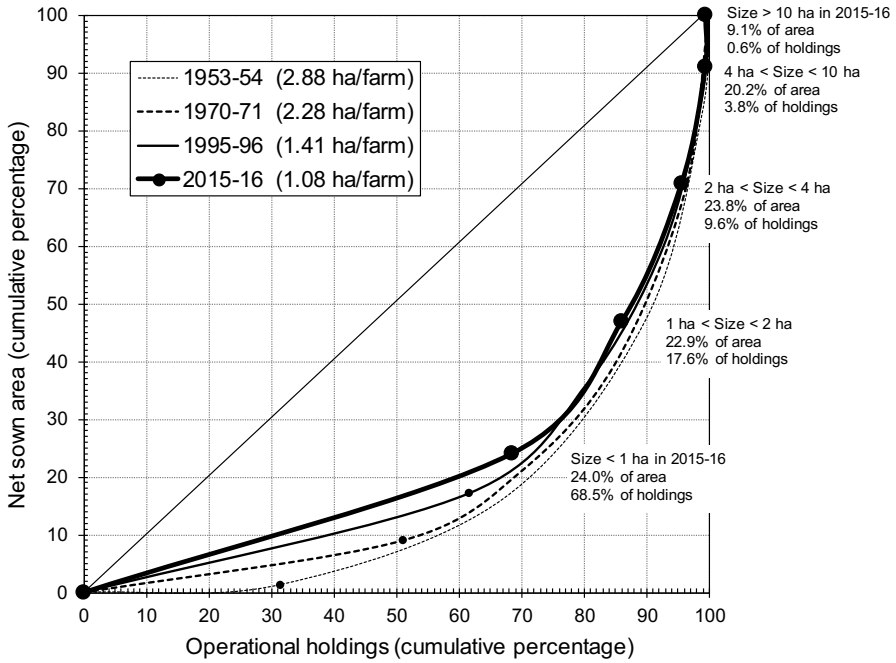


Figure 2. Agricultural land distribution according to farm size (1953, 1970, 1990, 2015). *Source: B. Dorin, based on Dorin and Landy (2009), Bhattacharjee (2020).*

Figure 3. Population and composition of the workforce: Census of India and NSS (1971-2018). *Note: (1) NSS rounds 1977-78 to 2011-12: "agriculture" = "Primary sector"; (2) Value for the NSS round 2017-18 to be confirmed; (3) 2018 and 2021 population based on K.C.* et al.*, (2018). Source: B. Dorin, based on various reports (Population censuses of India, National Sample Surveys).*

In the case of crop production, following the introduction of a series of proactive public policies in 1967 (Dorin and Landy, 2009), the Green Revolution, implemented in a large part of the country, had a profound effect on agricultural work. Irrigated areas, most of which now use groundwater lifted with

pumps, have more than doubled since 1970 (Dorin, "Agribiom-India" model, 2020 version). Irrigation, and the selection of shorter crop cycle varieties, enabled an increase in the number of crop cycles per year on the same plot, which rose from one to two or even three, with an average crop intensity, at the scale of India, of about 140% in 2017 (Figure 4). The multiplication of crop cycles and the increase in yields translated into an increase in the time dedicated to harvest and post-harvest activities, which are still little mechanised (see Konduru *et al.*, 2013 for cotton). The tractor, introduced in the 1990s, has become a common sight on the largest farms in irrigated zones (that rent its services to the neighbouring farms) (Gulati and Juneja, 2020). But its usage is often limited to soil preparation and transportation operations. On certain irrigated farms, cereals, sugar cane or even cotton were replaced in the 2000s by vegetable crops, combining at the same time and successively producing cycles that are highly labour intensive in terms of manual work. While it required inputs (seeds, fertilizer) and irrigation equipment, the Green Revolution also represents a vast process of labour intensification. According to the data collected in three study regions, the number of work days per hectare per year required to cultivate irrigated crops is between 176 and 940, as compared to only 112 to 269 for rainfed crops (Table 1).

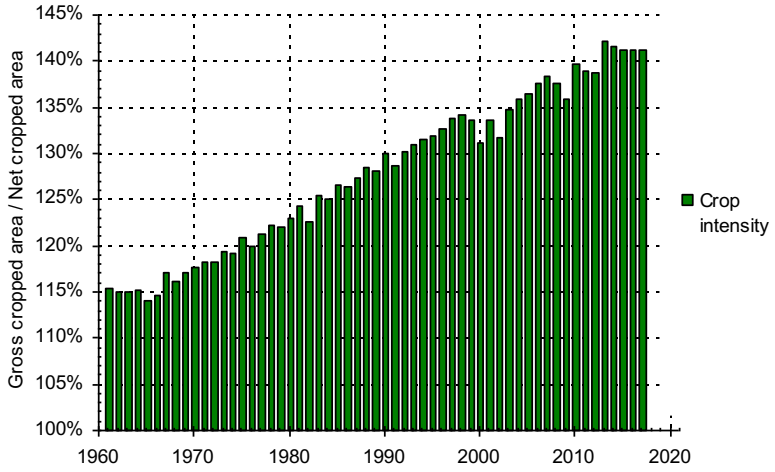


Figure 4. Crop intensity (India, 1961-2017). *Source: Dorin 2020, "Agribiom-India" model, mostly based here on EPWRF (2020).*

The role of livestock in this type of farming and the work associated with it, have also been greatly transformed over the last decades. In irrigated zones, livestock has to face the challenge of reduced spaces and grazing periods as a result of the development of irrigated crops and the replacement of its two historical roles (draught and manure) by equipment or inputs (Aubron *et al.*, 2019). This situation has led certain irrigated farms to abandon livestock and to specialise in crop production. On the contrary, smaller farms, or farms that do not have access to water, maintain or even develop their livestock activity: they thus seek to take advantage of its traditional roles (draught and manure) as well as to produce milk, for which a market now exists, particularly via the dairy cooperatives created by the Indian White Revolution introduced in 1970 (Dorin and Landy, 2009; Scholten, 2010). In some regions, this dairy farming even involves agricultural labourers with no access to cultivated land, who thus develop landless livestock farms. According to estimates, 40 to 90 million families are involved in dairy farming at the scale of India, with very low average sizes in this case too. The size of the herds is on average 3 cows or buffaloes for farms that possess them, including 1 to 1.3 milk producing females, respectively

cows or female buffaloes (GoI, 2012; Dorin *et al.*, 2019); 70% of India's cows and female buffaloes are bred on farms with access to less than one hectare of cultivated land (NSSO, 2013). The work time associated with raising these herds depends on the fodder resources used to feed them. A large amount of time is required on farms that have limited access to land and water and thus little access to straws and cultivated fodder: they are largely dependent on spontaneous vegetation, and both gathering fodder and grazing are time consuming, even for small herds (Aubron *et al.*, 2019).

Gundlupet	**Rainfed cropping systems**	Finger millet/horsegram	180
		Sunflower/horsegram	112
		Sorghum/horsegram	137
		Maize/horsegram	143
		Marigold/horsegram	269
	Irrigated cropping systems	Associated turmeric	716
		Vegetables (3 cycles a year)	736
		Vegetables and bananas on a two-year cycle	308
		Ginger associated with chilli	777
		Bananas	200
Petlad	**Irrigated cropping systems**	Tobacco	299
		Tobacco/Millet	398
		Tobacco/Rice	437
		Wheat/Rice	225
		Mustard/Millet	176
		Chilli	466
		Tobacco//Banana	417
Debra	**Rainfed cropping systems**	Aman rice	179
	Irrigated cropping systems	Aman rice/boro rice	326
		Cabbage+cucumber+chili	845
		Mulberry	940
		Aman rice/marigold	875

Table 1. Labour requirements for the main cropping systems in three study areas (Number of work days/ha/year). *Source: C. Aubron, S. Bainville and O. Philippon 2020, based on agrarian diagnoses IndiaMilk project.*

Family work combined with wide use of hired labour

In the thirteen study regions, the use of paid workers is noteworthy (see Figure 5 for five small regions). The vast majority of farms employ workers, most often day labourers, to carry out a part of the agricultural work, alongside family work. In some farms, more than half the work is thus entrusted to labourers. Production systems where all the work is carried out by family labour are actually quite rare, and while a few cases correspond to farms that function solely on the basis of hired labour, with the family making no contribution in terms of work, such cases are even rarer in our sample.

The results obtained in all the study regions reveal the following trends:
(i) The use of hired labour increases with the size of the farm. Landless livestock farmers do not employ paid labour, and farms smaller than a certain area (0.3 to 0.4 ha in the cases shown in Figure 5), mainly or even exclusively make use of family labour to carry out the agricultural work.

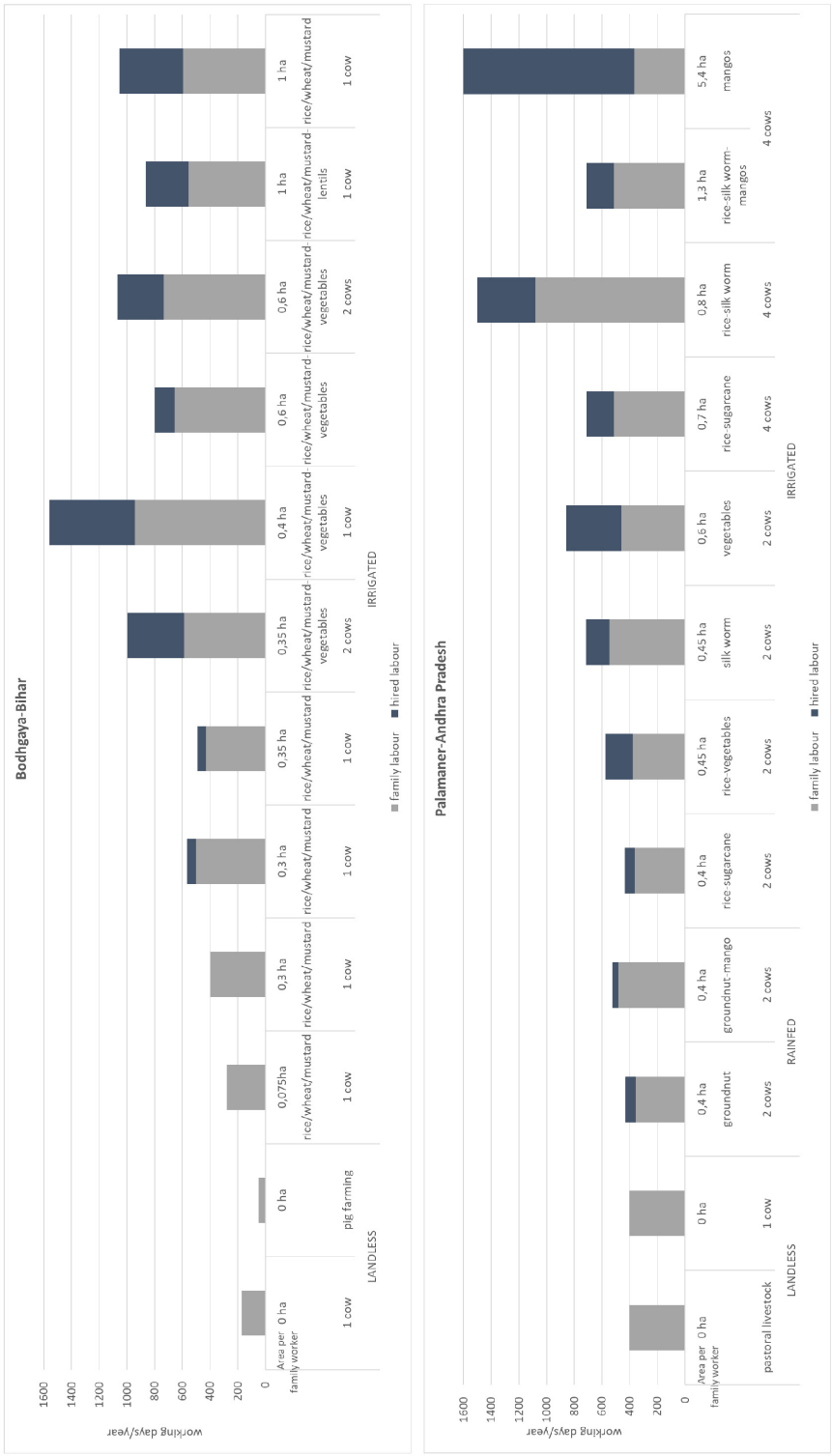

Bodhgaya-Bihar
working days/year
1600
1400
1200
1000
800
600
400
200
0
family labour
hired labour
LANDLESS
IRRIGATED
Area per family worker
0 ha
1 cow
0 ha
pig farming
0,075ha
rice/wheat/mustard
1 cow
0,3 ha
rice/wheat/mustard
1 cow
0,3 ha
rice/wheat/mustard
1 cow
0,35 ha
rice/wheat/mustard
1 cow
0,35 ha
rice/wheat/mustard
vegetables
2 cows
0,4 ha
rice/wheat/mustard
vegetables
1 cow
0,6 ha
rice/wheat/mustard
vegetables
0,6 ha
rice/wheat/mustard
vegetables
2 cows
1 ha
rice/wheat/mustard
lentils
1 cow
1 ha
rice/wheat/mustard
1 cow
Palamaner-Andhra Pradesh
working days/year
1600
1400
1200
1000
800
600
400
200
0
family labour
hired labour
LANDLESS
RAINFED
IRRIGATED
Area per family worker
0 ha
pastoral livestock
1 cow
0 ha
0,4 ha
groundnut
2 cows
0,4 ha
groundnut-mango
2 cows
0,4 ha
rice-sugarcane
2 cows
0,45 ha
rice-vegetables
2 cows
0,45 ha
silk worm
2 cows
0,6 ha
vegetables
2 cows
0,7 ha
rice-sugarcane
4 cows
0,8 ha
rice-silk worm
4 cows
1,3 ha
rice-silk worm-mangos
4 cows
5,4 ha
mangos

Figure 5. Use of paid work in the production systems present in five study regions. *Source: C. Aubron, S. Bainville and O. Philippon 2020, based on agrarian diagnoses IndiaMilk project.*

(ii) Irrigated farms are more dependent on hired labour than farms with less access to water. This result is shown in Figure 5, Palamaner (rainfed groundnuts and mango crops), Debra and Gondal (flood recession melon), where all three farms employ very little paid labour. Rainfed crops, grown by the tribal populations in the Dharampur mountains in the south of Gujarat, only make use of family labour, although they cultivate half a hectare per active worker.
(iii) Livestock is almost universally present on farms employing little paid labour, and is sometimes absent on farms that make the most use of paid labour.

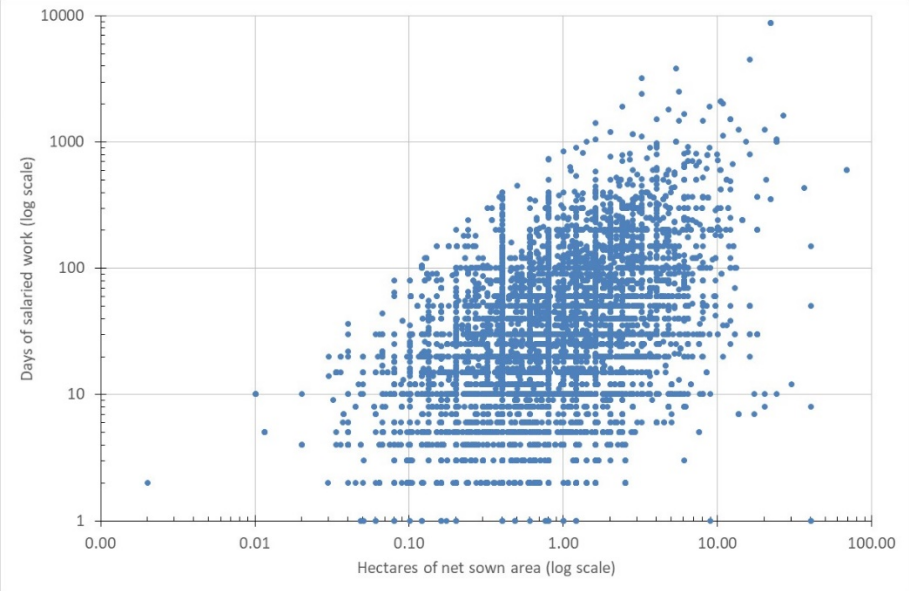


Figure 6. Relationships between farm size and salaried work. *Note: Of the 42,152 households surveyed by the India Human Development Survey II (IHDS survey 2011-12), 16,475 have a net sown area greater than zero, those shown in the graph after removing few outliers (66 households). Source: B. Dorin, based on IHDS-II and Dorin* et al. *(2019).*

The households surveyed across the country by the IHDS in 2011-12 (IHDS, 2011), largely confirm these results. Among the 16,409 households shown in figure 6, we note that with a few exceptions, the intensity of hired labour remains high, even on farms smaller than 1 ha. The general (unweighted) average is 30 days/year, or 32 days/ha (for 1.15 ha/household on average). However, on holdings smaller than 0.4 ha, this average falls to 7 days/year (37 days/ha for 0.19 ha/ household on average), while with 5 ha or more, it rises to 182 days/year (less than 21 days/ha for 9.27 ha/household on average).

“Patronal” agriculture: a specific rationale

Between landless farmers, small family farms and corporate farming, a wide range of combinations of family and hired labour

The regions studied here reveal a wide range of situations when it comes to making use of paid labour. The different types of farms identified in Gundlupet in Karnataka (Figure 5) clearly show the gradient that runs from farms where the members of the family hire out their labour for part of the year, to companies where work is exclusively provided by hired workers.

In the case of landless families that nonetheless have a dairy herd, the work is done exclusively by the family and represents 470 days per year (Figure 5). The relatively homogenous distribution of the work over the year, allows one of the two active members of the family to engage in off-farm agricultural day labour for about sixty days a year. The family thus supplements the income it earns from dairy farming (20 000 Rupees per active worker) to obtain a total income of 30 000 Rupees per active worker, a sum slightly higher than the poverty threshold, which is estimated at 25 000 Rupees for an active worker with a dependent child (Planning Commission, 2014).

Access to a few hectares of unirrigated land is sufficient to change this work organisation. Thus, for a farm that has 1 hectare per family worker, cultivated with cereals and sunflower, raising 2 milk cows continues to occupy more than one family worker throughout the year, but the work required for rainfed crop farming is more seasonal. During the monsoon, family labour is rapidly insufficient to carry out all the crop operations. Sowing and harvesting that cannot be delayed, are not only periods of intense work, with a day being longer than 8 hours of work, they also involve hiring day labourers (Figure 7). On the contrary, in the dry season, part of the workforce can dedicate a few days to working on neighbouring farms that cultivate irrigated crops. The salary thus earned usefully supplements the low agricultural income from rainfed crops, allowing families to earn more than the poverty threshold, with a total income of 30 000 Rupees per active family worker per year. Here, employing day labourers, and working as labourers outside their farm, are means of ensuring full time employment for the family workforce, despite the irregularity of the crop calendar (Table 2).

Thanks to irrigation, it is possible to grow several crop cycles, or crops with longer crop cycles. The period when it is necessary to employ paid labour is hence longer. Thus, another farm, in Gondal in Gujarat, illustrates this situation (Figure 7). Cotton cultivation that has become widespread in this region, thanks to irrigation, also implies making use of a large number of workers from July to January or February. In addition, the income from irrigated crops is higher and earnings from off-farm work are far less essential.

Nonetheless, balancing the work required and the available family labour is not always sufficient to explain the use of hired labour. Thus, in Vinukonda in Andhra Pradesh, a farm with 2 family workers, occupying 2.4 hectares, producing a combination of partially irrigated tobacco, gram, castor oil plants, chilli and cotton, and raising 2 traction animals, employs day labourers including during periods when family labour is available to carry out the work (periods when the work requirement is less than 50 days per month for the two family workers, Figure 7). The same can be said for the farm in Ekangarsarai in Bihar (Figure 7). In such a situation, the importance of paid labour goes beyond a mere supplement to family work. Far from the result of calendar constraints, using paid labour is a deliberate choice here. This situation exists not only on large farms: it is, for example, very frequent in West Bengal, a very densely populated region, where the agrarian reforms were the most effective (Bardhan *et al.*, 2014).

Hiring to ensure that family labour is fully employed or to increase its income?

The economic assessment of crop and livestock systems, and a comparison of labour productivity with day labourers' wages, is extremely enlightening when it comes to understanding why these farms employ hired labour (Figure 8). In all the regions studied, the gross added value created per day of total work (labour productivity) in irrigated cropping systems is far higher than the daily wage agricultural labourers earn. In the three study areas presented in figure 8, it varies between 340 and 3200 Rs per day of total work, and is between 2.3 and up to 10 times higher than the local daily wage. When it comes to rainfed crops, their productivity is similar to, or lower than, the daily labourer's wage. Livestock systems do not make it possible to achieve a level of labour productivity higher than a salary, except when the number of animals is more than 3 to 10 heads.

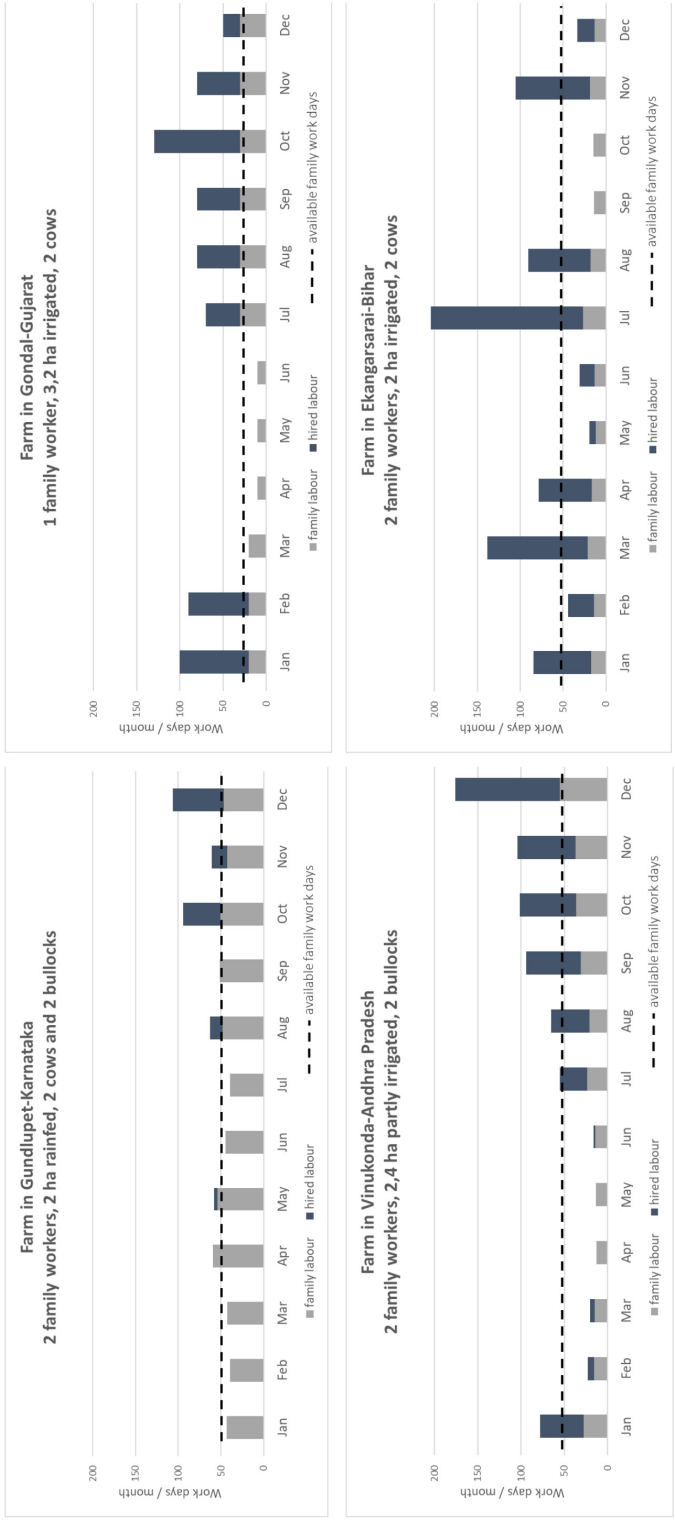


Figure 7. Work calendar for four contrasting types of farm. *Source: C. Aubron, S. Bainville and O. Philippon 2020, based on agrarian diagnoses IndiaMilk project.*

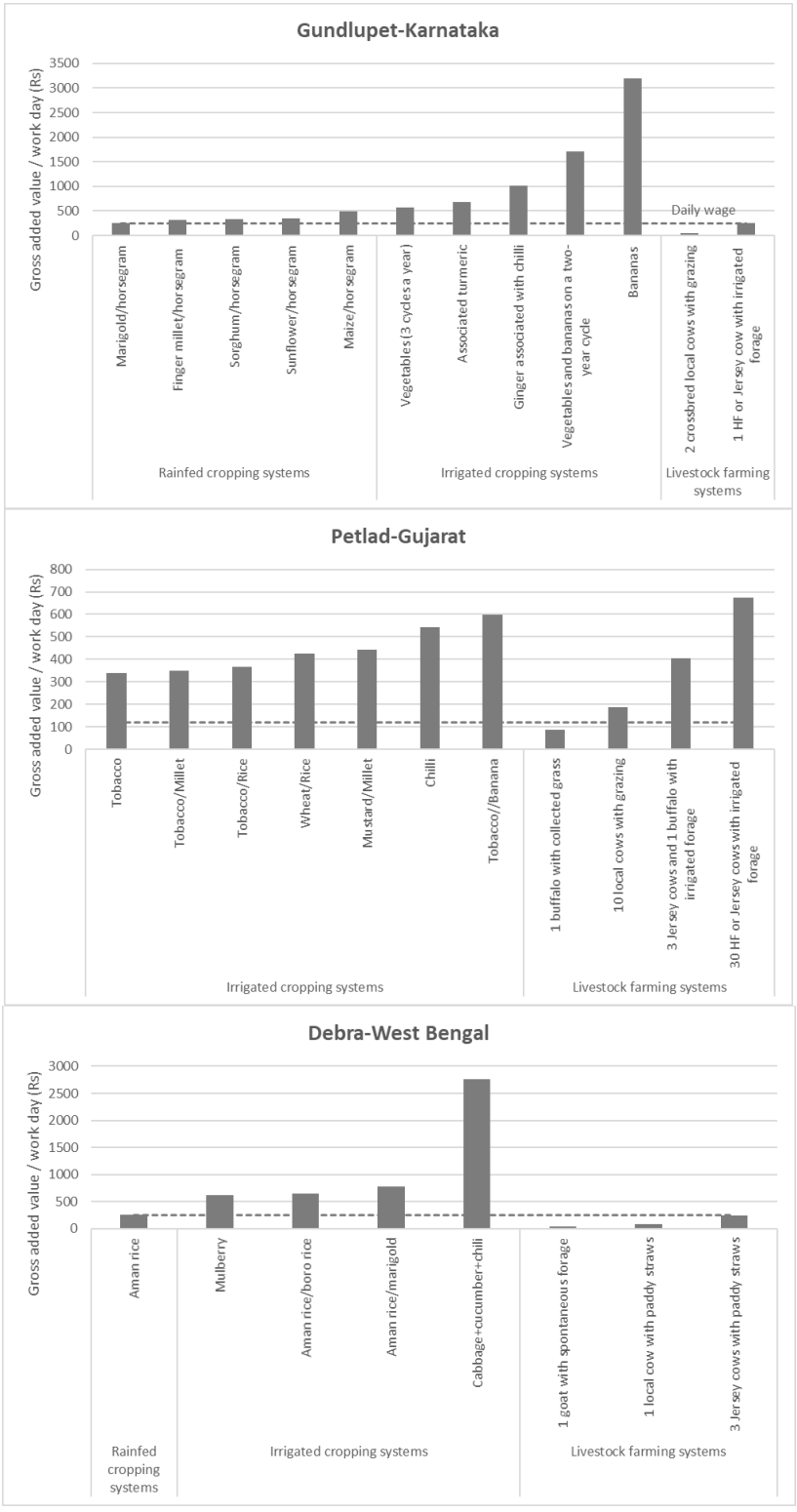
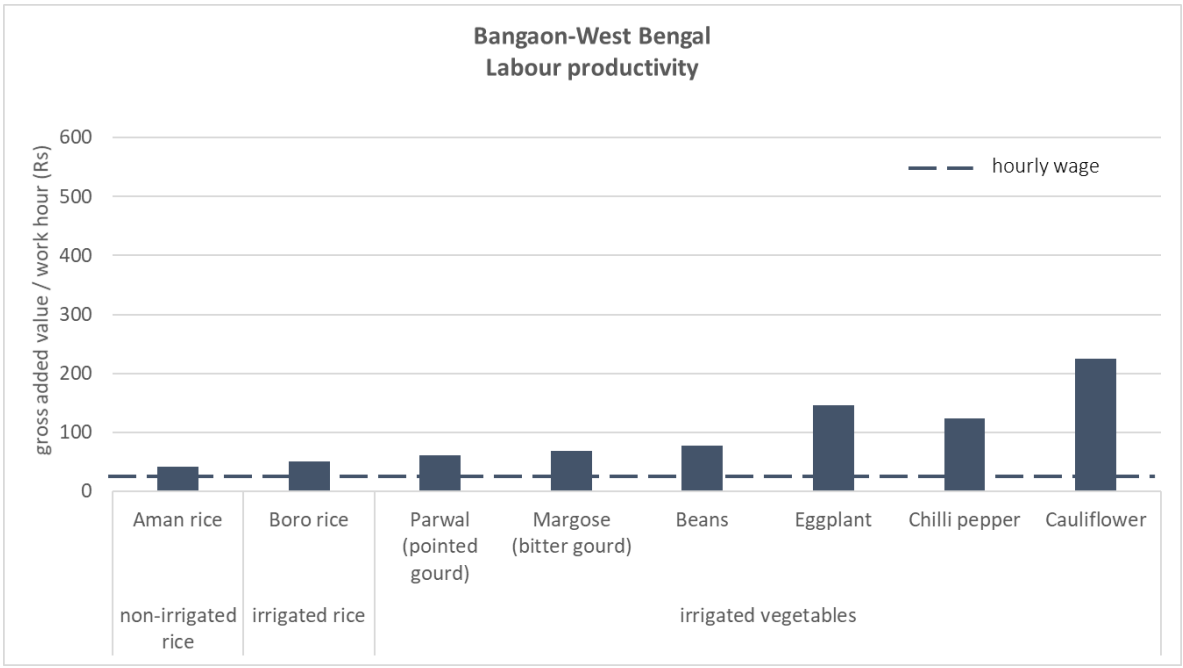


Figure 8. Comparison of daily labour productivity in the main cropping and livestock farming systems with the agricultural daily wage in three study areas. *Source: C. Aubron, S. Bainville and O. Philippon 2020, based on agrarian diagnoses IndiaMilk project*

The difference in labour productivity between rainfed and irrigated crops, leads us to clearly distinguish between two types of situation where agricultural labourers are employed: the first is imposed by work peaks; the second is economically justified.

Employing labourers to work on rainfed crops is not, so to say, economically "profitable". The labour productivity they generate is generally close to the daily wage. Employing workers is hence equivalent to paying them all the added value they produce. But this employment that represents neither a gain nor a loss for an employer, allows them to exploit the total land surface available. Without this additional labour a part of the land would not be cultivated and, outside peak periods, family labour would be largely under employed. In these circumstances, hiring paradoxically contributes to full employment of the family workforce. In the Indian context, this is the type of farming we would specifically call family farming.

This is not the case of irrigated crops or dairy farming with above 3 to 4 heads of bovines. In these cases, the labour productivity is far higher than a daily labourer's daily wage. Independently of any calendar constraints, it is profitable to hire labourers, as the wage paid remains lower than the added value generated (Table 2). With this, the employer keeps an appreciable gross margin (added value, from which the cost of the salary is deducted). On these farms, on which the family works, hiring labourers is a means of increasing family earnings to levels above its actual productivity. This can be measured by dividing the gross margin by the number of days of family work. This is particularly visible on vegetable farms in Bangaon in West Bengal (Figure 9). It seems to be necessary to clearly distinguish this type of farm from family farming and to specifically identify it as "patronal faming".



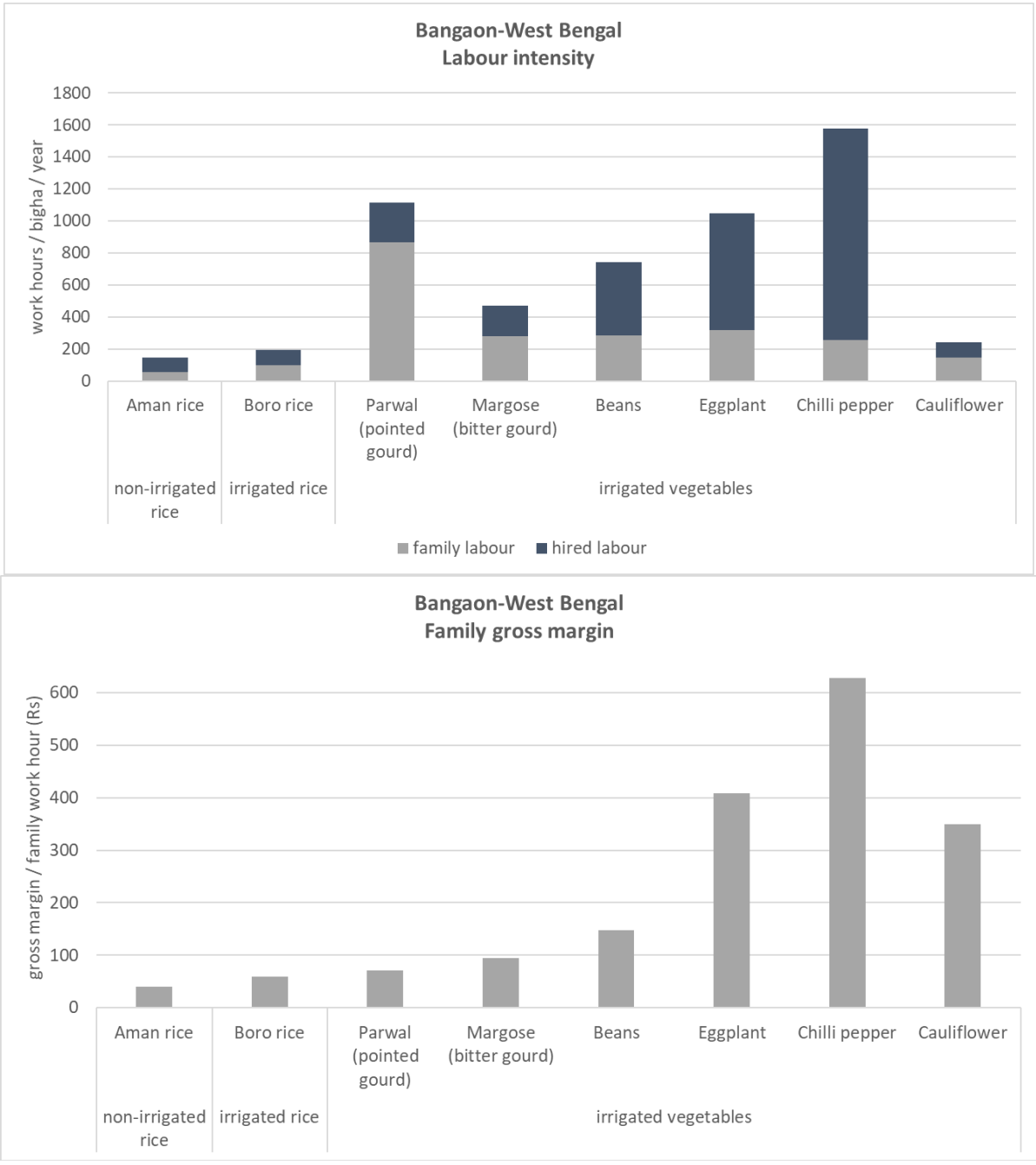


Figure 9. Labour productivity, work time and gross margin per day of family labour in Bangaon, West Bengal[1].

Corporate farms (the final case presented in Gundlupet in Figure 5) differ from family and patronal farms. When investors tie up their capital in farming, all the work is provided by employees. Paid labour is a cost that has to be reduced and the production systems implemented demand relatively little labour per unit of land or per animal (Table 2). Thus, in Gundlupet, coconut groves covering 4 to 40 ha are planted with rotating crops alternating irrigated ginger and banana trees. Once they are established, banana

[1] 1 bigha=0,1350 ha

and coconut trees require little care. Ginger cultivation is more labour intensive, but as it is sensitive to fungal diseases, it requires long fallow periods and is only grown one year out of ten. The absentee owner entrusts the plantation to a part-time manager. The sowing, weeding and harvesting of ginger, and the banana plantation, is left to day labourers. The bananas and coconuts are harvested by the buyer. The whole process requires far less work per hectare than the production systems followed on family or patronal farms. However, the larger surface area makes it necessary to multiply the lower work requirement per hectare by the total number of hectares.

	Family Farm	**Patronal Farm**	**Corporate Farm**
Labour used	family (and hired labour)	family and hired labour	only hired labour
Periods when labourers are employed	work peaks when family labour is insufficient	as soon as work has to be done	for all the work throughout the year
Reason for hiring labour	to cope with work peaks and ensure full family labour employment	to increase income from family work (margin/day of family labour)	to increase the profitability of a capital investment
Daily labour productivity	can be equivalent to, and at times even lower than the daily wage	higher than the daily wage	as high as possible and always higher than the daily wage
Work distribution over the year	most evenly distributed over the year	distributed over the year	concentrated in time so that it can be done mainly by day labourers to avoid hiring permanent staff
Types of operations carried out	livestock farming with daily chores; diversity of crops and irrigated crops when possible to spread the workload over the year; labour on other farms during the slow periods in the calendar	irrigated crops (labour productivity higher than the daily wage); livestock farming sometimes associated with few daily chores	specialisation in crops that require little labour and with the highest labour productivity: irrigated crops (and more rarely large livestock farms with economies of scale in terms of daily chores)

Table 2. Main features of family, patronal and corporate Indian farming models.

Discussion and conclusion

The Indian countryside is hence filled with lessons that allow us to understand the role of paid agricultural labour. Numerous farms are clearly family farms. They correspond to families who invest their labour to earn an income, but wage-labour is nonetheless present. This allows them to supplement their income and to ensure that the family workforce is fully occupied, either by hiring out their labour when the means of production are lacking (land, animals, irrigation) or during fallow periods in their farm calendar, or by employing labourers when family labour is insufficient during certain periods.

But there are also numerous patronal farms. As they have greater means available to them, particularly good access to irrigation, they can follow cropping systems that are very productive, despite being labour intensive. They hire labourers, not only to cope with work peaks, but also to increase the income the members of the family earn. While they are clearly different to family farms, these patronal farms are still a far cry from “corporate farms”. In the latter case, the investors are motivated by the relationship between the profit and the capital invested, and not by the payment for work they do not provide (Cochet, 2018).

Indian agriculture cannot be reduced to a homogenous series of family farms, and it shows a large diversity of agricultural enterprises. The latter differ more in terms of the role they attribute to hired labour, than in terms of their surface area. While it is common to employ labourers on most farms, the reasons for this cover a range of contrasting realities. While it complements family labour on family farms, it is a means of increasing the earnings of the family workforce on patronal farms.

The latter category is probably the most typical in Indian agriculture and the most original in world agriculture. In the family business farms studied in different parts of the world (Gasson *et al.*, 1988; Pritchard *et al.*, 2006; Weller *et al.*, 2013; de Souza *et al.*, 2018; Chaxel *et al.*, 2018), the use of hired labour is not systematic and does not have the same intensity. Patronal farms with similar functioning to those identified in India are described in Indonesian palm oil production, but they find their place in a dynamic linking agro-industries and small family farms set up temporarily by the labourers (Barral, 2018) which has no equivalent in India. The structural importance of patronal farms in India is linked to the country's agrarian history. It is the result of an incomplete agrarian reform, which left landless a large part of the rural workforce, and a Green Revolution, which beyond inputs, was largely based on an intensification of the use of labour, thereby partly provided by hired workers. While this model has not allowed a large part of the rural Indian population to shift out of poverty, it created more jobs than corporate farming and made it possible to retain a large proportion of the active population in the countryside. According to the International Labour Office, the agricultural sector still provides over 40% of jobs in India, while this proportion is 30% in China for example. This patronal agriculture has thus contributed to limiting unemployment and the expansion of slums, in an economy that is still little industrialised, and marked by secondary and tertiary sectors that generate few jobs. The Indian State developed a coherent agricultural policy, stabilising agricultural prices for patronal producers, while subsidising food for the poorest (Dorin *et al.*, 2001), often working for them. The Public Distribution System (PDS) has thus made it possible to keep agricultural salaries low. The White Revolution that gave the poorest access to a supplementary income through milk, has reinforced this edifice (Aubron *et al.*, 2019).

The recent history of Indian agriculture nonetheless questions the durability of this model. The question of rural salaries is a key issue today, and changes, however timid, seem to be taking place in agricultural production systems. The *Mahatma Gandhi National Rural Employment Guarantee Act* (MNREGA), voted in August 2005, follows on from numerous programmes that, since 1970, have sought to create employment for the poor by developing rural infrastructure. But for the first time, this is a legally binding law: the State commits to providing at least 100 days of paid employment to every rural household engaged in unqualified manual labour. The candidates are entitled to unemployment benefits if the local administration does not provide them work within 15 days of their application. This particularly restrictive context seems to have borne fruit, and may even have led to raising real salaries, which have stagnated for over twenty years (Das and Usami, 2017; Berg *et al.*, 2018).
These changes in salaries are probably not unrelated to the more frequent use of moto-mechanisation. In the regions studied here, apart from irrigation equipment, moto-mechanisation has long remained marginal. Tractors nonetheless appeared in the countryside in the 1990s, and moto-mechanised cereal harvesting is increasingly common in certain regions. Less pronounced, but more problematic, is the growing use of chemical herbicides. The Indian consumption level had remained exceptionally low until present. Manual weeding was done by labourers, for whom it was a precious source of fodder. However, over recent years there has been a clear increase in the use of herbicides (Gupta *et al.*, 2017). Soil preparation that is increasingly mechanised is not a very time consuming activity, but this is not true of weeding and harvesting, which mobilise numerous workers.
In parallel, in several states, land regulations have recently been modified to facilitate the introduction of large capitalist holdings and numerous authors question the effects of such measures on rural employment (Singh, 2006; Swain *et al.*, 2012). More recently, three farm bills question in the long term the system of cereals public purchases and the price guarantees for producers in the concerned regions. These producers, often at the head of patronal farms where moto-mechanization is underway, have in

fact strongly contested these farm bills during demonstrations in Delhi at the end of 2020. The question which arises is whether the Indian patronal farming model, which creates employment without being nonetheless able to reduce poverty, is compatible with a further liberalization of the Indian economy. If that is not the case and these transformations continue, the Indian subcontinent would change both its type of farm and its model of economic development.

India's weight in the world's agriculture and the originality of this farming model make the study of these transformations a major issue, and the methods used in this study (field research investigating in detail agricultural labour, both in technical and socio-economic terms) particularly valuable. These questions also call for a much more in-depth consideration of agricultural labour in national statistics, by quantifying within farms: the number of work days provided by family members and by labourers, as well as agricultural labour productivities and wages for different crop and livestock activities. As we have shown here, these indicators are as important as the size of the farms in characterizing and understanding the Indian farming model.

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