

AGRICULTURE SHOULD BE A MATTER OF BRAZILIAN NATIONAL SECURITY POLICY

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ABSTRACT

Death from hunger in the world may overcome the number of deaths in conventional war. Therefore, food should be considered a National Security core issue of any country. However, the concept of National Security has evolved in this direction only with the end of the Cold War and a growing public awareness that global changes may exacerbate tensions related to food and water shortages. Accordingly, this paper presents a conceptual evolution of the food issue within the context of National Security. Brazil's situation is contrasted to international scenarios outlined in an attempt to earn greater attention from the Ministry of Defense regarding Brazilian agriculture due to its important role in the five expressions of national power.

Keywords: Agribusiness. food security. National Defense Policy.

AGRICULTURA COMO COMPONENTE DA POLÍTICA DE SEGURANÇA NACIONAL BRASILEIRA.

RESUMO

As fatalidades derivadas da fome podem superar as mortes em uma guerra convencional. Por isso, a alimentação de uma nação deveria ser considerada como assunto da Segurança Nacional. No entanto, o conceito de Segurança Nacional só evoluiu nessa direção com o fim da Guerra Fria e com a percepção pública de que as Mudanças Globais poderiam exacerbar tensões relacionadas à escassez de alimentos e água. Nesse sentido, o presente trabalho apresenta uma evolução conceitual da questão alimentar dentro do contexto da Segurança Nacional. A situação do Brasil é contrastada para cenários internacionais descritos em literatura na tentativa de ganhar maior atenção do Ministério de Defesa em relação a agricultura brasileira, devido ao seu importante papel nas cinco expressões do poder nacional.

Palavras-Chave: Agronegócio. Segurança Alimentar. Política Nacional de Defesa.

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AGRICULTURA COMO COMPONENTE DE LA POLÍTICA DE SEGURIDAD NACIONAL BRASILEÑA

RESUMEN

Las muertes por hambre pueden superar las muertes en una guerra convencional. Por esta razón, la alimentación de una nación debe considerarse un problema de Seguridad Nacional. Sin embargo, el concepto de Seguridad Nacional solo evolucionó en esta dirección con el final de la Guerra Fría y con la percepción pública de que los Cambios Globales podrían exacerbar las tensiones relacionadas con la escasez de alimentos y agua. En este sentido, el presente trabajo presenta una evolución conceptual del tema alimentario en el contexto de la Seguridad Nacional. La situación en Brasil se contrasta para los escenarios internacionales descritos en la literatura en un intento de obtener mayor atención del Ministerio de Defensa en relación con la agricultura brasileña, debido a su importante papel en las cinco expresiones del poder nacional.

Palabras clave: Agronegocios. Seguridad Alimentaria. Política de defensa nacional.

1 INTRODUCTION: ORIGIN AND EVOLUTION OF THE NATIONAL SECURITY TERM

According to Romm (1993), the term “National Security” was not commonly used until the Second World War. Therefore, the *National Security Act* passed by the American government in 1947 can be considered the origin of the popularization of this term (ROMM, 1993; STUART, 2008). Hogan (1998) refers to it as “the Magna Carta of national security state” (HOGAN, 1998, p.24). The National Security Act, among other things, established the National Security Council with the function of “[...] the President with respect to the integration of domestic, foreign, and military policies in relation to the national security [...]” (TAYLOR, 1974, p. 593). Thus, we see that the term “National Security”, from the very beginning, was applied to more than just military issues, even though the Cold War issue dominated the National Security strategy for nearly 45 years (HOGAN, 1998; ROMM, 1993; STUART, 2008). Furthermore, as it was coined as a result of the Cold War, most analyses and authors of national security are connected to the USA and their Western Europe allies, notably, England, which were the most affected by it (STARES, 2001).

Nevertheless, the equivalence between Security and Defense started to be questioned in the early 1970s. In 1974, General Maxwell D. Taylor, an important military and diplomatic figure in the Cuban missile crises and the Vietnam War, suggested that the American National Security Council (NSC) should deal with all kinds of threats, military and otherwise (CAMPBELL, 2008; ROMM, 1993; TAYLOR, 1974), criticizing the fact that the NSC could only deal with matters related to the American military policy.

General Taylor firmly believed that “[...] the most formidable threats to this nation are in the nonmilitary field” (TAYLOR, 1974, p. 592). For example, he cited the threat arising from the American dependence on oil imports, which, as a result of the oil barrel price hikes from 1973 on, period known as the First Oil Crisis, had a deep impact on world economy and particularly on American economy. It is interesting to observe that Aspin (1993) and Crane et al. (2009) made similar approaches decades after the 1973 world economy crisis.

According to Room (1993) and Campbell (2008), in 1977, environmentalist Lester Brown was the first to identify the need for extending the term “National Security” to encompass environmental and economic issues:

[...] threats to security may now arise less from the relationship of nation to nation and more from the relationship of man to nature. [...]. National security cannot be maintained unless national economies can be sustained [...]. (BROWN, 1977, p. 5).

The bias of inclusion of environmental security within economic security was later mentioned by Snow (2014) by identifying the non-military components in contemporary National Security.

Therefore, it was Buzan (1983) who systematized the debate around different levels of National Security by discussing the participation of the Individual, the State and the International Systems in the understanding/definition of security in a more holistic, integrative and synergetic approach, in contrast to an isolated analysis of each of these three levels. He argued that to that point, all the specialized literature was based on the concept of Power (Realist School) and Peace (Idealist School), which can be summarized as follows: “[...] an actor with enough power to reach a dominating position will acquire security as a result or as a consequence of peace [...]” (BUZAN, 1983, p. 2).

Buzan (1983, p. 2) thus supported that: “[...] security is more usefully viewed as a companion to rather than a derivative of power, and that is more usefully viewed as a prior condition of peace than a consequence of it.” That is, it is better defined between these two extremes rather than by each in isolation.

Finally, in an article written after the great transformations that occurred in 1989 (*Glasnost* and *Perestroika*) and the first post-Cold War crisis, the Gulf War, Buzan (1991, p. 432) systematized the analysis of National Security into five sectors: political, military, economic, societal and environmental. Political security involved the organizational stability of the State, the government system and its ideologies. Military security dealt with the defense and attack capacity of the State. Economic security was concerned with the access to natural and financial resources and markets necessary to ensure common wealth. Societal security was based on the ability of the society to preserve its language, culture,

and national and religious identity. Finally, environmental security involved the capacity to provide local and global Biosphere support to human activities. It is worth noting that this systematic approach of security was the origin of the Copenhagen School that so greatly influenced European security analysts since 1985 (TANNO, 2003).

With the dissolution of the Soviet Union in 1991/1992 and the end of the Cold War, the Americans and the world sought a new direction and the definition of national security threats was revised (ROMM, 1993; STARES, 2001). A number of new threats were identified (BROWN, 1977; ROMM, 1993; STARES, 2001; TAYLOR, 1974; UNDP, 1994) to include: budget and trade deficits, the stagnation of American wages in respect to the global economic competition, environmental degradation, energy crisis, demographic explosion, food insecurity, ozone layer depletion, climate changes, fight on drugs, ethnic disputes, terrorism and other issues. However, in the American Case:

Short of clear threats to US territory, Americans often disagree over priorities. Even when there is agreement on priorities, there is disagreement on resource commitment and strategy. [...] Each generation of Americans interprets national values, national interests, and national security in terms of its own perspective and mind-set. (SARKESIAN; WILLIAMS; CIMBALA, 2013, p. 5).

Nevertheless, as remarked by Booth and Vale (1995, p. 293), this is a moment when “[...] states become the means and not the ends of security.” In this sense, it is worth citing the 1990 Human Development Report, a cornerstone in the analysis of the development of nations. Coordinated by Mahbub ul Haq, this document made it clear that:

Human development is a process of enlarging people’s choices. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living. (UNDP, 1990, p. 1)

which is to say, “People are the real wealth of a nation” (UNDP, 1990, p. 9).

However, what was the perception of National Security of other Nations outside the USA-Western Europe axis? Some studies already indicated that not only military issues mattered in the field of National Security, even during the

Cold War. Among all, Japan stands out as a path-breaker starting with the Meiji revolution in 1868 (NAJITA, 1980). The Japanese practice made it clear that the collective benefit and National Security derived mainly from economic institutions and innovation, rather than from military force (SAMUELS, 1994). Tetsuo Najita highlights this fact by stating that “[...] the nation assures its autonomy only through economic power – fukoku.” (NAJITA, 1980, p.6). And the mission (*shimei*) of the Japanese bureaucratic service is to “[...] enhance the well-being of the nation through the systematic creation of industrial wealth.” (NAJITA, 1980, p.6). Room (1993) clearly remarked that in the end of the 1970s, Japan’s nonmilitary goals included attaining energy security and food security.

Korany, Noble and Brynen (1993) already mentioned the lack of food and water security as National Security issues in Middle-East Countries and in Turkey.

Booth and Vale (1995) presented strong arguments for the broader vision of security presented by Buzan (1983) by discussing the situation of South African countries, particularly South Africa. In the latter case, historically, National Security encompassed the concept of security of the regime and for the social elite (*Apartheid*), for which reason it was hostile to the security of most of the population and of the neighboring countries. However, they remarked that “the difficulties inherent to expanding the security agenda should not be an excuse for regression into the shriveled conceptions of realism.” (BOOTH; VALE, 1995, p. 295).

Cai and Smit (1996) introduced a sharper vision of the connection between the future of the Chinese National Security and food sufficiency in an environment of global changes.

Finally, it is worth pointing out the view of the United Nations (UN) of human security divulged in its 1990 Human Development Report (UNDP, 1990). For UN, human security is by far the most important issue related to National Security. And it could be organized in seven main categories of security: economic, food, health, environmental, personal, community and political (UNDP 1994, 24-25).

What is the Brazilian vision of National Security? From the juridical viewpoint, Ri Jr. (2013) considers that former President Getúlio Vargas passed the National Security Act in 1935 and remarked that it had a marked authoritarian tendency, greatly influenced by fascist ideology. However, considering the Act that the author probably mentions (BRASIL, 1935), we see that it actually had no relation with the National Security issue itself. In fact, it only defined crimes against political and social order.

Indeed, it was in the period of the military government (1964-1985) that the doctrine of National Security was defined with the contribution of the Brazilian National War College - ESG (FERNANDES, 2009). Although it was founded in 1949 under the influence of an intense relationship with the U.S. War College, ESG evolved from a simple anti-communist reaction derived from the Cold War into a

developmentalist concept. According to ESG, National Security should focus on attaining national objectives, especially economic and social development, with a greater emphasis on internal vulnerabilities than on external threats (FERNANDES, 2009; Ri Jr., 2013). With the end of the military regime, the issue of National Security, closely associated with exception acts with an authoritarian and repressive connotation, was abandoned by the civil governments that followed. However, it is still worth pointing out that the 2007 *Doctrine of Military Defense* published by the Ministry of Defense (BRASIL, 2007) presented a concept of security that unfolded into individual, community, national and collective levels. It demonstrates the doctrinaire updating of the Brazilian Army in tune with the focus on the human being postulated by the UNDP (1990, 1994).

Only under the administration of former President Fernando Henrique Cardoso - FHC (RUDZIT; NOGAMI, 2010) was this topic of national security taken up again in the Brazilian Scenario through the creation of the First National Defense Policy (BRASIL, 1996). It implied that the Defense policy would deal with “specific problems that could not be transferred to the private sector or to any other government agency or department.” (ALMEIDA, 2010, p. 222).

In 2005, the administration of former President Luiz Inácio Lula da Silva – Lula – issued an equivalent document when it edited Decree 5484/2005 (BRASIL, 2005). An updated version was produced in the administration of former President Dilma Rousseff (BRASIL, 2012), when it was renamed as National Defense Policy (PND). A new version is still under analysis by the National Congress (BRASIL, 2016). Common to all of them is a broader approach of distinct themes related to defense besides those directly related to the military area. As these themes arise from the perception of politicians, the military and the civil society, conceptual renewals, expansions and evolutions are commonly observed. Two themes are recurrent in all PNDs starting in the administration of former President Fernando Henrique Cardoso – FHC: the protection of the Amazon and a concern with the Antarctica. The Nuclear Disarmament issue during the FHC administration (BRASIL, 1996) reflects the end of the Cold War and evolved into the total banning of chemical, biological and nuclear weapons in the two following PNDs; the PND under analysis by the National Congress also included the banning of radiological weapons (BRASIL, 2016). Another point worth noting is the indissociable relation between development and Defense formulated in the Dilma Rousseff administration’s PND (BRASIL, 2012), as well as in the one currently under evaluation (BRASIL, 2016). This concept had already been pointed out by the ESG in the 1940s, as indicated by FERNANDES (2009) and Ri Jr. (2013). Incidentally, these last two PNDs also bear similarities in that they consider the space, cybernetics and nuclear sectors strategic, together with food scarcity, as causes of future conflicts. This represents a clear evolution of related themes presented in Lula’s administration’s PND (BRASIL, 2012). The latest PND (BRASIL, 2016) also shows an evolution regarding previous PNDs when it applies the concept of sustainability to the whole country rather than only to the Amazon alone; points

to the urgency of developing all the energy matrixes to sustain Brazilian development; identifies a lack of infrastructure, investments in Science, Technology and Information and in the training of qualified human resources.

What would be the importance of establishing that a specific issue is a National Security concern? Labeling a problem as a threat to National Security would imply that it took precedence over other problems. That is, that it would receive prompt attention and quick access to human and financial resources in the current economic environment of austerity and budget control and would make up a domestic policy driver (ROMM, 1993).

2 NEW THEMES ASSOCIATED WITH NATIONAL SECURITY IN THE WORLD: THE ENVIRONMENTAL ISSUE

Among the new vulnerabilities to National Security, environmental security unequivocally touches most countries in the world (CAMPBELL, 2008; LEVY, 1995; PORTER, 1995), also because of its strong popular appeal (BUZAN; HANSEN, 2009).

Porter (1995) and Snow (2014) remarked that environmental security requires long-term policies, which is incompatible with the current political systems, as they work only on a more immediatist time span. Unless there is an actual threat, such as was the case of Hurricane Katrina in New Orleans, USA, environmental threats are speculative. They are based on questionable projections. Furthermore, they are based on a future scenario, which, for many, is uncertain and distant (SNOW, 2014) and require coordinated action on global scale (PORTER, 1995).

Despite controversies, the environmental and climate change issues were objects of world discussions on National Security between the 1970s and 1980s (CAMPBELL, 2008). Numerous facts can be considered forerunners of this position, but one of great importance was the United Nations Conference on Environment, also known as the Stockholm Conference held in June 1972:

Stockholm represented a first taking stock of the global human impact on the environment, an attempt at forging a basic common outlook on how to address the challenge of preserving and enhancing the human environment. (HANDL, 2012, p. 1)

In 1988, the Canadian government carried out the first large international conference on climate change with the theme “The Changing Atmosphere: Implications For Global Security” (CAMPBELL, 2008). In the USA, Senator Al Gore was an important figure in the media in the debate on environmental changes. He even stated that “In effect, the environment is becoming a matter of

national security - an issue that directly and imminently menaces the interests of the state or the welfare of the people." (GORE, 1989). Meanwhile, two reports were fundamental for climate changes to firmly get into the National Security framework in the USA. The first one was that by Schwartz and Randall (2003), from Caltech. They proposed that despite the low risk of a sudden climate change, because of its devastating action, this issue should be taken from the purely academic circles into the debate on National Security in America. Later on, the Center for Naval Analyses (CNA) published a document that had a great impact at the time due the military council that worked on it: all high-ranking military with great experience in high command in the USA (Campbell 2008). As a first conclusion, the report stated that "Projected climate change poses a serious threat to America's national security." (CNA, 2007, p. 6). Shortly afterwards, they recommended that "the national security consequences of climate change should be fully integrated into national security and national defense strategies." (CNA, 2007, p. 7).

Nevertheless, the change in the status of the environment from a background variable to a National Security foreground issue occurred gradually, much as a function of the growing environmental awareness of public opinion (BUZAN; HANSEN, 2009).

Porter (1995, p. 221) remarked that Bush was the first president to mention the environmental security issue as one of the objectives of American National Security. However, the first president to actually be concerned with the effects of climate change on National Security was Clinton. According to Levy (1995), he was greatly influenced by Robert Kaplan's article entitled "The Coming Anarchy", the citation of which "became practically *de rigueur* for Cabinet members appearing before Congress." (Levy, 1995, p.35). According to Kaplan (1994), demographic growth, the spread of diseases, deforestation, erosion, soil pollution, water scarcity and, possibly, the rise in the sea level in overpopulated regions and coastal agricultural areas were the main foreign policy challenges after the Cold War. Challenges which might lead to natural resource wars and ethnic and religious conflicts. To reach this hypothesis, Levy used basically the article of Homer-Dixon that presented a series of pieces of contemporary historical evidence at regional and societal level to demonstrate that "[...] as environmental degradation proceeds, the size of the potential social disruption will increase [...]" (Homer-Dixon. 1991, p. 116). And this is beyond the capacity of intervention of politicians to prevent a conflict. Furthermore, this author pointed out that poor countries would be more vulnerable and, because of it, more concerned with conflicts since they would not have financial, material and intellectual means to minimize the undesirable impacts of climate changes. More recently, two robust studies by Hsiang,

Burke and Miguel (2013) and Schleussner et al. (2016) corroborated Homer-Dixon's observations when they related climate changes to an increase in world-level conflicts and in countries affected by ethnic divisions, respectively.

After the Clinton administration, only another Democrat, former President Obama, looked at the threat of climate changes to National Security earnestly. Concrete measures were taken to increase resilience of new public infrastructure work, such as bridges and military bases, to future extreme climate events, by means of various Executive Orders (THE WHITE HOUSE, 2015).

In Brazil, the environmental issue was only taken seriously starting with former President Lula's PND (2005), which as early as in its preamble indicates in item 1.3 that "[...] the concept of security has been extended to encompass the political, military, economic, social, environmental fields [...]". The same concept can be found in Brasil (2012), item 2.3, but disappeared from Brasil (2016). Brasil (2005) also brings the statement that "the environmental issue remains one of the main concerns of humanity", which is echoed in Brasil (2012), item 3.4, but is absent from Brasil (2016). Finally, Brasil (2005), item 4.4 and Brasil (2012), item 5.4 indicate that development and integration of the Amazon region depend on sustainable exploitation of natural resources and protection of the environment. Now, in Brasil (2016), items 2.3.4 and 3.2.X, this concept is broadened to include the importance of sustainability for the whole country. The climate change issue (item 3.5) appeared for the first time in former President Dilma Rousseff's Administration. However, this event was only associated with its social consequences (BRASIL, 2012). Brasil (2016) extended the consequences of climate changes in item 2.3.5 when it included environmental, social, economic and political issues. Nevertheless, although it is mentioned, none of the PNDs analyzed considered the emergency of sharp National Defense Objectives on how the Brazilian government means to deal with the global climate change threat.

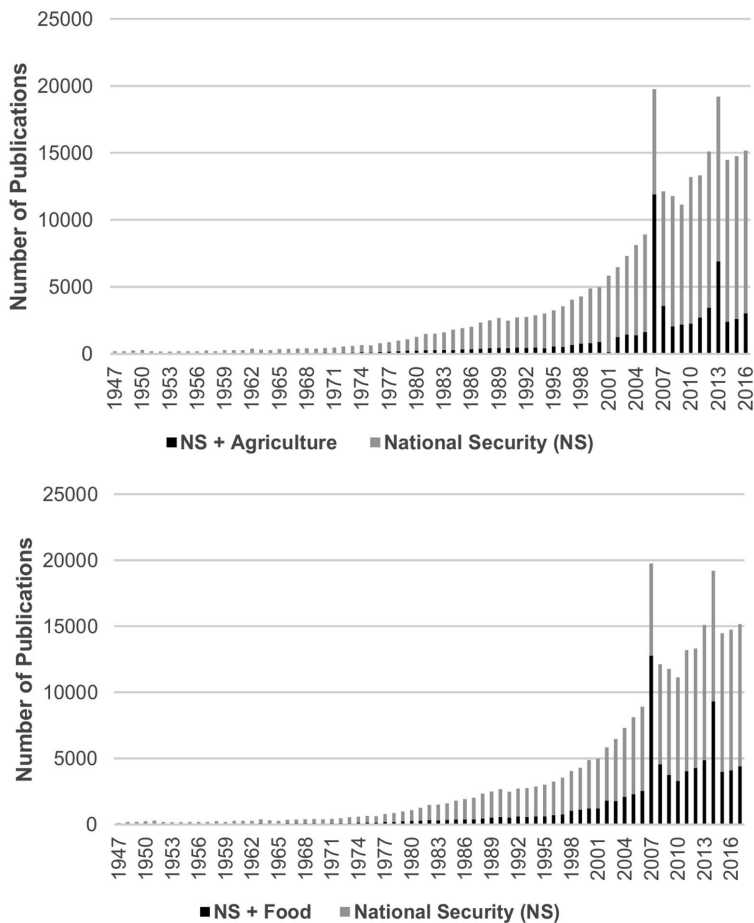
3 NEW THEMES ASSOCIATED WITH NATIONAL SECURITY IN THE WORLD: FOOD SECURITY

Of all the possible impacts of climate changes studied internationally, the most cited and feared is related to food production (FAO, 2008; FAO, 2017; PORTER et al., 2014). Farming, forest and fishing production processes are extremely sensitive to climate. Consequently, any climate variation, notably arising from an increase in the frequency of extreme events, has an immediate effect (PORTER et al., 2014). As a result, several countries started to see the strong connection between food, food security and National Security.

That is, most countries started to understand that the human right to proper amounts of nutritious food is a basic condition for the stability and security of a nation (BEREUTER; GLICKMAN, 2017; ECHOLS, 2016).

As a way to make this conclusion evident, bibliometric analysis using the program DIMENSIONS (<https://app.dimensions.ai/>) was conducted. The term “National Security” was surveyed alone and together (+) with the terms Agriculture and Food. The study was conducted from 1947, when the National Security Act was passed by the American government (ROMM, 1993; STUART, 2008), to 2017. The results are shown in Figure 1.

Figure 1 - Results of the bibliometric study applying the program DIMENSIONS for the period from 1947 to 2017 using the terms “National Security” (NS), agriculture and food



Source: Author's elaboration.

Initially, a significant increase was observed in the number of publications using the term “National Security” in the last years, with peaks in 2007 and 2014, with over 19,000 publications. The association with the terms “agriculture” and “food” was relatively stable in the period from 1947 to 2017, with occurrences of around 20 and 25%, respectively, in relation to the total number of citations involving National Security (Figure 1). An increase was also observed in years 2007 and 2014, when the term “agriculture” was associated with 60 and 36%, respectively, of the citations of National Security, and the term “food” was associated with 65 and 49%, respectively, of the citations of National Security (Figure 1). These results are probably related to the global economic crisis that started in 2007. The SubPrime American crisis triggered a series of turbulences in the global financial market, which has since affected food prices (CLAPP; HELLEINER, 2012).

In the international scenario, in the early 1990s, based on a survey of journals and official Arabic documents, Korany, Noble and Brynen (1993) indicated that fear caused by food insecurity was similar to the fear caused by regional wars, with a detail: food scarcity represented an immediate threat with a daily impact.

Cai and Smit (1995) observed that food production in China would be strongly affected by climate changes, which would threaten Chinese National Security. This concern with food insecurity led China to include an article (No. 22) on food security in the National Security Act in 2015 (WOOD, 2017).

Sedik, Sotnikov and Wiesmann (2003) reported that the USA and the European Union donated US \$1.5 billion to ensure food security in the newly created Russian Federation in 1998. In 2010, a severe draught hit the Russian Federation (KRAMER, 2010). This resulted in the inclusion of food security in the Russian National Security strategy in 2015, especially in Articles 52 and 54 (RUSSIAN FEDERATION PRESIDENTIAL EDICT 683, 2015).

The definition of the term “Food Security” accepted by most authors (FAO, 2003) appeared in this scenario, being the same definition as that in Action Plan No. 1 derived from a meeting sponsored by FAO in 1996 (FAO, 1996): “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” As a result, food security can be evaluated according to four categorical dimensions (FAO, 2006; CHANG; HSIU, 2011): *availability*, *access and consumption/utilization*, which are related to food flow, and finally, *stability*, which refers to the time dimension

(GROSS *et al.*, 2000; FAO, 2006). In Brazil food security was officially defined by Article 3 of Law No. 11,346 of September 15, 2006:

Food and nutrition security consists in achieving everyone's right to regular and permanent access to quality foods in sufficient quantity, without compromising access to other essential needs, based on food practices health promoters who respect cultural diversity and are environmental, cultural, economic and socially sustainable. (BRASIL, 2006, p. 1, our translation).

FAO (2017) reported that one out of every six inhabitants on our planet can be considered undernourished. Over 40% of them live in Asia, the region with the greatest demographic growth in the world. The combination of these two factors consequently results that world food production must be increased by 40% by 2020, and by 70% by 2050 (GRANT, 2012; MUTEIA, 2012) to ensure food availability in the future.

Over 50% of human dietary calories ingested basically derive from three types of cereals – wheat, corn and rice (AWIKA, 2011), for which reason they are also the most cultivated. In this way, the world food supply capacity was analyzed based on total cereal stock data. It has increased worldwide since the last crisis in 2007/2008 (FAO, 2018) from 448 to 748 million tons (Table 1). A large part of it is in China and in developed countries, which hold stocks of around 508 million tons, 71% of the world total. However, China's stocks have a strategic character to ensure Chinese food security for one year (KUTELEVA, 2016; WOOD, 2017). This situation becomes more complicated when we consider that the current consumption of cereals is not only as human food, but also as animal feed (production of protein mainly for pigs and chicken) and for the production of biofuels, notably in the USA (BROWN, 2011).

Table 1 - Cereal world production and consumption data during farming years from 2007/2008 to 2017/2018

Agricultural Year	Production	Consumption	Stock ¹	Consumption per month	Months with stock guaranteed
	<i>million tons</i>				
2007/08	2.131,4	2.128,1	447,7	177,3	2,5
2008/09	2.292,9	2.194,6	533,4	182,9	2,9
2009/10	2.258,3	2.220,1	569,7	185,0	3,1
2010/11	2.246,7	2.269,9	542,5	189,2	2,9
2011/12	2.339,5	2.311,3	563,7	192,6	2,9
2012/13	2.291,4	2.318,0	546,2	193,2	2,8
2013/14	2.522,4	2.429,5	610,3	202,5	3,0
2014/15	2.569,6	2.499,6	676,8	208,3	3,2
2015/16	2.540,0	2.521,5	691,3	210,1	3,3
2016/17	2.611,2	2.572,9	720,0	214,4	3,4
2017/18	2.645,8	2.612,3	748,2	217,7	3,4

1. One-year stock is not the difference between production and stock because it also includes the stock of the previous year.

Source: FOOD AND AGRICULTURE ORGANIZATION, 2018. ¹

Other fact of interest concerns the time of consumption of the stocks in the case of a global food emergency resulting from a break in production, for example, due to extreme climate events, such as a prolonged draught, storms during crop seasons, etc. The work of Brown (1977, p.26), indicates that the world grain reserves varied from around 40 to 110 days of global consumption needs from 1960 to 1978. Table 1 shows that more recently, between 2007 and 2017, the reserves varied from 75 to 102 days. That is to say that although the nominal grain reserves have increased, the security margin in the last 57 years has not, which is probably related to the world demographic growth rates. This is a particular major concern when we consider the fragility of the world agricultural systems in the face of extreme weather conditions.

¹ Disponível em: http://www.fao.org/fileadmin/templates/worldfood/Reports_and_docs/Cereal_supply_and_demand_data_may.xls. Acesso em: 01 abr. 2018.

From this comes another food security dimension – accessibility as a function of costs. The world is increasingly vulnerable to price hikes and volatility (MUTEIA, 2012). In the past, the greatest price crises were caused by a combination of factors such as oil hikes and natural disasters in production areas. However, with the participation of large corporations in the agricultural business, commercial speculation has made price variations less predictable (MUTEIA, 2012). Consider the example of oil producing countries in the Persian Gulf. Their perception was always that the oil and gas revenues would be sufficient to set off the importation of food (WOERTZ, 2013). However, the 2007/2008 crisis demonstrated that countries that traditionally exported food, like Argentina and Russia, imposed restrictions to their exports as a means of ensuring their own food security (BROWN, 2011). As a result “Gulf countries now face the specter that some day they might not be able to secure enough food imports at any price [...]” (WOERTZ, 2013, p. 3). Furthermore, one cannot compare the impact that the 2010 increase in wheat prices had on an American and that on an Indian, for example. In the first case, food expenditures represent less than 10% of the income. Therefore, a 5-10% increase is at most an annoyance. However, for Indians, who spend around 40-50% of their income on food, this is a calamity (BROWN, 2011).

It is worth noting that the Brazilian National Defense Policies (BRASIL, 1996b; BRASIL, 2005; BRASIL, 2012; BRASIL, 2016) do not mention food security at all. Nevertheless, the Brazilian government created, in 2006, the National System of Food and Nutrition Security - SISAN (BRAZIL, 2006) which would be regulated by Decree No. 7,272 of August 25, 2010. In this decree, the federal government instituted and defined the guidelines and objectives of the National Food and Nutrition Security Policy - PNSAN (BRAZIL, 2010). It is worth pointing out that despite Brazil’s importance as a food producer and exporter, it is not free from supply problems. In May 2018, Brazil suffers with a truckers’ strike that lasted 10 days (CANDIDO; SANTOS; ROLIM TAVARES, 2019). This crisis revealed the fragility and vulnerability of the whole food stocking and distribution system, bringing back to memory the ghost of food rationing that was so common from the 1960s to the 1980s.

4 CONTRIBUTIONS OF THE BRAZILIAN AGRIBUSINESS TO DEFENSE, SECURITY AND DEVELOPMENT ISSUES

Thus, considering that food production is a current fundamental issue of National Security, what is the importance of agriculture in the context of Brazilian defense, security and development?

From the discovery of Brazil up to 40 years ago, agriculture can be summarized as a simple series of cycles of monoculture to supply foreign markets: sugar cane, from the 16th century to late 18th century, when it lost competitiveness to the Dutch colonies in the Caribbean. Then, coffee, starting in the 18th century up to the 1930s, which ended as a result of the world economy crisis in 1929 (NAVARRO; BUAINAIN, 2018). However, we must not forget that these two cultures were the main economic expression of National Power at their time and were responsible for the first glimpses of Brazilian society.

The profile of the rural producer in the early 20th century was that of a small producer who practiced subsistence agriculture without any support from government and trodden by “*latifundiários*”, owners of large and less productive areas of land (GALERA, 2017), and without any government support (ALVES; CONTINI; GASQUES, 2008).

In the 1965-1980 period, according to Delgado (2001), the ideas of Delfim Neto and his team from the University of São Paulo started to influence Brazilian agricultural development. For them, the answer for the expansion of the agricultural sector would be technical-agricultural-industrial integration, as defined by Delgado (2001). It would be characterized by a growing use of inputs such as fertilizers, pesticides, improved seeds, etc., farming mechanization and integration between the primary production of food, raw-materials and various industrial segments.

Alves, Contini and Gasques (2008, p. 70) pointed out the importance of three policies in this context: subsidized credit, mainly for the purchase of modern inputs and as working capital loans; rural extension and agricultural research

Brazilian agriculture has shown a tendency for systematic growth in the last 40 years, mainly as a result of increasing productivity. According to CONAB (2018), for example, grain production in Brazil increased between 1976/1977 and 2017/2018 by approximately 46.9 to 227.8 million tons, while the farming area increased by approximately 37.3 to 61.7 million hectares. This means that increase in land productivity was primarily responsible for the increase in production rather than an increase in farmed land. Thus, a “land saving” effect of 119.4 million hectares could be calculated as a result from the hypothetical need of farmed land to attain the production of 2017/2018 with a productivity of 1976/1977.

The same reasoning applies to the production of meat in the 1990-2016 period, with an increase in the production of pork of 252%, of poultry of 448%

and of beef of 85% (EMBRAPA, 2019) without significant increases in production area. In 2018, as a result, agriculture was responsible for 21.1% of the GNP, with 29.8% of the agricultural GNP being due to the industry and 41.2% to services (CEPEA; CAN, 2018). Also in 2018, 20% of the jobs (CEPEA, 2018) and 42% in exports (BRASIL, 2018a) were in agriculture. Thus, it can be stated that Brazilian food security has been achieved only through recent technical scientific developments in agricultural production. Alves et al. (2012) corroborates this statement when they pointed out, based on the agricultural census from 1995/1996 to 2006, that technology as an isolated factor contributed the most to the growth of production (50.6 and 67.4%, respectively) in contrast to other factors like labor and land.

Another characteristic of the contribution of the agribusiness to the national development is related to its use as a part of the Brazilian foreign policy. Brazil made numerous cooperation projects in the agricultural area with African and Latin American countries through the Ministry of Foreign Affairs (MRE) and the Brazilian Agency for Cooperation (ABC), mainly under former President Lula's administration (SANTOS, 2013; SOUZA, 2012).

These South-South alliances, thus constructed, allowed Brazil to gain support to its attempt to reduce the asymmetries in foreign relations with developed countries (MILHORANCE, 2013; SANTOS, 2013). An example of Brazil's leadership was in the coalition of developing countries in commercial negotiations in 2003, which led to the rejection of the joint proposal from the United States and the European Union (EU) in Doha (LIMA; CASTELAN, 2012). Another fact worth mentioning is the Conference of the Parties of the United Nations on Climate Change. A great extent of the major role played by Brazil in the fight against the climate changes was due to agribusiness based on the proposed Brazilian targets for the control of greenhouse gas emissions (LIMA, 2015).

Given the extensive participation of agribusiness in all the five expressions of National Power, namely, political, economic, psychosocial, military and scientific-technological (ESG, 2018), maybe it would be strategic to set its importance in the National Policy and Strategy of Defense. It is not the case of anticipating any type of intervention from the Ministry of Defense in the Ministry of Agriculture, Livestock, and Food Supply (MAPA), but rather of extending the relation between these two ministries beyond the mere "guarding of borders to prevent the propagation of diseases in Brazil." (BRASIL, 2016, p. 134). Partnership with technical-scientific institutions in the agricultural area would be fundamental for the analysis of the main signs and tendencies, foreseeing game-changing or disruptive transformations and preventing possible

problems, notably in the area of cyber-attacks, technical barriers to Brazilian agricultural exports, agroterrorism, foreign land grabbing, dependency on foreign inputs and lack of strategic food stocks (PÉREZ, 2018). To this end, it would be rather interesting to enhance the relationship between MAPA's Strategic Intelligence System through EMBRAPA and the Department of Agricultural Defense (SDA) with the main *think tanks* of the Ministry of Defense. A possible point of departure could be doing an exercise of Strategic Planning that established a macro vision beyond the economic risk. It would be fundamental to evaluate scenarios where the national agriculture might be threatened or even pose a threat to the interest of other nations, either for food sovereignty or for mere competition for international markets.

5 CONCLUSIONS

The Green Revolution that took place right after World War II gave a false impression of a solution to the Malthusian inequality between human growth and food production. However, the recurrent supply crises that have happened since the 1970s reawakened the sensation of food insecurity, particularly the last crisis that happened in 2007/2008. It calls into question the setting-off effect exerted by international trade: the countries that had products to sell did not want to risk running out of stock. The general skepticism regarding Globalization with the view of new barriers to global trade also contributes to the present scenario.

As a result, the thought of self-sufficiency reemerges in all areas, especially in those related to human food, and, indirectly, to animal feed. However, it is obvious that not all Nations have the means to reach this level. Brazil seems to be one of the few countries that can still raise its food production as a result of the availability of land and water (from rain) suitable for farming without the need of deforestation whatsoever (BRUINSMA, 2011; OECD, 2016). However, the opportunities derived from its great agriculture capacity flows in strong threats to development and ultimately to national sovereignty disguised under various forms and sources.

Maybe China is the best expression of all the risks that Brazil faces. Currently, it is Brazil's main trade partner. Agribusiness contributes with little over 25% of Brazilian exports to China, mainly

soy (grain and meal), chicken meat and beef, cellulose and coffee (BRASIL, 2018b; FGV, 2019).

However, to ensure its Food Security, China has acted in various areas all over the world. First, it has purchased and stocked large amounts of grains (KUTELEVA, 2016; WOOD, 2017) and bought land, especially in East Africa, to ensure new production areas and food supply (BROWN, 2011; DEININGER; BYERLEE, 2011; NALLY, 2015). Chinese companies have also expressed interest in the flexibilization of the legislation on the sale of land to foreigners in Brazil (O ESTADO DE SÃO PAULO, 2010; REUTERS, 2016). Besides this strategy, Chinese companies have been buying various Brazilian and international companies, mainly seed production, food processing and pesticide companies, which grant them the possibility of controlling the means of agricultural production in the world, especially in Brazil (AMORIM, 2017; BARRUCHO, 2017; HEINRICH-BÖLL-STIFTUNG et al., 2017; SEGALLA, 2018a; SEGALLA, 2018b). Finally, China has shown to be a great provider of infrastructure services in the world, and in the near future, in Brazil, which, obviously, includes all kinds of means of transportation. This will certainly influence the logistics of food distribution and allow Chinese companies to obtain utilization and taxation concessions that may last more than decades in Brazil.

As indicated in this study, countries like the USA, Russia and China invoke National Security to protect their Food Security and Food Defense. Thus, the Brazilian Government needs a repertoire of future scenarios that may help our major administrations (e.g., in the Economic, Planning and Presidential Cabinet areas) in making decisions in the agriculture area besides on trade. As a function of the various courses of action that they take, the main *think tanks* of the Ministry of Defense should conduct a strategic planning exercise focused on agribusiness aiming at the protection of land resources, inland water and airspace as factors for Brazilian development.

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