

## Food Insecurity in Brazil: The Issue of Private Standards of Toxicity

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### Abstract

This article aims to discuss the problem of food insecurity in Brazil in what it refers to contamination of food by chemical substances such as herbicides, pesticides and other contaminants. The issue will be faced by analyzing, on the one hand, the standards that guide the food system in the world and, on the other hand, human rights indicators whose purpose is to provide an effective monitoring of the State's obligations to guarantee food security, analyzing the implications of the former for the success of the latter.

**Keywords:** Standards of Toxicity; Food Security

### Introduction

The success of monitoring food security in Brazil depends on efficient indicators that are adequate to assess to the greatest extent possible and comprehensively the fulfillment of the State's obligation as imposed by international and internal standards. An efficient monitoring mechanism, then, requires appropriate indicators, developed from efficient methodologies that guarantee a comprehensive evaluation of the state's performance, in order to guarantee not only quantitative but mainly qualitative access, ensuring a food free from contaminants. However, indicators, in addition to a skillful methodology, also depend on standards to guide the agri-food system and to point and inform precisely the level of acceptability or non-acceptability of the use of chemicals in food production.

An adequate and efficient indicator should not only point out the use of toxic substances in agri-food processes, but should above all discriminate in detail the type, composition and levels of chemical actives introduced in the product, relevant information to be carefully considered in the elaboration of a Standard, which in turn must consider values such as human or environmental health. This is the problem to be faced in this article: how to obtain accurate assessments of Brazil's compliance with food safety requirements, given the uncertainties about the reliability of the technical information provided by the standards? Food insecurity in Brazil is a public health issue, which requires a closer look at issues related to the monitoring of human rights, especially the problem of indicators and their relationship with private standards of toxicity levels.

In this attempt, it is concluded that specific indicators for pesticides, when they exist, are totally dependent on private domestic and international standards that establish levels of toxicity according to the private interests of the market and that are developed scientifically, using techniques which often compromise the transparency of the information it contains, and which are aimed both at avoiding risks to human health and at avoiding embarrassment to the free trade of the chemical industry. In this way, its role as a parameter for the monitoring of human rights is partially impaired.

Although the alternative markets are gaining ground in Brazil, especially the market for fresh and organic products, we are still far from guaranteeing access to all Brazilians, for not only adequate food in terms of quantity, which was already done in part by the Programs of government, but in terms of quality, which implies food free of any substance, which in any degree may compromise the health and life of Brazilians. The achievement of food security depends on innovative, adequate, efficient and independent mechanisms for monitoring Brazil's efforts to ensure a healthy diet.

## Methodology

For the purposes of that were analyzed the documents referred to the mechanism for monitoring food security in Brazil, established by the National Food Security Plan (PLANSAN) for 2012 - 2015 and improved by the Second National Food Security Plan for 2016-2019 - comparing the monitoring proposals with the results presented in the Indicators and Results Report of the National Plan for Food and Nutrition Security 2012-2015, to evaluate Brazil's progress in ensuring food security. In a second moment the research focused on the standardization process of the agrifood system, especially the standards of toxicity, intrinsically related to the monitoring of food safety, as a guarantee of a food free of toxic substances that human health.

### Food insecurity in Brazil

Brazil is one of the world leaders in the consumption of agrochemicals, accounting for numerous cases, including acute [1] contamination by toxic substances classified by the World Health Organization (WHO) as being of higher risk and dangerous to human health [2]. Although the use of toxic substances is not a recommended practice [3], in Brazil it is still carried out on a large scale, not limited to rural areas, as acknowledged by National Agency of sanitary surveillance (ANVISA) in the Note on the Use of Agrochemicals in urban areas [4], and nor to products authorized by the organs Supervisory and control bodies.

In the last anvisa report, 36% of the samples presented the following irregularities: a) presence of pesticides at levels above the mrl in 38 samples, corresponding to 2.3% of the total; b) verification of unauthorized pesticides (NA) for cultivation in 520 samples, corresponding to 32% of the total; c) residues above the MRL [5] and NA simultaneously in 31 samples, corresponding to 1.9% of the total [6]. The SDA Act n° 115, of august 30, 2013, of the Ministry of Agriculture, livestock and food supply (MAPA) [7] also points out the presence of toxic substances in foods that daily arrive at the table of Brazilians, among them Carbofuran [8], classified by the World Health Organization of as being highly dangerous.

### Monitoring food security: the issue of human rights indicators

The Human Rights set moral standards to guide the action of states and more recently in 2011, also transnational corporations [9]. In a way they are standard, but strictly linked to values, morally considered. Directed to the States, the guarantee of a food free of toxic substances is foreseen in several agreements as the International Covenant of Economic, Social and Cultural Rights and the Inter-American Pact of Social and Cultural Economic Rights, the latter including the obligation of the State to carry out Progressively food security, which made possible the creation of mechanisms to monitor compliance with this obligation However, assessing progress in food security connects the state to human rights, the agri-food system and its standards.

The International Covenant on Economic, Social and Cultural Rights and the Protocol of San Salvador establish the State's commitment to progressively realize the economic and social rights enumerated in its texts, among them the right to adequate food. In the Protocol of San Salvador states expressly guarantee the right to adequate nutrition and undertake to improve methods of production, supply and distribution of food, which means that this international standard directly binds the states and indirectly the agrifood system [10]. The right to adequate nutrition, guaranteeing the "highest level of physical well-being" [11] and to this end undertakes to improve methods of food production by prohibiting, supervising and production of food which must be of substances harmful to human health.

The monitoring mechanism of the right to adequate food in Brazil, faced with the serious public health problem, includes, above and beyond the standards, a set of efficient public policies to combat the use of toxic substances in Brazilian agricultural and industrial production that depends on the definition of standards that delimit the space of toxic substances in the market and the market for toxic substances. The Brazilian context of corruption in the administrative public machine and policies clearly favorable to the investments of the chemical industry market are ingredients that make monitoring difficult.

The success of the mechanism for monitoring the State's obligations with a means to evaluate and thus ensure the realization of human rights in Brazil depends on the choice of indicators, analytical tools that are the backbone of monitoring the achievement of economic and

human rights. Local, national, regional or global levels. However, the development of efficient and appropriate indicators for the different realities and contexts is also a difficult task. As regards food safety, the challenge is even greater, as the UN recognizes, since the development of an indicator of chemical pollution is a complex task because of the difficulty of measuring it in internationally comparable terms [9].

Grenn defines indicator as “a piece of information used in measuring the extent to which a right is being carried out or taken in a given situation.” Technically the term means a set of statistics that can serve as a metaphor for a phenomenon that cannot be measured and differs in the human rights literature from the term benchmarks that are specific goals or targets for particular circumstances of each State, that is, they are minimum limits of conditions that cannot be overcome in the socioeconomic contexts evaluated [12].

Traditionally, in the monitoring processes, progress indicators [13] have been used, which are useful tools for measuring performances against a certain benchmark. They are used to evaluate and plan the progress of a given situation over time, set some goals and measure the evolution of these goals, based on statistics (hard data) that allow to reflect on the progress or not of a given situation. Indicators of progress point to material improvements, which does not imply showing improvement in the quality of people’s lives, which depends on several other factors, in view of the integrality of human rights.

In the application of rights indicators, data on the country’s social and economic situation are used as a reference for the analysis of the progressive obligations of this country. This data can be complemented by other data referring to institutional mechanisms and public policies, as well as the resources and capacity of the population to demand the rights.

Susan Randolph and Shareen Hertel [14] classify indicators in three instances: a) structural indicators that reflect commitments at the global level - treaties, declarations, agendas - and at the national level - ratified treaties, standards, institutional structure and programs of action necessary for the realization of the right; B) process indicators, which reflect the State’s effort to achieve the law, taking into account the various factors that affect the realization of the law; C) Outcome indicators, focused directly on the extent to which the right is realized. However, indicators with this profile have a practical problem, which is the focus on rights (right bearer). Both structural, process and outcome indicators typically assess the degree of enjoyment and enjoyment within the right-bearer, when they should assess to what extent States are fulfilling their broader obligations in terms of To demand the rights.

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### **Monitoring and indicators in Brazil: the National Food Security Plan**

Food security in Brazil is the responsibility of the Ministry of Agriculture, Livestock and Supply (MAPA), through the Protection Secretariat of Agriculture (SPA), the body that has the authority to control the phytosanitary aspects of production and international trade of all livestock, fruits, vegetables, grains, plants, veterinary drugs, toxic substances and components. The SPA also registers and inspects products and activities that use genetically modified organisms, on behalf of the National Technical Commission of Biotechnology (CTN-Bio), which issues the relevant authorization. However, it is incumbent upon the National Health Surveillance Agency (ANVISA) of Brazil, an autonomous entity related to the Ministry of Health to control the production and marketing of products and services subject to sanitary surveillance for the protection of human health, being responsible for the approval and importation of and sanitary inspections at points of entry in Brazil. However, in the current government this body has been losing power in the face of the tendency to centralize the registration and inspection process in the Ministry of Agriculture [15].

The mechanism for monitoring food security in Brazil was initially designed by instituted by the National Plan for Food Security (PLANSAN) for 2012-2015 and improved by the II National Plan for Food Security for 2016 - 2019, prepared by the Interministerial Chamber of Food and Nutrition Security (CAISAN), that presents the new monitoring methodologies whose proposal is the expansion and strengthening of more sustainable food production systems.

The first PLANSAN is committed to “improving the management, control and education mechanisms for the use of pesticides, genetically modified organisms and other agricultural inputs” and establishes priority goals for 2012 - 2015, among them: to increase by 25% the number of agricultural crops to be analyzed for the levels of pesticide residues within the scope of the Agrochemical Waste Analysis Program; Provide technical notes on eight active ingredients of pesticides submitted to re-evaluation due to the high hazard they pose to the health of workers; strengthen and expand the Agrochemicals Education and Health Group; create an Intersectoral group to define strategies for the control and use of pesticides; increase the capacity of evaluation and registration of generic pesticides with the qualification of labor and electronic systems and to construct a risk index of the agricultural inputs.

The National Plan for Food and Nutrition Security 2012 - 2105 attributes to IBAMA the initiative to evaluate hazardousness and control of products, chemicals and hazardous waste [16]. This body works together with the Ministry of Agriculture, Livestock and Supply (MAPA) and the National Agency for Sanitary Surveillance (ANVISA). In 2012, IBAMA presented the Agrochemicals and Related Trade Bulletin - 2000. In this Bulletin, IBAMA shows that the number of sales of very dangerous and dangerous chemicals to the environment increased almost 4% from 2009 to 2012, while the sale of non-hazardous products decreased by 3.15% [17], these analyzes directly imply toxicity standards. In the same sense the indicator proposed by PLANSAN for chemical substances [18] refers to the percentage of contamination of food by pesticides (irregular samples).

In 2015, CAISAN presents the Indicators Report and Results of the National Food and Nutrition Security Plan 2012 - 2015 [19], a quantitative approach, that is clearly focused on access to food and water, does not present the expected result regarding the subject of pesticides. In the topic referred in first PLANSAN to guideline 3 [20], the Report shows the significant increase in consumption of fruits and vegetables as indicative of an improvement in food habits, however it does not take into account the quality of fruits and vegetables with regard to contamination by pesticides. When dealing with guideline 5, no results regarding the use of agrochemicals are also presented. It should be noted that the words “pesticide”, “pesticide” or “chemical substances do not appear once in the text of the report, which already anticipated the intention of Bill 3200/2015, that replaces the word “agrototoxic” by “agricultural defensive”.

In May 2016 the second PLANSAN is published for 2016 - 2019, which innovates in the intersectorality, proposing a systematic monitoring of programs and actions. Re-evaluating the PLANSAN 2012 - 2015, the second Plan selected from the wide range of goals of the first Plan a set of strategic and priority goals, without, however, losing the breadth of the original Plan. The result was the reorganization of the PLANSAN in 38 goals, with 144 annualized goals. The PLANSAN 2016 - 2019 proposes a macro challenge in promoting healthy and sustainable food systems [21]. The methodology adopted for the II PLANSAN is based on nine challenges, a hundred twenty one goals to be achieved in the next four years and ninety-nine related actions (means necessary for the goals).

The second PLANSAN presents the indicators of food and nutrition security relating them to each of the challenges of the Plan, indicating the dimensions of analysis associated with them. To challenge number 3 [22], which deals with the promotion of healthy food production, a single indicator is associated, the “Annual Marketing of agrochemicals and related products by planted area - Brazil, large regions and UF”. Regarding the challenge 5, which deals with the promotion and protection of the adequate and healthy food of the Brazilian population, an indicator is associated with the analysis of the levels of residues of pesticides in foods of plant origin, a measure that also depends on private standards of toxicity.

Nevertheless the lack of substantial innovations in monitoring the use of pesticides brought by PLANSAN 2016 - 2019, some targets may be considered relevant, provided that the outcome assessment is consistent and based on appropriate indicators. In the topic “Con-

control of risks related to food consumption and exposure to the use of pesticides”, the goal is to re-evaluate eleven active ingredients of pesticides already registered, considering new indications of risk to human health and the review of the standard that determines the procedures for toxicological reappraisal of active ingredients of agrochemicals with new indications of risks to human health (RDC Anvisa nº 48/2008), although they still depend on the level of toxicity standards that are in turn a problematic aside, as has already been shown above.

### Standardization of toxicity levels of toxic substances

Standards are measures by which products, processes and producers are judged and scales are categories used to implement these standards. Today standards and formal scales are everywhere in the world and powerfully affect the production chain, the condition of things and the judgment of people’s attitude and merit and worth. Standards define what will be marketed, establishes conventions to order the production process and sets quality levels (which does not necessarily imply high quality). Chemicals, such as toxic substances, are categorized into standards and scales [23] at the local and global levels, defined by both government bodies, as in the case of Brazil, the National Sanitary Surveillance Agency ANVISA), and by industry associations such as the Brazilian Association of Chemical Industries (ABIQUM), nongovernmental organizations and international organizations, such as the UN International Health Organization and the World Economic Forum.

Recently standards have been related to product differentiation. In the food industry, product differentiation has been practiced since the mid-twentieth century, when they failed to offer a few products to provide a huge range of processed foods. The most recent change in the food system is the development and enforcement of private standards by the global supermarket chains [23].

The question that arises is what determines the standards and whether they can be conceived outside a wider societal-social context, which could mean that the standards are disembedded measures, that is, designed to the margin of social and moral demands. According to Busch and Bingen [23], standards are associated with ethical and value issues such as justice, rights, risk, and virtues. However, argues Fligstein [24], the existence at a given time of a set of shared strategies, tactics and values that produce profits for the larger corporations, and that these strategies are based on an understanding or conventions about the which is good for making more money. We can then launch as a motivating hypothesis that the standards and values of the food industry are formulated in the conceptions of control and reflect the power of the chemical industry in the food market, which raises the risk of violation of the right to adequate food and entails the need to monitor the state’s obligations to ensure food security.

Regarding the risk arising from the practice of a given market, such as the agro-food industry that we analyze in this study, the use of toxic substances should be considered relevant information to be carefully considered in the elaboration of a standard, since directly related to values such as human or environmental health. However, scientific disagreement on the acceptable level of risk in the use of toxic substances or even on the prohibition of use is still a reality and its confrontation is a matter of public interest as it affects unavailable public goods. The scientific debate about risk and its evaluation is intense and is divided among those who argue that it is the probability of harm that defines the risk, while others argue that the risk has several dimensions and that none of them is essential to its characterization [23].

Standards define at what level the risk is tolerated or acceptable. In the case of food and in face of food safety requirements, this level can be defined according to the consequence it causes, such as diseases, environmental degradation or death or due to the vulnerabilities of certain groups (elderly, pregnant), more susceptible according to other evaluation criteria. What or who defines the criteria or the option of one and the exclusion of other risk assessment criteria is an open question, but this gap certainly implies a disconnection of the standards with the broader ethico-social context.

The Joint Workshop (JMPR) of the World Trade Organization (WTO) and the Food and Agriculture Organization (OAA) [25], were held recently in Geneva, whose overall objective was to improve the knowledge and skills of country government officials in the implementa-

tion of the Agreement on Sanitary and Phytosanitary Measures (SPS), which deals with how governments can implement food safety measures and health measures for animals and plants. This year's event was an in-depth discussion at the technical level on maximum residue levels in food products (Maximum Residue Levels of Toxic Substances - MRLs).

From a scientific point of view, in the panel presented by Dr. Jürg Zar [26] - Swiss Department of Food Safety - he concludes that food products are safe if the Maximum Residue Limits can be defined by ensuring that the exposure to risk is less than or equal to the level of acceptable daily intake (ADI) and to the acute reference dose (ARfD), even when consumption patterns vary. According to Zarn, the standard recommended by the two organizations (MRLs) are strictly based on the risks and not the danger due to their consequences for human health, since many of them are carcinogenic or teratogenic, which implies the recognition that standards involve values Moral and not just economic.

The secretary of the World Health Organization, Anneke Hamilton [27], points out that the Agreement on Sanitary and Phytosanitary Measures (SPS) has two main objectives: to recognize the right to protection of human, animal and plant life and health and to avoid unnecessary barriers to trade. Thus, while SPS aims to take measures to protect human life and health - animals and plants - against the presence of additives, contaminants (toxic substances), toxins, or any pathogenic organisms in their food, on the other hand, avoids that the diversity of imposed standards will compromise free trade. In the panel presented by the National Director of Research on Wastes (Ian Reichstein), he shows data that seems to prove that the second objective still prevails, since from 2010 to 2016, "many other pesticides were added and then revoked" [28].

### Conclusion

The purpose of this article was to address the problem of food insecurity in Brazil, regarding contamination of food by chemical substances such as herbicides, toxic substances and other contaminants. The theme was faced by analyzing, on the one hand, the standards that guide the world food system and, on the other hand, human rights indicators whose purpose is to provide an effective monitoring of the State's obligations to guarantee food security, The actions necessary to guarantee a healthy diet, without chemical or biotechnological products harmful to human health. Food insecurity in Brazil is a matter of public health, which requires a closer look at issues related to human rights monitoring, especially the issue of indicators and their relationship with private standards of toxicity levels.

In this attempt, this article introduced the thematic of monitoring and the problematic of indicators of the progress of the State in achieving food security, analyzing the two National Plans of Food Security in particular with regard to the monitoring system of the use of pesticides/toxic substances in Brazil. It is concluded that specific indicators for pesticides, where they exist, are totally dependent on private domestic and international standards that establish levels of toxicity according to the private interests of the market and are developed scientifically using complex techniques that compromise the necessary transparency of the information contained therein, turning at the same time to avoid risks to human health, as well as to avoid embarrassing the free trade of the chemical industries. Thus, its role as a parameter for the monitoring of human rights is partially impaired.

As a result, the research pointed to the problem of the dependence of the food safety indicators of the private standards of toxicity levels in four points:

1. As regards the structural indicator of reception of the right to adequate food, this one assesses the scope and scope of public quality policies, which means taking into account the standards for the agrifood system, such as the Maximum Residue Limit In toxic substances).
2. Regarding the indicator "state capacity", which proposes to review the rules of the game in the State apparatus, especially the skills of agents who must be prepared to meet the technical requirements for understanding the standards to be respected. Regarding this indicator, it is pointed out that its limitation to the standards issued by government authorities, leaving aside the international standards, which, although not sufficient in isolation, are necessary to aggregate information.

3. At the Brazilian level, it was verified that all the analyzes carried out by the inspection bodies directly implicate in toxicity standards. In the same sense, the indicator proposed by PLANSAN for chemical substances refers to the percentage of Contamination of food by pesticides (irregular samples).
4. In PLANAN 2016-2019, it was observed that the re-evaluation goal of eleven active ingredients of pesticides already registered, considering new evidence of human health risk and revision of the standard that determines the procedures for toxicological re-evaluation of active ingredients of Pesticides, with new indications of risks to human health (RDC Anvisa nº 48/2008), all of which imply dependence on the levels of toxicity.

Although alternative markets are gaining ground in Brazil, especially the market for fresh and organic products, we are still far from guaranteeing access to all Brazilians for not only adequate food in terms of quantity, which was already done in part by the government programmes, but in terms of quality, which implies food free of any harmful substance, which in any degree may compromise the health and life of Brazilians. The achievement of food security depends on innovative, adequate, efficient and independent mechanisms for monitoring Brazil's efforts to ensure a healthy diet.

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