



The paths on elaborating the Plant Variety Protection Act in Brazil

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ABSTRACT

This article explains the paths on elaborating the Plant Variety Protection (PVP) Act in Brazil by showing the discussions and controversies that have surrounded this matter since the 1970s. Our hypothesis is that the PVP Act drafting, far from being centered on a discussion of agricultural and technical-scientific matters, has been a political process eminently based on the dynamic articulation of few actors who dispute interpretations in accordance to their own interests about whether signing the PVP Act was needful (or not). The analysis guided by the Multiple Streams theory shows a learning process for the main actors and institutions involved on this political agenda. The conclusion was that the political discussion around the PVP Act remains the same in Brazil, as it has still been questioned up today even after decades of its institution in the law promulgated in 1997.

KEYWORDS: Plant variety protection; Plant variety protection law; Political agenda; Brazil

1. Introduction

Brazilian agricultural production is the result of technological and productive trajectories. These trajectories shaped a large-scale diffusion pattern of biological, chemical, and mechanical inputs. Public research institutions organized in international research and development (R&D) networks were vital for the development and diffusion of high-yield varieties, especially in the context of the Green Revolution. High-yielding varieties were and continue to be a strategic input as they carry characteristics and establish relationships among actors throughout the entire production chain. The Genetic Revolution followed this model and changed the productive configuration mainly carried out by strategies and practices of transnational corporations. Complementary assets to this production process, such as intellectual protection mechanisms, also coevolved and adapted to new contexts. This paper focuses on intellectual property rights used in high-yield seeds, particularly the Plant Variety Protection Act in Brazil.

Two main treaties discuss the matter of plant variety protection (PVP) internationally: the Trade-Related Aspects of the International Property Rights (TRIPS) and the International Union for the Protection of New Varieties of Plants (UPOV, in French). Both treaties had an essential role on the political agenda of PVP in Brazil, which culminated in the institution of the Brazilian PVP Act in 1997 (TRIPP; LOUWAARS; EATON, 2007).

The political agenda of PVP Act in Brazil has come a long and tumultuous way. Although most analyses are limited to the drafting of the bill during 1997 (ROCHA, 1997; ARAUJO, 2010; PECEQUILO; BASSI, 2011; CARVALHO; SALLES FILHO; PAULINO, 2009), detailed studies show that the topic had already been discussed in the 1970s (VELHO, 1995) and coevolved with the new dynamics promoted by the agricultural and political conditions. Current discussions on PVP in Brazil are mainly concentrated in the fields of the agricultural, biological sciences, and biochemistry (BRAGA JUNIOR et al., 2018; FLÔRES JUNIOR, 2015, among many others); on the technical aspects

of PVP in Brazil (AVIANI, 2011; SANTOS et al., 2012; AVIANI; MACHADO, 2015; CARVALHO; SALLES FILHO; PAULINO, 2009; SÁ; SAES, 2015) and on the juridical aspects of the law, especially the industrial property and the plant variety protection (GARCIA, 2011; BARBOSA, 2012; BRUCH; VIEIRA; DEWES, 2015; BOFF, 2019; VIEIRA; BRUCH, 2020). Thus, this study aims to advance these discussions by presenting a historical and political approach on the elaboration of the PVP Act in Brazil.

This paper aims to review the path that led to the agenda setting of PVP in Brazil by using Kingdon's Multiple Streams model (KINGDON, 2003). His arguments on agenda setting and problem definition guided our analysis to identifying actors and institutions, contexts, and strategies that shaped such a political agenda. Pierson's policy approach brought light to lock-in conditions, path dependence and to the importance of comprising the institutional environment in political discussions.

Our hypothesis is that the PVP Act drafting, far from being centered on a discussion of agricultural and technical-scientific matters, has been a political process eminently based on the dynamic articulation of few actors who dispute interpretations in accordance to their own interests about whether signing the PVP Act was needful (or not). This study will fill an analytical gap in PVP discussions since the literature mostly relies on technical arguments about plant variety legislation without considering the influence that political forces have in this kind of process. They acted not only in the past, in instituting the PVP Act in Brazil, but they continue today, as attempts towards changing the law have still been made. By performing an *ex post* analysis of the agenda setting of the PVP Act in Brazil, we provide relevant information on strategies and dynamics of actors that can impact the political discussions about the changes in the PVP Act today.

The methodology consisted of the analysis of primary sources of official documents such as draft bills, congressional meetings, and Special Commission's reports and law processing information published on the National Congress websites. The Multiple Streams framework

allowed us to map and analyze the dynamics and relations among actors according to their argumentative strategies and political discussion.

The paper is divided into six sections in addition to this introduction, as follows i) the theoretical guidance for the agenda setting, presenting discussions of path dependence, policy lock-ins and the Multiple Streams approach; ii) the international path of PVP discussions; iii) the national path of PVP; iv) the policy window; v) changing the PVP Act in Brazil; and vi) final considerations.

2. Agenda setting, problem definition and the multiple streams model

In order to analyze the elaboration of a political agenda, it is important to understand the political rationale and the institutional context behind it. This perspective highlights the embedded policy rationales, actors, and policy choices (FLANAGAN; UYARRA; LARANJA, 2011). The agenda-setting literature can help in this analysis by providing insights on the dynamics through which new ideas, new political proposals, and new understandings of problems can find resistance within consolidated political arrangements and how, in some cases, these new ideas breakdown barriers and lock-ins to result in actual change. The agenda-setting analysis focuses on examining the pre-decision processes and the politics involved in selecting issues for active consideration (DERY, 2010).

Another essential factor to consider is 'problem definition.' Conflicts in the political agenda are not only about issues that policymakers choose to act on but also about how competing interpretations of political problems and political alternatives occur (COBB; ROSS, 1997). The problem definition incorporates a set of facts, beliefs, and perceptions framed and presented to and by the government (JONES; BAUMGARTNER, 2005; REICH, 1988).

One can also consider the path dependence that may occur in the formulation of public policies. Pierson (2000, 2010) argues that there

are many reasons to believe that sequences of path dependence prevail strongly in politics. They are adopted in the context of preexisting policy entanglements and institutional frameworks that have been shaped and constrained by numerous policy changes (FLANAGAN; UYARRA; LARANJA, 2011). This knowledge accumulation is observed in institutions and in political processes that involve public policies formulation. Since problems identified by policymakers become visible or latent from past experiences, the setting of a political agenda may reflect past successes or lessons learned from past mistakes (PIERSON, 1993, 2000).

Likewise, the Multiple Streams Approach (KINGDON, 2003) acknowledges the learning aspect within the political process. To develop his analysis, Kingdon (2003) elaborated two different processes for agenda-setting: (a) the governmental agenda, which refers to the topics that are receiving attention, and (b) the decision agenda, which is the list of subjects within the governmental agenda that are taken into consideration in the active decision making. The author believes that an issue reaches the governmental agenda when it attracts enough attention and interest from policymakers (CAPELLA, 2006). Therefore, the Multiple Streams theory aims to explain how these two agendas (governmental and decision) are affected by three different processes: the problem stream (how a problem is seen), the policy stream (the set of alternatives available), and the political stream (the political dynamics and public opinion) (CAPELLA, 2006).

Kingdon (2003) refers to the policy stream as the natural selection analogy in his concept of the 'primeval soup'. The author explains that the ideas conceived by policy communities or communities of experts undergo a refining process (FRANCO; PELAEZ, 2016). As the ideas are discussed, they evolve like biological organisms over time. Once in the primeval soup, the ones that meet favorable conditions may survive intact rising to the surface, while others can be confronted with other proposals, combined with other alternatives, or eventually be discarded and disappear.

In an attempt to gain legitimacy, individuals seek to have their ideas spread across other arenas in a process called ‘softening-up’. They link their proposals to different audiences and gradually promote their acceptance considering the best time to present them. Timing is also an essential aspect in the Multiple Streams theory, since shifts in the political agenda occur through the convergence of the three streams in a policy window. This is the precise time when changes in the decision agenda is likely: a problem that has become recognized meets a solution that is already available, and this happens under favorable political conditions for changing and adding issues on the decision agenda.

Kingdon describes the critical role of policy entrepreneurs in the policy arena, which, according to Pelaez et al. (2017), is convergent with Schumpeter’s concept of opportunistic behavior among individuals or collective actors. Policy entrepreneurs must be aware of the stream convergence and the mood of relevant actors. Once in the role of framing problems and solutions, the policy entrepreneur can shape the political debate, move around political networks and build coalitions.

3. The international path of plant variety protection

The establishment of an international system of PVP took place in the Paris Convention held in 1961. The conference started the negotiation of an international instrument on PVP and thus established the International Union for the Protection of New Varieties of Plants (UPOV) system. This way, UPOV would set the minimum requirements of PVP during the early 1960s. (CORREA; SHASHIKANT; MEIENBERG, 2015; THIELE-WITTIG; CLAUS, 2003; AVIANI; MACHADO, 2015).

UPOV aims to guarantee the exclusive right granted to the breeders of a new plant variety, making it possible for them to exploit commercially the protected variety (THIELE-WITTIG; CLAUS, 2003). Thus, breeders can guarantee the appropriability of their innovative

process. UPOV established that a plant variety can be protected when it covers the following criteria: a) novelty, b) distinctiveness, c) uniformity, d) stability, and e) proper name.

Since its creation, UPOV was revised in 1972, 1978 and 1991. The first two revisions did not alter substantially the PVP system of protection. However, the 1991 revision brought significant changes by expanding and strengthening the rights conceded to breeders while limiting the historical rights of farmers to save, use and exchange seeds (CORREA; SHASHIKANT; MEIENBERG, 2015).

The membership of the UPOV was modest at first. Over the 17 years after the Convention, only 12 countries became members, which reflected the perception that such a protection model might not have been suitable for the agricultural conditions of many countries. Developing countries only demonstrated interest in the 1990s, when the Trade-Related Aspects of Intellectual Property Rights (TRIPS) required its members to develop their PVP laws by 2000. This demand constrained the countries to draft plant protection bills, so joining UPOV became a minimum condition in that process (FALCON; FOWLER, 2002). PVP Law was then considered a mandatory legal apparatus that would stimulate research investments and national seed market development. Currently, UPOV has 75 members, which is a significant number when compared to the beginning of the Convention in 1961.

It was determined that after 1998, the new members joining UPOV should adhere to the 1991 UPOV, which was a more rigid version than the 1978's. Most countries that drafted the bills did so because of international pressure from the US and the European free trade agreements (CORREA; SHASHIKANT; MEIENBERG, 2015).

Considering the abovementioned scenario, in which the TRIPS Agreement made plant variety protection mandatory, it is possible to assume that the adoption of a UPOV-like system was not a decision made from cost-benefit analyses or over other sui generis options, but was the result of the pressure and obligations imposed by free trade agreements (KRATTIGER, 2004; SRINIVASAN, 2005; TRIPP et al., 2007; CORREA; SHASHIKANT; MEIENBERG, 2015).

4. The national path of plant variety protection

The analyses of the development of the Brazilian PVP Act usually focus on the political discussion carried out in the 1990s (ROCHA, 1997; CARVALHO; SALLES FILHO; PAULINO, 2009; ARAUJO, 2010; BOFF, 2019). However, studies such as the one by Velho (1995) demonstrate a political path that had already started decades before, in the 1970s. Velho (1995) argues that the political discussion that culminated in the development of the PVP Act had been a longstanding debate that can be divided into two phases: the 1st phase of controversy, which dated from 1970 to 1978, and the 2nd phase of controversy, which started in the 1980s and ended with the promulgation of the PVP law, which instituted the PVP Act, in 1997. From these phases it was possible to find lock-in conditions within the debates, and a learning process from the actors' previous political choices.

During the 1970s, two Draft Bills aimed at guaranteeing breeder protection were sent to and rejected by the National Congress. The Draft Bill 03072/1976 headed by Deputy Osvaldo Buskei intended to extend to plant varieties the same protection enforced in the industry. A sub-commission was created to assess this Draft Bill. Another one gained attention for being slightly controversial since it had been developed by the International Plant Breeder (IPB – a breeder company controlled by Royal Dutch/Shell). IPB elaborated on a document describing the potential benefits of plant variety legislation in Brazil and stressed that the country should invest in plant breeding legislation as private companies could feel discouraged from investing in the field without national legislation and incentives.

Documental research by Velho (1995) indicates that this document was widely promoted within the seed commercialization parties and was finally delivered to the Minister of Agriculture, Alysson Paulinelli. IPB justified their permanence in Brazil to the elaboration of the PVP legislation and started a lobby for the law's approval by pressuring policymakers to take effective action in designing such policy (VELHO, 1995, p. 119).

Concomitantly, one of the leading institutions that would oversee the discussions about the PVP Act in the following years entered the arena. Embrapa, the Brazilian Agricultural Research Corporation, headed a working group to study the issue, as it had been requested by the Minister of Agriculture Alysso Paulinelli. It is essential to emphasize that the first discussion about the PVP Act in Brazil happened simultaneously to both the creation of Embrapa itself in 1973 and to the boost of agricultural activities in the country following the Green Revolution's agricultural development model (FILOMENO, 2013). In addition to Embrapa, two other institutions had an important role in the 1st phase of controversy: the Brazilian Association of Seed Producers (Abrasem) and the Campinas Agronomic Institute (IAC).

Embrapa's working group eventually recommended caution in drafting the act, but defended a Brazilian PVP legislation, arguing that it would be important to ensure investments from companies of the agricultural sector. A softening-up process can be identified during this period, as a new group was organized by the Ministry of Agriculture aimed at searching for public and private actors' support to draft a plant variety law. It can be said that Minister Paulinelli acted as a policy entrepreneur for having identified an opportunity to discuss the matter politically.

Both Abrasem and IAC started the process internally by consulting their technical staff. IAC technical staff strongly rejected the draft project, and one of its members met with the state deputy Antonio Rodrigues, convincing him to hold the project's approval before it was widely debated. Hence, deputy Antonio Rodrigues conducted a lecture on the subject at São Paulo's Legislative Assembly in 1978, whose reaction was a rejection campaign headed by the Association of Agricultural Engineers of the State of São Paulo (AEASP) and the Brazilian Society for the Progress of Science (SBPC).

Congressman Cilas Pacheco gave a lecture to the Agricultural Commission at the Federal Chamber of Deputies that aimed to explain technical issues about the law. The purpose was to galvanize values within the policy communities and present the PVP law as an

opportunity for the agricultural sector to invest in private breeding activities. His presentation did not have the expected result, culminating again in strong opposition to the law. The rejection also mobilized several regional institutions, such as the Association of Agricultural Engineers of the states of Paraná, São Paulo, Rio Grande do Sul, Santa Catarina, Goiás, Minas Gerais, Maranhão, and Pará, as well as the Brazilian Society of Agronomy, based in Rio de Janeiro, which actively opposed to any legislation on PVP.

According to Velho (1995), this political discussion was sustained by political actors who represented interest groups that would have their requests translated into the Draft Bills. The process faced strong opposition from the scientific community. The softening-up process led by Minister Paulinelli's working group has come to an unwanted outcome: the problem definition of PVP in Brazil, a necessary step to advance the agenda-setting process, faced great resistance by the specialist communities.

The main arguments used in the discussions during this first phase were:

Arguments in favor of the PVP Act:

- a) By protecting breeders, PVP would consequently attract private companies to raise their investments in research in the country (Abrasem, IPB);
- b) PVP would contribute to the increase and development of plant varieties available for farmers (Abrasem);
- c) PVP would cause an impact on the control, exchange, and use of scientific germplasm (Abrasem, IPB);

Arguments contrary to the PVP Act:

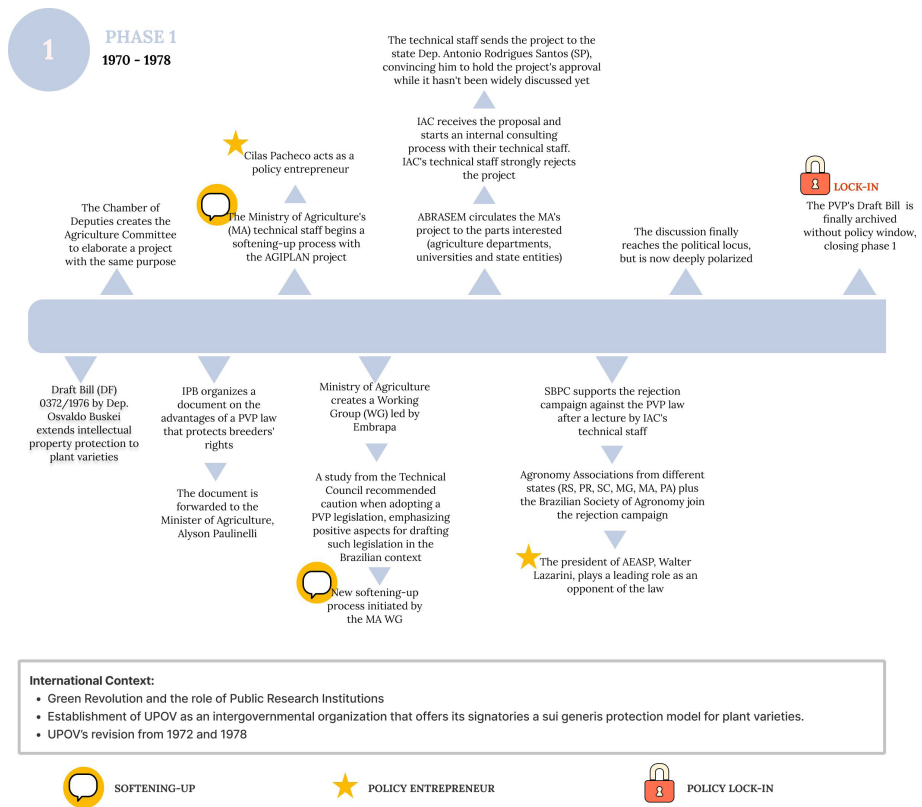
- a) PVP would cause a negative impact on the control, exchange, and use of national germplasm, which would affect the preservation of national genetic resources;
- b) The law could promote the boost of breeding activities, and this would jeopardize the quantity and quality of plant varieties available for Brazilian farmers (AEASP);
- c) PVP would lead to an increase in the cost of agricultural production due to the royalties embedded in the prices of registered seeds;

- d) PVP would impact directly the cooperation in the ‘propagation of new varieties system’ developed by researchers of public research institutes;
- e) PVP would promote the denationalization of the breeding sector since foreign companies were at a higher level of organization than the national competitors;
- f) This would disrupt the public sector from seed improvement.

Figure 1 illustrates the timeline of the 1st phase of controversy and identifies the main actors involved in this period and their trajectories.

Based on the presented context, we can summarize that two groups debated this issue in the 1st phase of controversy: one group opposed the enactment of the PVP Act, led by AEASP, IAC, Embrapa’s researchers and technical staff, SBPC, and other state-level agronomy

FIGURE 1
1st phase of the controversy.



Source: Elaborated by the Authors.

associations, versus the other group that wanted the law's approval, formed by producers' associations, led by Abrasem, the Minister of Agriculture, and IPB representing the interests of international seed companies.

The opposition group succeeded in mobilizing political actors to file and reject the bills related to PVP. The lobby against the Draft Bills, raised mainly by the technical and scientific community, put an end to the 1st phase of debates and controversies. Therefore, a critical lock-in situation constraining the policy stream is identified, despite the Minister of Agriculture's political entrepreneurship and favorable executive agenda. The conclusion of this political process also ended the discussions about the PVP law in Brazil, temporarily.

5. Policy window

The 2nd phase of the controversy began with the approval by the Minister of Agriculture on the creation of the Brazilian System for Plant Variety Registration (SBRC). One more time, the development of SBRC faced great opposition from the Ministry of Agriculture's technical staff and was never actually implemented.

In 1986 and 1989, several attempts at the legislative level were made by deputies Oswaldo Trevisan, José Santana, and Rosa Prata, who presented Draft Bills aimed at plant breeders protection. Nevertheless, they found resistance from institutions such as the agronomy association AEAPR and were thus foreclosed from the political process.

These Draft Bills were aligned with the moves in the international context. As discussions and propositions for the 1991 UPOV revision were underway, and a new round of negotiations by the General Agreement on Tariffs (GATT) had been in course during that same period (1986-1994), the agreements on intellectual property trade culminated in the creation of the TRIPS Agreements. As mentioned before, such a scenario may have influenced the choice and discussions

of some countries to develop intellectual property legislation for plant varieties (CORREA; SHASHIKANT; MEIENBERG, 2015).

Furthermore, the Genetic Revolution likewise played a relevant part in the breeding activities scenario. Diverging from the rationale of the Green Revolution, organized by public research institutions, the Genetic Revolution followed a course based on biotechnological breeding processes primarily conducted by transnational companies. In this new context, the leading role of public research institutes were undermined, as companies lobbied for stronger intellectual rights that would assure appropriability rights for their expensive and high-yielding oriented varieties.

The convergence of the national and international paths in favorable conditions opened a policy window for the bill to be drafted. With the opportunity to have the PVP Act formulated, the problem stream – which had been in course since the 1970s – finally met its long-awaited goal. Once the Genetic Revolution, endorsed by the new UPOV revision and the TRIPS Agreement, enlivened this new historical, scientific and agricultural scenario, the circumstances were favorable for the conduction and conclusion of the debates, thus closing the controversy's 2nd phase.

In 1988, during the elaboration of the National Constitution, Embrapa presented to the Constituent Committee on Agriculture a document emphasizing the need for specific patent legislation for plants. This, however, was not a consensus position in the institution. While the board of directors had strong political force for claiming in favor of the legislation, the technical staff and researchers had rejected it vehemently ever since the 1st phase of controversy. The confronting opinions were due to the diversity of Embrapa's researchers and analysts', whose work activities had great diffusion among the plenty centers of the company. Therefore, an internal consultation was held within Embrapa's members during the first years of the controversy's 2nd phase. The result consolidated the institutional opinion, which was of the opposition to the PVP Act, since the great majority of researchers and staff had declared being against the plant variety protection legislation.

During a meeting promoted by the Brazilian Seed Technology Association (Abrates) in 1989 to discuss PVP legislation options, Embrapa declared their contrary opinion, discussing the matter with other institutions such as IAC and the Ministry of Agriculture. Notably, it may be assumed that some effort could have been done to restrict the subject among the same institutions that had been taking part in the debate, once they have not changed for almost two decades of discussions.

The initial discussions of the 2nd phase of the controversy intended to preserve the role of the public sector in the breeding activities. They aimed to ensure that research activities in this area would remain to public research institutions, such as Embrapa itself, which has historically carried out this kind of work. However, according to Velho (1995), a different framing arose. It defended the view that the public sector should look for new sources of revenue and that such revenue could come from economic return obtained by the protection of breeders' rights. This argument brought the public sector closer to the strategies of the private's one.

Moreover, the new political configuration that started in Brazil in 1990 contributed to plant variety discussions be addressed. Fernando Collor, the new president, was committed to the TRIPS Agreement as well to the modernization of the country's intellectual property legislation. With his political actions forging a favorable national mood for intellectual property legislation matters, grounded on a privatizing logic, and promises of economic and productive progressions, the paths for the development and approval of the Brazilian PVP Act seemed inevitable. Nevertheless, any of these factors excluded the controversy inherent to the discussions on plant variety protection.

By 1990, Embrapa had a new board of directors headed by president Murilo Flores. Murilo Flores argued that Embrapa needed to rediscuss the matter of PVP and analyze future scenarios to understand the impacts of the international relations on the company's activities. He had been strongly against any type of PVP legislation few months before taking up office, but this position changed. He argued that

his new opinion regarding the PVP legislation altered over the rapid changes in society, such as the reorganization of the global economy, the need for breaking commercial barriers and the understanding that such type of law could place Brazil in a better position in the international scenario (VELHO, 1995).

At that time, the private sector represented by Abrasem, the Central Cooperative of Sugar and Alcohol Producers of the State of São Paulo (Copersucar) and Agrocerec (a leading company that planted hybrid corn seeds) was pressuring Embrapa to alter its institutional position and to lobby for the formulation of the PVP draft bill. This pressure was effective as Embrapa changed its public position and, committed to the TRIPS Agreement, became favorable to the drafting of the PVP Act – which may be viewed as a critical point for the policy window. This way, no more doubts remained as to whether or not the PVP Act would be drafted, mainly because Embrapa had already been requested by the Ministry of Agriculture to work on the document.

Many discussions featuring Embrapa, the National Institute of Industrial Property (INPI), and the Ministry of Science and Technology (MCT) have agreed on the need to negotiate with TRIPS a better deadline. This negotiation made it possible for Brazil to adhere to the 1978 UPOV's revision – which was considered more flexible in its protection devices – and to incorporate a vital aspect from 1991 UPOV: the essentially derived variety protected private breeders and public research institutions, thus benefiting both sectors (PECEQUILO; BASSI, 2011).

Embrapa developed a draft bill internally and presented it to the Interministerial Committee¹, created in 1991 to advance on PVP discussions, and to the National Agricultural Policy Council (CNPA). CNPA represented the National Confederation of Industry (CNI), the Organization of Brazilian Cooperatives (OCB), the National Confederation of Agriculture (CONTAG), the Brazilian Rural Society, and other entities. CNPA and Embrapa did not agree

¹ Interministerial committee was formed by the Ministry of Justice, Ministry of Foreign Affairs, Ministry of the Economy, Ministry of Planning and Development, Ministry of Agriculture, The Science and Technology Secretary of the President of the Republic.

on almost 40 aspects concerning the legislative proposal, particularly on a retroactive aspect that would benefit the public research sector, which Abrasem and OCB did not accept.

Velho (1995) described that after many discussions, both sides have eventually been granted concessions to accommodate interest from the public and private research institutions. This process is similar to the primeval soup process, since ideas may survive intact rising to the surface, while others can be confronted with other proposals, combined with other alternatives, or be discarded and eventually disappear. In this fermentation of ideas, those that display more technical feasibility are the ones affordable, represent shared values and meet less resistance.

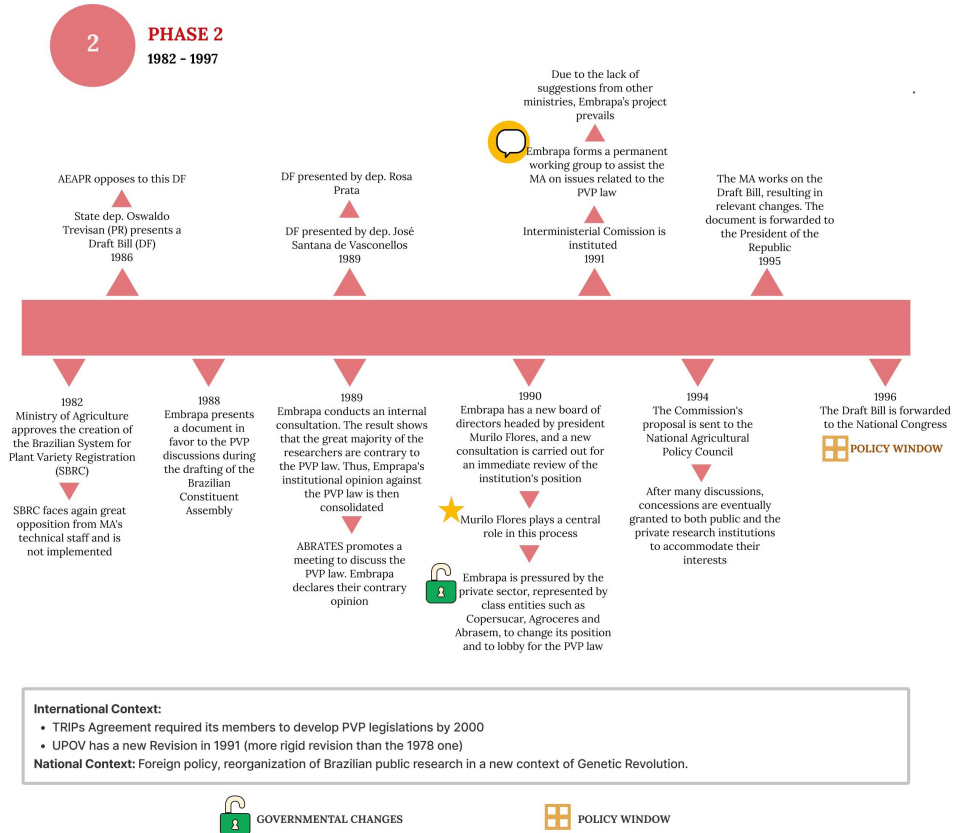
Another alteration process occurred without Embrapa's and CNPA's approval. The final draft bill became very similar to 1978 UPOV (VELHO, 1995), was submitted to the President's General Secretary and finally forwarded to the National Congress in 1996.

Figure 2 illustrates the timeline and identifies the main actors involved in the 2nd phase of the controversy and their trajectories.

A learning process concerning the actors who defended the PVP law can be identified by observing the strong lobby that Embrapa faced to change its institutional opinion. Velho (1995) explains that Embrapa's change of opinion was crucial for the legislation process because it conferred technical legitimacy upon a political decision that had already been made when the Brazilian government signed the TRIPS Agreement. Similarly, Wilkinson and Castelli (2000) argue that the TRIPS condition also forged a possible situation of diplomatic isolation if Brazil decided not to follow UPOV's guidelines while developing plant variety legislation, which explains why drafting the PVP Act was so important.

Araújo (2010), in turn, highlighted the numerous implications of PVP Act drafting, especially the ones concerning the political and social aspects of the agricultural sector. The author further endorsed that PVP legislations are intrinsically rooted in neoliberalism, focused on privatization of knowledge, which was the central point of that debate.

FIGURE 2
Phase 2 of the controversy.



Source: Elaborated by the Authors.

The arguments in favor of the PVP Act in Brazil in the 2nd phase remained the same: PVP advocated for the modernization of agricultural structures and the globalization of the economy, which could be seen as a mechanism for boosting technological advancement, resulting in a new productive dynamic in Brazilian agriculture.

In contrast, the opposing arguments defended national seed production and more economic democracy in the elaboration of this law, since they contended exclusive rights to breeders and their monopoly.

A summary of the arguments by both sides can be observed in Table 1.

TABLE 1
Controversies about plant variety protection

	Phase 1	Phase 2
Actors in favor of the PVP Act	1) Ministry of Agriculture, 2) IPB 3) Abrasem	1) Ministry of Agriculture 2) Embrapa 3) Copersucar 4) Agroceres 5) Abrasem 6) CNPA
Policy entrepreneurs	State Deputy Cilas Pacheco	Embrapa's president Murilo Flores
Arguments in Favor	1) PVP legislation would consequently attract private companies to raise their investments in research in the country; 2) PVP would contribute to the increase and development of plant varieties available for farmers; 3) The public sector should look for new sources of revenue and that such revenue could come from economic return obtained by the protection of breeders' rights (this argument was presented during Phase 2).	
Actors contrary to the PVP Act	1) SBPC 2) AEASP and other state-level agronomic institutions, 3) Embrapa's researchers and technical staff IAC's researchers and technical staff	1) Embrapa's researchers and technical staff 2) IAC's researchers and technical staff 3) AEASP and other state level agronomic institutions
Contrary Arguments	1)PVP Act would cause a negative impact on the control, exchange, and use of national germplasm; 2) The legislation could promote the boost of breeding activities, and this would jeopardize the quantity and quality of plant varieties available for Brazilian farmers 3) PVP would lead to an increase in the cost of agricultural production due to royalties embedded in the prices of registered seeds; 4) PVP would impact directly on the cooperation in the 'propagation of new varieties system' developed by researchers of public research institutes; 5) PVP would promote the denationalization of the breeding sector since foreign companies were at a higher level of organization than national competitors; 6) It would disrupt the public sector from seed improvement.	

Source: Elaborated by the Authors.

6. Drafting the PVP Act in Brazil

The starting point of the Brazilian PVP Act drafting was the analysis' outcome of two previous draft bills: 1.325/1995, by deputy

Renato Johnson, and 1.457/1996, developed by the government. Although draft bill 1.325/1995 was broader and more descriptive, the draft bill 1.457/96 passed more quickly as it was included in the decisional agenda of the National Congress with an 'urgency request'. Since PVP is a multidisciplinary topic, many public hearings were conducted with public and private institutions, universities, and executive representatives. According to Araújo (2010), deputy Carlos Melles – the draft bill's rapporteur – promoted a negotiation process among sectors to which the issue concerned, specifically the Ministry of Agriculture, the Ministry of Industry and Commerce, Embrapa, among others. He also articulated with others that opposed the PVP Act, trying to include the requests from all interest groups – although governmental restrictions were respected in this process.

During this period, seventeen amendments were evaluated and added to the draft bill text during the Special Committee's analysis, and seventeen other amendments were added during the evaluation by the plenary in the Chamber of Deputies. Contrary to the PVP law, interest groups sought to obstruct or delay the draft bill's evaluation. This was an attempt to deepen the discussions while proving that the draft bill's approval was unfeasible. Although the opposition lobby was well articulated, the pressure from governmental sectors was more effective, mostly because they ensured that there was sufficient presence of allied deputies to approve the matter in the parliamentary votes. The bill was finally approved, aligned with the Executive's aims.

The bill was then forwarded to the Federal Senate under the name PLC 94/96. The urgency request for its analysis was again granted in this chamber. The Senate approved the bill with fourteen amendments. The bill returned to the Chamber of Deputies for further urgent processing following the political process. Finally, on April 25, 1997, the bill was sent for sanction to become the Plant Variety Protection Law, nº 9.456 (BRASIL, 1997)

It is noteworthy that the whole drafting process was carried out in the midst of ideological conflicts, as argued by Velho (1995) and Araújo (2010). An opportunity emerged when national, international,

economic, and political paths converged, thus creating a policy window. Interestingly, the actors and the political discussion were stable throughout the almost three decades of plant breeding legislation drafting.

Moreover, while the sanction of the PVP Act can be interpreted as the final phase of the political process, Velho (1995) correctly predicted that a series of adjustments would be necessary if it were approved.

7. Changing the PVP Act in Brazil

Far from settling conflicts that emerged during the attempts to draft the PVP Act, the law continues to unleash discussions and has continually been questioned since then. Since its promulgation, there have been many attempts to change and adapt the PVP Act. Velho (1995) predicted that PVP Act adjustments would need to meet the specific interests and characteristics of each crop production sector (forest trees, forage crops, fruit trees, vegetables, ornamentals, and crops), which may confirm the transformative, evolutionary and adaptive characteristics of intellectual property legislation.

PVP sanctions in 1997 marked a milestone in the national production configuration and reflected a new design of Brazilian agricultural research, both in the scientific, related to seed improvement, and in the commercial and economic aspects (CARVALHO; SALLES FILHO; PAULINO, 2009).

Different agricultural cultures (such as cotton, soybean, and sugarcane crops) have been demanding stricter legislation and more effectiveness in ensuring the appropriability of innovative efforts. In this sense, the ongoing PVP discussions, which could be seen as the third phase of controversy, either demand from the national legislation an update to exclude or minimize historical privileges (SÁ; SAES, 2015; AVIANI; MACHADO, 2015), or alternative mechanisms that guarantee private returns without having to change the legislation itself. This last case mainly concerns the soybean culture, whose mechanisms of appropriability are proven to be more efficient and less

expensive than the pressure required for changing the legislation, as described by Filomeno (2013), Turzi (2017) and Teles (2018)². Thus, understanding the peculiarities of the appropriability mechanisms according to each culture is an important step for further analysis of the political dimension of the actors' relationship in building problems and narratives based on their private appropriability strategies in associating them with alternative government action (JUK; FUCK, 2020). Apart from that, the new configuration of Brazilian agriculture demands a deeper assessment of this third phase since lobbies regarding each crop production sector are much more complex today (JUK, 2019).

The process of questioning the PVP Act is now represented by five draft bills submitted to the Chamber of Deputies over the past 20 years and two draft bills submitted to the Senate. The legislative proposals presented in Table 2 translate the private interests of agricultural institutions and technical-scientific approaches that are under 1991 UPOV. They still focus on privatization of knowledge and grants of exclusive rights to breeders. Opposition is still strong defending national seed production and more economic democracy, and continues postponing discussions or shelving legislative proposals.

The constant discussion on PVP Act adjustments guarantees the continuity of the governmental agenda, impacting the dynamics of the agricultural sector (ARAUJO, 2010). The seven draft bills and the discussions conducted through public hearings (in 2007, 2008, 2010) and through the specific committee created to assess the legislative proposal 827/2015 (in 2015) allow us to understand the political issues and lobbies that end up building the PVP problem in a continuous presentation of alternatives. This recent process also reveals a path dependence since the political discussions on PVP legislation adjustments have remained the same after decades.

² Monsanto's efforts were successful in changing the interpretation of PVP Act concepts to ensure royalty payments for Round-up Ready seeds in 2019. From now on, judges and courts across the country will have to observe the thesis in their decisions (BRASIL, 2019).

TABLE 2
Legislative proposals for PVP Act adjustment

Legislative proposal	Federal Legislative Branch	Author	Amendment	Status
2325/2007	Chamber of Deputies	Rose de Freitas	Alters articles 8 th , 9 th 10 th and 37 th	In discussion
3100/2008	Chamber of Deputies	Moacir Micheletto	Alters article 10 th	In discussion
6862/2010	Chamber of Deputies	Beto Faro	Alters articles 8 th and 10 th	In discussion
827/2015	Chamber of Deputies	Dilceu Sperafico	Alters articles 8 th , 9 th 10 th and 37 th	Closed for discussion (shelved)
8926/2017	Chamber of Deputies	Luis Carlos Heinze	Alters article 11 th	Closed for discussion (shelved)
32/2017	Senate	Rose de Freitas	Alters articles 8 th , 9 th and 10 th	In discussion
404/2018	Senate	Givago Tenóri	Alters article 11 th	In discussion

Source: Elaborated by the Authors.

8. Final considerations

This article presented the history of the elaboration of the PVP Act in Brazil and its controversies by using the Multiple Streams approach. The Multiple Streams theory enabled an *ex post* analysis of the agenda-setting and Pierson's concept on path dependence contributed in illuminating the lock-in conditions in the political process, improving our comprehension of that matter. The combination of these two theoretical perspectives proved helpful to explain why the PVP Act has been continuously questioned in the Brazilian Congress. Our examination provides a basis for an *ex ante* analysis by helping to understand the political paths and the rooted arguments over this political process.

The phases of the controversies involved in the elaboration of the PVP Act were well described by Velho (1995) and Araujo (2010)

and filled an analytical gap when discussing PVP legislation in Brazil. The analysis proved our hypothesis by indicating that drafting and enacting PVP legislation is a political process eminently based on the dynamic articulation of few actors who dispute their interpretations on this topic. This approach expands the technical-scientific discussions on how this subject is usually covered in the literature.

The analysis also showed that the paths of the political discussion were rooted in the actors involved. Thus, path dependence can be observed in the institutions that were part in the process, such as the Ministry of Agriculture, Embrapa, Abrasem, and AEASP. Moreover, the political context of the PVP Act elaboration remained the same after decades, *i.e.*, a political discussion based and influenced by the scientific community, leaded by certain political actors (usually deputies and senators) who represented the interests of specific groups and translated them into bills.

PVP's Law approval in 1997 resulted from a prolonged period during which a series of alternatives were presented, and political and institutional learning were observed. The policy window was opened by a new international context that brought together the problem stream, the policy stream, and the political stream. The partial associations between policy streams and previous policies were not sufficient to formulate the legislation during phase 1, which resulted in the lock-in conditions. However, the policy stream contributed to conforming to a historical path that allowed the maturing of these discussions and prompted attention and effective action by political actors. The policy window can be understood as the binding obligation imposed by the TRIPS Agreement that did not leave much room for manoeuvre to its signatories and demanded from the political actors a decision that broke lock-ins and path dependencies.

Far from settling conflicts that emerged during the attempts to draft the PVP Act, the Law continues to unleash discussions and has continually been questioned since then, translated into seven draft that are still being discussed in the National Congress. These propositions aim to adjust the PVP Act to have it aligned with 1991 UPOV. This

means stricter legislation in protecting the breeder's rights. This discussion is still economically and socially relevant in Brazil's political and agricultural contexts. The current situation is complex since it encompasses new lobbies from each crop production sector, which demands further investigation to understand how this historical path has been currently forged.

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