



TASK AND LABOR RISK MAPPING: SOY AND CORN SEEDS IN BRAZIL

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1. INTRODUCTION

The Fair Labor Association conducted this task and labor risk mapping study to develop a better understanding of the local conditions, practices and labor standards in agriculture in Brazil. The specific aim of this exercise is to understand the production processes and map the labor risks present in corn and soy seed production.

In this study, the labor standards risks are mapped at three levels:

- Country (local conditions, labor laws, etc.)
- Supply chain management systems (code awareness, training, etc.)
- Farm (tasks, working conditions, etc.)

The Fair Labor Association conducted this study together with an independent external expert. The assessment started with desk-based research on the agriculture sector in Brazil. The field visit was conducted in São Paulo and the state of Minas Gerais between January 4 and 12, 2012. Data was collected through interviews, documentation review and visual assessment. As Syngenta is an affiliate of the FLA producing seeds in Brazil, information was gathered from their local staff, growers and workers at two farms producing corn and soy seeds. Data was also collected through meetings with stakeholders, including Instituto Ethos, a leading CSR organization in Brazil; and union representatives from Sindicato dos trabalhadores rurais de Minas Gerais in Serra do Salitre and Sindicato de trabalhadores rurais de Uberlândia of Uberlândia. This study included interviews with 10 management staff at both farms; two union representatives based in Serra do Salitre and Uberlândia; one representative from Ethos in São Paulo; eight representatives from Syngenta in São Paulo, Uberlândia and Unai; and 39 workers, of which 15 were women.

It is important to note that from Christmas to mid-January, most Brazilians are on vacation. It was therefore challenging to organize meetings prior to the field visits and meet key international organizations, ministries or NGOs while in Brazil. Nevertheless, the visit had to be organized during this time as corn and soy were in season. Because Brazil is a very large country and farms are long distances apart, the time spent at the farms was limited. Farms are large (around 9,000 ha each) and operated by trained workers using modern equipment.

This report provides a baseline assessment of risks based on a small sample of farms and stakeholders. Considering the constraints mentioned above, further visits would be recommended to obtain additional details.

2. COUNTRY RISKS

2.1 GENERAL INFORMATION ON AGRICULTURE IN BRAZIL

Brazil is endowed with vast agricultural resources. There are two distinct agricultural areas: the southern one-half to two-thirds of the country, and the drought-ridden northeast region and Amazon basin. The former has a semi temperate climate, high rainfall, fertile soil, advanced technology and input use, good infrastructure, and experienced farmers, and produces most of Brazil's grains and oilseeds and export crops (coffee, cotton, soy, corn). The northeast region lacks well-distributed rainfall, good soil, adequate infrastructure, and sufficient development capital; it is also mostly occupied by subsistence farmers. Both regions are increasingly important as exporters of forest products, cocoa, and tropical fruits. Central Brazil contains substantial areas of grassland with only scattered trees.¹

¹ <http://www.fao.org/countryprofiles/index/en/?iso3=BRA>



In the 1980s, Brazilian agriculture underwent a major transformation. Large-scale plantations became more highly mechanized and export-oriented, and land became increasingly concentrated in the hands of large agricultural businesses.

Agriculture is a major sector of the Brazilian economy, and is key for economic growth and generation of foreign exchange. Agriculture accounts for about 6percent of GDP and 36 percent of Brazilian exports. Brazil enjoyed

a positive agricultural trade balance of \$55 billion in 2009. The country is the world's largest producer of sugarcane, coffee, tropical fruits, frozen concentrated orange juice (FCOJ), and has the world's largest commercial cattle herd (50 percent larger than that of the U.S.) at 170 million heads. Brazil is also an important producer of soy beans (second-largest producer behind the United States), corn (third largest producer in the world), cotton, cocoa, tobacco, and forest products. The remaining agricultural

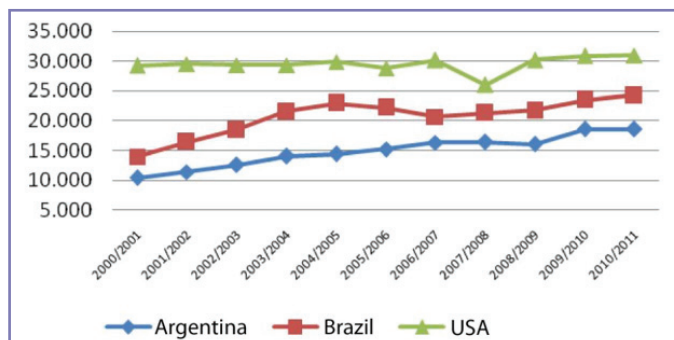
output is from the livestock sector, mainly the production of beef and poultry (second largest, behind the United States), pork, milk, and seafood.²

Given its available agricultural land, abundant water, favorable climate, tropical agricultural technology, and an advanced agricultural sector, Brazil is well positioned to become the principal agricultural exporter in the world maybe as early as 2020.

2.2 GRAINS – CORN AND SOY

During the 2009-10 growing season, Brazil was expected to harvest a combined 138 million tons of grain, about 6 percent of the world's total estimated grain production of 2.2 billion tons. Brazil's agricultural production is already quite diverse and there is ample room to grow.

The amount of land used in Brazil for cattle ranching declined 3 percent over the last ten years to 172 million hectares, while the number of cattle in Brazil increased to 170 million in 2006, 11 percent over the number of cattle reported in 1995. At the same time, the amount of land used for crop production increased 83.5 percent to 76.7 million hectares. The largest increase in crop acreage was for soybeans, but other crops such as corn, cotton, and sugarcane also registered increases.³



Area cultivated with soy in Argentina, Brazil and the U.S. (thousand hectares)⁴

² <http://www.state.gov/r/pa/ei/bgn/35640.htm>

³ <http://www.soybeansandcorn.com/Brazil-Land-Utilization>

⁴ Soy Strategic Gap Analysis: Brasil e Argentina, IFC July 2011

Conab (Companhia Nacional de Abastecimento) estimates that 2011/12 soybean production will be 71.7 million tons. It is currently estimated that the 2011/12 full-season corn acreage in Brazil increased 9.1 percent to 8.6 million hectares.⁵

2.3 A WORD ON CERRADO, THE REGION WHERE THE TWO FARMS VISITED ARE LOCATED



More than 60 percent of the cerrado's former 200 million hectares has been cleared for agriculture.

The *cerrado* is the most biologically rich savanna in the world, occupying a huge expanse of the high plains of central Brazil on the Atlantic side of the Amazon basin. The soils of the *cerrado* — a complex mosaic of grass and woodland — were once regarded as too acidic to grow crops. But since Brazil's agronomists began applying industrial quantities of lime in the 1980s, these soils have been transformed. The *cerrado* now produces 70 percent of Brazil's farm output.⁶

⁵ http://cornandsoybeans.com/news/Jan11_12-Conab-Releases-Latest-Brazilian-Crop-Estimates

⁶ http://e360.yale.edu/feature/the_cerrado_brazils_other_biodiversity_hotspot_loses_ground/2393/

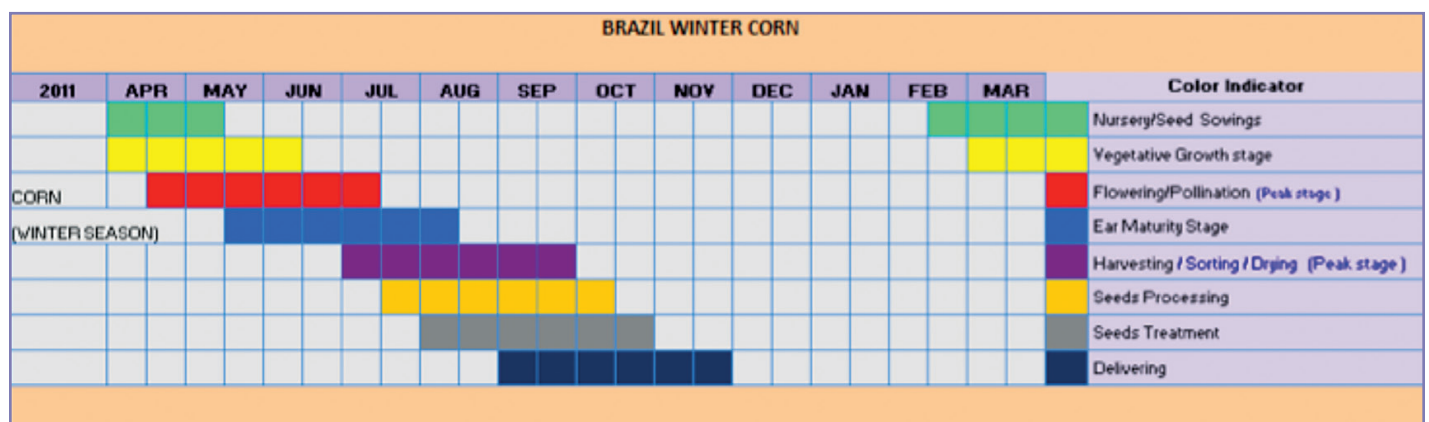
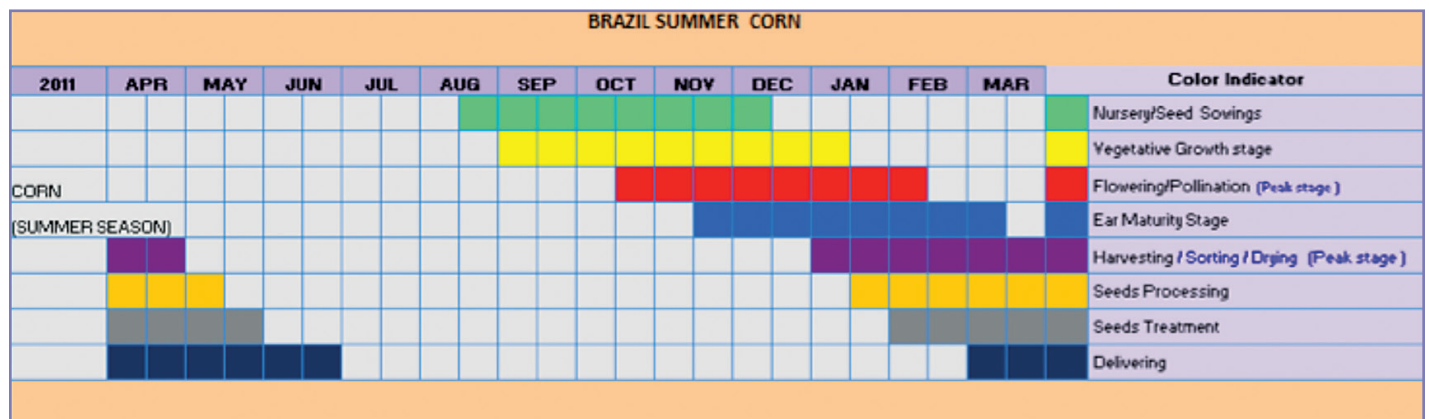
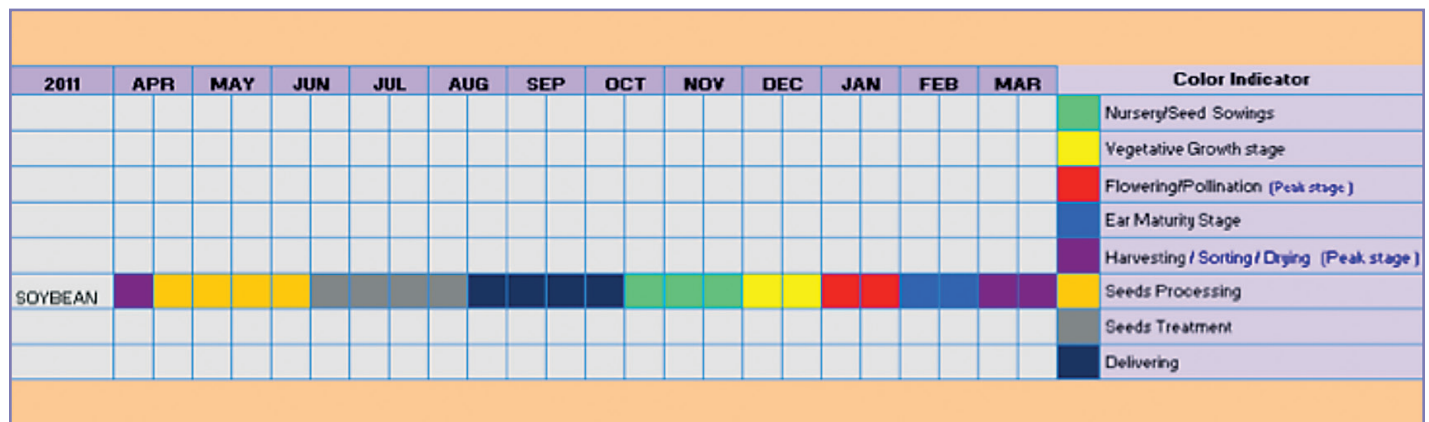
2.4 LABOR INTENSITY/CROP CALENDAR

As indicated in the crop calendars below, soy seed production has one season per year, and corn seeds have two harvesting cycles per year in Brazil.

While soy seeds production in Brazil is completely mechanized and thus not too labor intensive, corn seeds production requires manual work for the specific tasks

of detasseling (to ensure male to female pollination) and roughing (to eliminate foreign elements mixed with corn). Seed producers usually use third party agencies that provide labor for these tasks.

At the time of our visit to the corn seeds fields, workers were in the processing of verifying the detasseling work they had previously carried out. Soy was in the active flowering stage.



2.5 LABOR LAWS

Formal workers in Brazil receive important benefits and protections – pension, sickness, disability and death benefits, paid annual leave, parental leave, limits on working hours and a guaranteed minimum wage. However, informal workers are not covered by labor law provisions.⁷

The 1988 Brazilian Federal Constitution, the Consolidation of Labor Laws (CLT) and other supplementary laws regulate labor and employment in Brazil. Labor contracts and collective bargaining agreements applicable to certain categories of workers may provide other benefits. Labor union organizations are active and rather powerful in Brazil and are responsible for a series of benefits and rights, which are guaranteed by collective bargaining agreements. Note that in Brazil every worker must pay a compulsory annual contribution to the labor union equivalent to one day

of salary, irrespective of membership. The payment is withheld by the employer directly from the employees' salary.

Union representatives interviewed as well as the representative of Instituto Ethos mentioned that major progress had taken place with regards to labor conditions, specifically child and forced labor as well as worker registration in Brazil since the Presidency of Luiz Inácio Lula da Silva and now under the Presidency of Dilma Rousseff, but there is a lot of work ahead.

Regulation NR 31 of the Ministry of Labor (2005) sets standards for workers in agriculture that encompass health and safety and well being; these standards tend to be enforced by labor inspectors and by the farms where the audits took place.⁸ Additional revisions of the original labor code, dating back to 1943, have also increased protections for workers.

⁷ G20 Country brief, ILO and OECD, <http://www.oecd.org/dataoecd/51/57/48723896.pdf>

⁸ <http://www.portaluniline.com.br/site/docs/nr031.pdf>

Key Points of Brazilian Labor Law

Brazilian labor and employment laws are very protective of workers and there are a series of

other rights, not mentioned below, which may be guaranteed to workers depending on their activity.

THESE BENEFITS APPLY TO ALL PERMANENT WORKERS AND SEASONAL WORKERS	
SUBJECT	DESCRIPTION
Minimum wage	The Brazilian Constitution guarantees a minimum monthly salary, which was R\$ 622 at the time of our visit (approximately US\$ 350).
13th salary	The 13th salary corresponds to an additional month's salary paid annually or according to the proportional number of months worked in the year.
Vacation	Employees are entitled to thirty (30) days of vacation after working one year for the same employer if not absent from work for more than five unjustified times during this same period.
Working terms and overtime pay	The Federal Constitution and the Labor Code provides that the maximum number of hours per week are 44 hours, or 8 hours per day. An employee cannot work more than two overtime hours per day since the workday cannot exceed the legal limit of ten hours; however, the law provides some very exceptional situations for overtime in excess of two hours. The minimum overtime premium is 50 percent of the regular hourly rate, but it may be higher if established in a collective agreement. Employers must allow an interval of 11 hours of rest between two working days.
Prior notice in case of dismissal	In case the employer wishes to dismiss an employee, the employer is obliged to give prior notice of at least thirty days.
Incentives	Employers provide incentives such as transportation and meal subsidies, with companies receiving tax deductions or other beneficial tax treatment for the resulting expenses. These in-kind benefits are not included in the taxable income of employees.
Profit sharing	The 1988 Constitution expressly grants workers the right to profit-sharing, which is not part of the basic salary, by means of annual negotiation between employers and employees.
Guarantee Fund for Time of Service (FGTS)	Employers contribute monthly 8 percent of an employee's salary into the Severance Indemnity Fund (Fundo de Garantia do Tempo de Serviço, FGTS). The contribution is deposited into a blocked FGTS bank account in the name of the employee. In case of dismissal without cause, the employer has to pay a 40 percent penalty of the FGTS over the entire amount deposited in the FGTS bank account. Withdrawals, however, are authorized in only a few circumstances established by law.
Termination of employment	Under Brazilian labor and employment law the labor contract may be terminated either by the employee or by employer. Terminations promoted by the employer may be made with or without cause.
Social security	Every worker in the formal sector in Brazil, once registered by the company, is covered by social security insurance with contributions from employers, employees and the government. Old age pension or retirement pension schemes are available to men aged 65 years and 35 years of service and women aged 60 with 30 years of service. Workers in certain industries with jobs of an especially dangerous nature are entitled to retire at an earlier age.

BRAZIL'S RATIFICATION OF CORE ILO CONVENTIONS AND YEAR OF RATIFICATION:								
	FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING		ELIMINATION OF FORCED AND COMPULSORY LABOR		ELIMINATION OF DISCRIMINATION IN RESPECT OF EMPLOYMENT AND OCCUPATION		ABOLITION OF CHILD LABOR	
Country	Conv. 87	Conv. 98	Conv. 29	Conv. 105	Conv. 100	Conv. 111	Conv. 138	Conv. 182
Brazil	Not ratified	1952	1957	1965	1957	1965	2001	2000

Core ILO Conventions

Brazil's ratification of Core ILO Conventions and year of ratification:

Freedom of Association and Collective Bargaining

Brazil has ratified ILO Convention 98, Right to Organize and Collective Bargaining Convention; it has not ratified ILO Convention 87, Freedom of Association and Protection of the Right to Organize Convention.

Brazilian law provides for union representation of all workers (except members of the military, the uniformed police, and firefighters) and imposes a hierarchical, unitary system funded by a mandatory union tax on workers and employers.

Collective bargaining is widespread in the formal sector and agriculture. The law obliges a union to negotiate on behalf of all registered workers in the professional category and geographical area it represents, regardless of whether an employee pays voluntary membership dues to it. De facto, in the farms we visited, all permanent workers were members of the local union with which employers had negotiated. Membership fees consist of one full day of pay deducted from the worker's salary each year.

Elimination of Forced and Compulsory Labor

Brazil has ratified ILO Convention 29, Forced Labor Convention, and ILO Convention 105, Abolition of Forced Labor Convention.

Brazilian law prohibits "reducing someone

to a condition analogous to slavery," and the government enforces that law. The concept of slave labor includes not only forced and compulsory labor, but also extremely arduous labor and labor performed in degrading working conditions. Such labor has occurred in some states, in activities such as forest clearing to provide cattle pastureland, logging, production of charcoal, raising livestock, and agriculture, such as sugarcane and citrus cultivation.

The National Commission to Eradicate Slave Labor coordinates the government's efforts to eliminate forced labor. The Ministry of Labor and Employment's (MTE) enforcement arm, the Special Group for Mobile Inspection, has responsibility for locating and freeing victims of forced labor, and the MTE increased resources dedicated to conducting inspections. Federal police accompany mobile unit inspectors on raids to provide protection.

According to the MTE's Secretariat of Labor Inspections, forced labor in the production of charcoal and harvesting sugarcane decreased in 2012. Forced labor often involves young men drawn from the impoverished Northeast states — Maranhao, Piaui, Tocantins, Para, and Ceara — and from Goias, to work in the northern and central-western regions of the country. Women and adolescents (the latter typically working with their parents) also were involved in forced labor activities. The ILO estimated that there were approximately 25,000 forced laborers in Brazil at any given time during 2010.

In 2010, The Federal Labor Prosecutor's Office participated in inspections by receiving

complaints and establishing fines that violators had to pay to receive financing and credit, sell products, have free access to their bank accounts, or obtain access to governmental loans. Mobile teams levied fines on estate owners who used forced labor and required employers to provide back pay and benefits to workers before returning the workers to their places of origin. Labor intermediaries often traffic forced laborers to remote estates, where victims are forced to work in harsh conditions until they repay inflated debts incurred by travel, tools, clothing, or food. Armed guards sometimes are used to retain laborers, but the remoteness of the locations, confiscation of documents, and threats of legal action or physical harm usually are sufficient to prevent laborers from fleeing.

Elimination of Discrimination in Respect of Employment and Occupation

Brazil has ratified ILO Convention 100, Equal Remuneration Convention, and ILO Convention 111, Discrimination (Employment and Occupation) Convention.

Anti-discrimination principles in Brazil are present in the constitution, in the labor law, in the Child and Adolescent law, in the Ageing law and in the penal code. The constitution prohibits all forms of discrimination based on age, race, color, national origin, disability, religion, sex, marital status and political affiliation.

Abolition of Child Labor

Brazil has ratified ILO Convention 138, Minimum Age Convention, and ILO Convention 182, Worst Forms of Child Labor Convention.

Although child labor is prohibited by Brazilian law, it continues to be a problem particularly in homes and the informal sector. Children are found working on cotton, manioc, pineapple, rice, and tobacco farms. A 2008 study by the government's Applied Economic

Research Institute showed that 1.7 million children between the ages of five and 14 (approximately 5 percent of the total in that age group) worked in the country's economy, based on data from the 2007 National Household Survey.

The government implemented innovative programs to prevent child labor, including the Program to Eradicate Child Labor (PETI) coordinated by the Ministry of Social Development; and works with state and local authorities to combat hunger.

2.6 CONCLUSIONS ON COUNTRY RISKS

Based on the data collected from background research, interviews with external and internal stakeholders and review of national policies and laws, the risk rating of Brazil is at level 3, Moderate Risk. Please see Box 1 for the Country Risk Matrix. It should be noted, however, that risks have declined in recent years, although the magnitude of the risks also depends on the crop.

BOX 1: COUNTRY RISK MATRIX

- High Risk: The context of the country is evaluated at a level 1 when the national law is contrary to the international law or the FLA (such as for financial sanctions or nonpayment of social security and pension for daily workers).
- Medium Risk: Level 2 indicates some lack of implementation of the local law and some controversies in the local labor code brought up by various research studies (State department, ILO etc.).
- Moderate Risk: Level 3 indicates effective implementation of the local law by government bodies such as the labor inspectors and lack of any major disputes. It is also the case when the context of the country does not hamper the implementation of the FLA Code. This is the case for the majority of issues in Brazil.
- Low Risk: Level 4 is applied when, in addition to meeting all the requirements of Level 3, a country promotes the issue covered by a best practice benchmark (for example, the recruitment of people with disabilities in France).

3. RISKS RELATED TO MANAGEMENT SYSTEMS

3.1 GENERAL INFORMATION

Many multinational companies operate in Brazil for the production of hybrid seeds. To a large extent, each company has its own supply chain management system. For the purposes of this study, we reviewed Syngenta Seeds' supply chain management structure. The review of this supply chain reflects some of the challenges and gaps in the internal management systems that exist in the agriculture sector in general.

From our observations, corn and soy seed production is mostly mechanized, except for roughing and detasseling in corn production. Seed companies have contracts with service providers for manual laborers doing these specific tasks. The agreements have been approved by the labor court and their conditions are verified by a private third party. Therefore, risks regarding working conditions for these workers are limited.

Farms usually only use a part of their fields

for seed production. The other parts, for example, may be used for potato or coffee plantations.

Profile of Workers on the Farms

Workers on the corn farm visited were either permanent or seasonal workers. Permanent workers involved in crop production were all men (72), with only eight women in charge of clerical and cleaning or cooking tasks. There were 33 seasonal workers (18 men and 15 women) completing manual labor, who were hired by Syngenta through a third party.

Permanent workers at the corn farm are accommodated in houses on the farm. One building is dedicated to single workers and appeared to be very new and well-maintained. These workers live in single or double rooms with a common living room. A cook prepares their breakfast, which is served at their house. The other meals are taken in a modern cafeteria where two cooks operate. Families are accommodated in houses scattered on the property. A bus takes the children to school in the morning and returns them home at night. Only men work on the farm; women usually stay at home to



Workers getting ready to detassel corn



Worker detasseling in corn field



Dining room in single workers' dorm



Double bedroom for single workers

take care of the house and children. Families do their grocery shopping and cooking by themselves. Accommodations and meals are provided free of charge.

Most of the seasonal workers come from the region and have been working for the third party for some years. They go from one field to the next under a one-year contract with the third party. The field where we interviewed seasonal workers covers 192.5 acres out of the farm's 8,758 total acres.

The soy seed production farm we visited employs 393 permanent workers (285 men and 108 women) in crop production, the soy seeds processing plant, potato sorting and offices. The proprietor of the farm owns 20 percent of the land, and 80 percent is rented from neighboring farmers through contracts. Workers involved in crop production are all men, as was the case with respect to the corn farm. Women are employed in administration as well as potato sorting. Some seasonal workers are also hired to work mostly on



Cafeteria



Kitchen



School bus



Soy seeds



Potato sorting

coffee and have short- term contracts (up to three months) with the farm itself.

The farm has signed a collective bargaining agreement with Sindicato dos trabalhadores rurais de serra do salitre (STRSDS).

In order to define the risks which arise from the supply chain management systems, the team looked at policies, procedures and implementation, training and the engagement with stakeholders. The interview framework with management is presented in Box 2.

BOX 2:

The interviews were structured to allow the analysis of integration of labor standards in the management systems. The interviews centered around the following questions:

- Are the policies visible to internal as well as external stakeholders such as families of seasonal workers and through which means (e.g., through radio announcements, billboards in the vernacular and drawings, etc.)?
- Are intermediaries, supervisors and managers trained to implement local labor law?
- What kind of trainings, processes, resources and responsibilities are set up at the farm level to ensure application of local labor law?
- Do the implementers receive sanctions or incentives (e.g., is child labor prohibited and related sanctions included in contracts with seed organizers)?
- What are the stakeholders' views on the policy, implementation and actual outcomes?

3.2 POLICIES

Syngenta has globally adopted a Code of Conduct (CoC) for labor practices for their agricultural supply chain that covers all code elements in the FLA CoC. The Brazilian version of the code of conduct is called “O trabalho rural tem que ser legal” (rural employment needs to be legal). In addition, this code comes with a simple guide on how to communicate these principles to workers, a good way of reinforcing awareness.

From our visit to farms and discussions with interlocutors, the labor law in Brazil is rather strong and defines employers’ obligations well. The code of conduct communicated by Syngenta reiterates national labor laws. From our interviews with Syngenta representatives the company has defined some internal policies based on legal requirement within their management system. Specific policies and procedures related to the FLA code have not yet been prepared or provided to growers and producers. However, because of the coverage of the law, these might be redundant. Both growers interviewed were aware of Syngenta’s CoC, and they have been trained on it.

3.3 PROCEDURES AND IMPLEMENTATION

Any new employee who joins the company receives a copy of the CoC, which has also been shared with seasonal workers. Corn seed growers have been trained on the CoC and FLA Code, and further trainings were scheduled from January to March 2012 for soy bean organizers and major growers.

Syngenta contracted an external audit company that monitored 100 percent of cornfields and 3.5 percent of soy bean fields in 2011. Their checklist contains 210 items related to EHS and payment, and provides an overview of the status of each. From the

results, Syngenta built its own checklist, including additional FLA requirements, and contracted another company to start a new round of audits.

Free access to a hotline has been provided, and workers involved in roughing and detasseling (hired by third party) received a hat with the hotline number printed on it. During interviews, workers confirmed that workers were aware of the hotline mechanism. Workers hired directly by farmers, however, are not aware of code or of the reporting mechanism.

At one farm, we could access records on HSE but could not check directly all personnel records or payrolls, as these are kept in two different offices located off the farm in the city of Unai. While we could not visit the office for lack of time, we had access to the records representatives had brought to the field and the company also provided us with requested records by email. We also had access to workers’ contracts, in the form of small booklets that are kept at the farm. During our visit to one of the offices in Unai, the owner of the farm showed us the payroll records of a few workers. The other farm is organized differently, with centralized records, and we could review HSE, personnel, payroll, policies, etc.

Recruitment, Hiring and Personnel Development

Most of the workers involved in mechanized activities for corn and soy seed production are long-term workers hired directly by the growers and producers on the basis of recommendations of already-employed workers or work contacts. While we do not have information on the year when the workers began employment with the farms, it was observed that some of the workers interviewed had likely been employed for around 20 years on the same farm. Workers

usually live in neighboring villages, travel to work for the day by car, and return to their homes at night. In the case of one farm, workers stay on the farm with their families. All workers have contracts. Neither of the farms use intermediaries to hire long-term workers.

Many workers in corn seed production have been working for the farm for several years, while others were starting; they all have one-year renewable contracts. When work is done in one field, they move on to the next. After the harvest, they take a break for a couple of months and start again either with the same farm or on others. On average, 60 percent return to the same farm.

One farm invites people living in the area to attend recruiting meetings with current employees. Candidates are interviewed, their ID card is checked to ensure that they can be hired (above 18), and they undergo a medical exam as mandated by law. If selected for employment, they undergo training on risks associated with the job and the use of personal protective equipment. They also receive training on Syngenta's requirements and "O trabalho rural tem que ser legal." No fees are associated with the recruiting process. Workers have written contracts and get a copy of it. According to the farm, 90 percent of the workers are literate.

Age Verification Process

When hiring a worker, employers have to check the candidate's ID card — which includes birth date — in order to enter into employment contracts. None of the workers in the farms were below 18 years of age, consistent with national law. Some juvenile workers were present (two in each farm) working as interns in the offices. Because of the restrictions imposed by the law on child and juvenile workers, the latter cannot be sent to the field as they might face hazardous conditions.

Grievance Mechanism and Disciplinary Procedures

During interviews, workers seemed to be comfortable with the fact that they could use the open door policy to complain about issues affecting them. Furthermore, farmers have signed a collective bargaining agreement (CBA) with the workers' union, and workers take advantage of the opportunity to raise complaints thorough the union representative.

Workers hired by one farm additionally have access to a hotline toll-free number provided by Syngenta to file anonymous grievances if they choose to do so. The telephone number was provided during induction sessions and is also written on a hat provided to workers to shield them against the sun. All workers interviewed were aware of the hotline. None had used it because their concerns, if any, had been resolved directly with their employer. According to workers, they have not had many complaints; the complaints that existed revolved around the omission of payment for a few hours, which were immediately resolved.

Hours of Work Monitoring

The legal provisions for hours of work stipulate a working week of 44 hours: 8 hours per day, and 4 hours on Saturday, with at least one rest day. The daily working hours can be extended by up to a maximum of two hours per day. Both farms had procedures to keep track of hours worked. Usually, farm supervisors in the field write down hours and workers sign to show they agree with the record. They usually work from 7h30 to 16h30, with a lunch break from 11h30 to 12h30. Representatives of one farm told us that since the beginning of the season, workers twice have worked over seven days in a row, but got some rest immediately after. The farm has a 'banco de horas' (hours bank). The first two

hours of overtime are compensated, but the rest is recorded in the bank. When workers cannot work because of adverse weather, the time they do not work is compensated by extracting hours from the bank (i.e., from overtime they did before). At the other farm, some workers reported working overtime very often because of the nature of their work and being compensated for it.

Compensation

All workers are paid at least the minimum wage, although workers employed by the soy seed farm usually make more depending on production. Workers hired directly by the farms operate machinery that requires training and are not manual workers. They make between two and three times the minimum wage.

Daily work objectives are based on the area to detassel and the number of workers needed is calculated accordingly. Each team can produce more or less depending on experience, and compensation is based on how many corn lines workers can detassel. The field is divided into male and female lines. One “beca” or block is composed of two male and six female lines. Workers detassel in the female lines only. Minimum wage is guaranteed, but workers usually make more based on production. The objectives and wage calculation (production bonus) is set by the farm. Supervisors write down the number of lines worked by each worker. One hectare is paid 120 reais (57.60 USD) To keep track of hours worked and number of lines detasseled or roughed, workers are given a little notebook where they can write down the value of their work every day. The minimum wage negotiated with the regional union was 602.80 reais per month (289 USD) until the end of 2011, and was raised to 622 (299 USD) in January 2012 .

Workers are paid monthly by wire transfer to their own bank account. Deductions

are explained on the workers’ pay slip and follow legal requirements. At the corn farm, workers receive a paycheck in their name for regular hours worked and a check without their name for all overtime hours. We did not have the opportunity to dig into this system and would recommend Syngenta or FLA representatives look into it and monitor workers. These workers are involved in land preparation and chemical applications, and there could be potential labor movement between the different fields thereby making their work more risky.

Health & Safety Procedures

Brazilian law is very strict with regard to health and safety (H&S) practices in agriculture. As a result, farms have some policies, procedures, training and evaluation processes for workers in place. Both farms have put emphasis on H&S and hired specialists to implement procedures, policies and best practices; they have also trained workers on proper use of equipment and chemicals.

There are procedures regarding the use of Personal Protective Equipment (PPE) and sanctions for workers not respecting them, specifically at the soy farm. Chemicals were stored properly in both places and material safety data sheets (MSDS), eye wash, etc., were provided.

Local law requires that workers handling chemicals undergo a health check every six months and this is being followed. We do not have enough information regarding procedures related to work accidents management at the corn farm. At the soy farm, procedures are in place and training has been reinforced since one worker driving a tractor was electrocuted and died because he forgot to fold the tractor’s arms and the latter came in contact with electric power lines.

4. TASK AND RISK MAPPING OF SOY AND CORN PRODUCTION

A first task and risk mapping for soy (Table 1) and corn (Table 2) seed production are presented below. This

task mapping assesses each of the major phases in seed production and defines the tasks and work activities that workers perform within each phase. We would recommend a more detailed study take place in the near future that would cover all aspects of the supply chain.

TABLE 1: PHASE, TASKS AND ROLE OF WORKERS IN SOY SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
1.	Land preparation (Aug/Nov)	<ul style="list-style-type: none"> Plowing to clean the fields; mechanical preparation using tractors 	<ul style="list-style-type: none"> Knowledge of handling, maintenance and repair of tractor, disk, combine (certificate) Knowledge of contouring to prevent soil erosion 	<ul style="list-style-type: none"> Job profiles require minimum training. Usually, mechanics are hired to perform these tasks. Women are excluded from these jobs. Also, training to become a mechanic is not accessible to women for cultural reasons (discrimination).
2.	Chemical fertilizer application (as part of land preparation)	<p>Producers provide fertilizers.</p> <ul style="list-style-type: none"> Unlocking and selecting crop protection products to be used Preparation of protective gear Mixing plant protection products Loading chemicals into sprayers (machines) Cleanup of contaminated loading site Storage and/or disposal of containers Transporting sprayers to farm site where application will occur Postings in areas where application will occur according to the law Application of crop protection products by machines (sprayers) Transport of sprayers back to storage site for decontamination Cleanup and maintenance of spraying equipment, protective gear and truck used for transporting spraying equipment Storage of equipment and protective gear Showering and change of clothing for workers engaged in activity Proper washing of work clothes of workers 	<ul style="list-style-type: none"> Operation, maintenance of sprayers Maintenance of protective gear Knowledge of Integrated Pest Management (IPM) Knowledge of agro-chemicals, their application, posting requirements, restricted re-entry interval, required protective gear, etc. Knowledge of signs and symptoms of pesticide poisoning Knowledge of first aid for pesticide poisoning Knowledge of proper storage and disposal of pesticide containers Knowledge of decontamination of mixing and loading sites Knowledge of maintaining inventory of supplies Knowledge of recordkeeping related to applications and accidents and poisonings 	<ul style="list-style-type: none"> Chemical fertilizers are applied by adults trained as mechanics. Special attention should be given to surrounding worker population and to the re-entry period. It is necessary that workers be well-trained.
3.	Sowing/ Seed planting (Sept/Nov)	Direct planting – mechanical preparation using tractor	High skilled workers; very technical task that is crucial for quality seed production	<ul style="list-style-type: none"> Permanent workers are technician-mechanics who have specific training from technical school and who gained experience and more technical skills onsite Risk of overtime depending on weather conditions

TABLE 1: PHASE, TASKS AND ROLE OF WORKERS IN SOY SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
4.	Phytosanitary treatment (Aug/Jan)	<p>Producers provide plant protection products.</p> <ul style="list-style-type: none"> Unlocking and selecting crop protection products to be used Preparation of protective gear Mixing crop protection products (insecticides, fungicides, herbicides and foliates) Loading chemicals into sprayers (machines) Cleanup of contaminated loading site Storage and/or disposal of containers Transporting sprayers to farm site where application will occur Postings in areas where application will occur according to the law Application of crop protection products by machines (sprayers) Transport of sprayers back to storage site for decontamination Cleanup and maintenance of spraying equipment, protective gear and truck used for transporting spraying equipment Storage of equipment and protective gear Showering and change of clothing for workers engaged in activity Proper washing of work clothes of workers 	<ul style="list-style-type: none"> Operation, maintenance of sprayers Maintenance of protective gear Knowledge of Integrated Pest Management (IPM) Knowledge of agro-chemicals, their application, posting requirements, restricted re-entry interval, required protective gear, etc. Knowledge of signs and symptoms of pesticide poisoning Knowledge of first aid for pesticide poisoning Knowledge of proper storage and disposal of pesticide containers Knowledge of decontamination of mixing and loading sites Knowledge of maintaining inventory of supplies Knowledge of recordkeeping related to applications and accidents and poisonings 	<ul style="list-style-type: none"> Herbicides, insecticides and fungicides are applied by adults trained as mechanics. Special attention should be given to surrounding worker population and to the re-entry period. It is necessary that workers be well-trained
5.	Fertilizer application (Aug/Nov)	<p>Producers provide fertilizers.</p> <ul style="list-style-type: none"> Unlocking and selecting crop protection products to be used Preparation of protective gear Loading chemicals into sprayers (machines) Cleanup of contaminated loading site Storage and/or disposal of containers Transporting sprayers to farm site where application will occur Postings in areas where application will occur according to the law Application of crop protection products by machines (sprayers) Transport of sprayers back to storage site for decontamination Cleanup and maintenance of spraying equipment, protective gear and truck used for transporting spraying equipment Storage of equipment and protective gear Showering and change of clothing for workers engaged in activity Proper washing of work clothes of workers 	<ul style="list-style-type: none"> Operation, maintenance of sprayers Maintenance of protective gear Knowledge of Integrated Pest Management (IPM) Knowledge of agro-chemicals, their application, posting requirements, restricted re-entry interval, required protective gear, etc. Knowledge of signs and symptoms of pesticide poisoning Knowledge of first aid for pesticide poisoning Knowledge of proper storage and disposal of pesticide containers Knowledge of decontamination of mixing and loading sites Knowledge of maintaining inventory of supplies Knowledge of recordkeeping related to applications and accidents and poisonings 	<ul style="list-style-type: none"> Fertilizers are applied by adults trained as mechanics. Special attention should be given to surrounding worker population and to the re-entry period. It is necessary that workers be well-trained

TABLE 1: PHASE, TASKS AND ROLE OF WORKERS IN SOY SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
6.	Harvesting (Feb/April)	<ul style="list-style-type: none"> Mechanical, performed by permanent workers 		Risk of overtime depending on weather conditions
7.	Transport to processing unit	Transport is organized by producer		Risk of overtime
8.	Seeds processing	<ul style="list-style-type: none"> All mechanical 		Depending on size of order from seed companies, might require more workers or some overtime
9.	Seeds conditioning	<ul style="list-style-type: none"> Sizing Treating seeds with insecticide-fungicide 		Mainly health and safety
10.	Transport to distribution center	Trucks usually sent by seed companies		Risks to be defined

TABLE 2: PHASE, TASKS AND ROLE OF WORKERS IN CORN SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
1.	Land preparation	Plowing to clean the fields; mechanical preparation using tractors	<ul style="list-style-type: none"> Knowledge of handling, maintenance and repair of tractor, disk, combine (certificate) Knowledge of contouring to prevent soil erosion 	<ul style="list-style-type: none"> Job profiles require minimum training. Usually, mechanics are hired to perform these tasks. Women are excluded from these jobs. Also, training to become a mechanic is not accessible to women for cultural reasons (discrimination).
2.	Chemical fertilizers (nitrogen) and pesticides application (during spring)	<p>Producers provide seeds and pesticides, take care of the irrigation</p> <ul style="list-style-type: none"> Unlocking and selecting crop protection products to be used Preparation of protective gear Mixing crop protection products (insecticides, fungicides, herbicides and foliates) Loading chemicals into sprayers (machines) Cleanup of contaminated loading site Storage and/or disposal of containers Transporting sprayers to farm site where application will occur Postings in areas where application will occur according to the law Application of crop protection products by machines (sprayers) Transport of sprayers back to storage site for decontamination Cleanup and maintenance of spraying equipment, protective gear and truck used for transporting spraying equipment Storage of equipment and protective gear Showering and change of clothing for workers engaged in activity Proper washing of work clothes of workers 	<ul style="list-style-type: none"> Operation, maintenance of sprayers Maintenance of protective gear Knowledge of Integrated Pest Management (IPM) Knowledge of agro-chemicals, their application, posting requirements, restricted re-entry interval, required protective gear, etc. Knowledge of signs and symptoms of pesticide poisoning Knowledge of first aid for pesticide poisoning Knowledge of proper storage and disposal of pesticide containers Knowledge of decontamination of mixing and loading sites Knowledge of maintaining inventory of supplies Knowledge of recordkeeping related to applications and accidents and poisonings 	<ul style="list-style-type: none"> Herbicides, insecticides and fungicides are applied by adults trained as mechanics. Special attention should be given to surrounding worker population and to the re-entry period. It is necessary that workers be well-trained.
3.	Sowing / Seed planting	Direct planting – mechanical preparation using tractor	High skilled workers; very technical task that is crucial for quality seed production	<ul style="list-style-type: none"> Permanent workers are technician-mechanics who have specific training from technical school and who gained experience and more technical skills onsite Risk of overtime depending on weather conditions

TABLE 2: PHASE, TASKS AND ROLE OF WORKERS IN CORN SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
4.	Mechanical and chemical weed treatment	<p>Producers provide seeds and pesticides, take care of the irrigation</p> <ul style="list-style-type: none"> Unlocking and selecting crop protection products to be used Preparation of protective gear Mixing crop protection products (insecticides, fungicides, herbicides and foliates) Loading chemicals into sprayers (machines) Cleanup of contaminated loading site Storage and/or disposal of containers Transporting sprayers to farm site where application will occur Postings in areas where application will occur according to the law Application of crop protection products by machines (sprayers) Transport of sprayers back to storage site for decontamination Cleanup and maintenance of spraying equipment, protective gear and truck used for transporting spraying equipment Storage of equipment and protective gear Showering and change of clothing for workers engaged in activity Proper washing of work clothes of workers 	<ul style="list-style-type: none"> Operation, maintenance of sprayers Maintenance of protective gear Knowledge of Integrated Pest Management (IPM) Knowledge of agro-chemicals, their application, posting requirements, restricted re-entry interval, required protective gear, etc. Knowledge of signs and symptoms of pesticide poisoning Knowledge of first aid for pesticide poisoning Knowledge of proper storage and disposal of pesticide containers Knowledge of decontamination of mixing and loading sites Knowledge of maintaining inventory of supplies Knowledge of recordkeeping related to applications and accidents and poisonings 	<ul style="list-style-type: none"> Herbicides, insecticides and fungicides are applied by adults trained as mechanics. Special attention should be given to surrounding worker population and to the re-entry period. It is necessary that workers be well-trained.
5.	Roughing	Removing 'foreign agent' in crop, manual labor	Ability to define 'foreign agent' in the field	<ul style="list-style-type: none"> Risks related to heat (heat strokes and dehydration), and snake bites but PPE provided and worn. Risk of walking into holes/tunnels made by tapirs that can result in ankle/foot injuries Hours of work could be a risk but they are closely monitored by third party employer
6.	Detasseling	Removing tassels. Manual labor	None	<ul style="list-style-type: none"> Risks related to heat and snake bites but PPE provided and worn. Risk of walking into holes/tunnels made by tapirs that can result in ankle/foot injuries Hours of work could be a risk but they are closely monitored by third party employer.
7.	Harvesting	Mechanical	Skilled workers	Risk of excessive overtime

TABLE 2: PHASE, TASKS AND ROLE OF WORKERS IN CORN SEED PRODUCTION

PHASE OF PRODUCTION		TASKS/ACTIVITIES	SKILLS REQUIRED	LABOR RISKS
8.	Transport to processing factory	Transport is usually organized by seed company		
9.	Factory drying and shelling	Responsibility of seed company		
10.	Conditioning seeds	Responsibility of seed company		

5. CONCLUSION

The two farms we visited were well organized and followed labor laws. While this is a positive finding, we are not sure if the farms we visited are representative of the rest of the farms in the soy and corn seed supply chain and further visits — unannounced, if possible — should be organized in order to get a better idea of the situation at large.

Our major concern is excess overtime during planting, spraying and harvesting; this was brought to our attention by workers interviewed in both farms and growers in the

soy farm. To counter these, the soy producer is investing heavily in better and bigger equipment. The latter is also considering employing women in roles traditionally reserved for men (tractor operators etc.), which would be a positive step against discrimination.

We would recommend that particular attention be paid to smaller farms that might not have such means to implement good working conditions or might not be inclined to do so for lack of exposure and lack of awareness of seed companies' requirements.