

ESTUDOS
Sociedade e Agricultura

Estudos Sociedade e Agricultura
ISSN: 1413-0580
estudoscpda@gmail.com
Universidade Federal Rural do Rio de Janeiro
Brasil

da Silva Medina, Gabriel

Where are governments leading their agricultural sectors? Comparative lessons from agri-environmental measures promoted in the U.S., Europe and Brazil

Estudos Sociedade e Agricultura, vol. 27, no. 1, 2019, February-May, pp. 5-23

Universidade Federal Rural do Rio de Janeiro
Brasil

DOI: <https://doi.org/10.36920/esa-v27n1-1>

Available in: <https://www.redalyc.org/articulo.oa?id=599962753001>

- How to cite
- Complete issue
- More information about this article
- Journal's webpage in redalyc.org

UABM
redalyc.org

Scientific Information System Redalyc

Network of Scientific Journals from Latin America and the Caribbean, Spain and Portugal

Project academic non-profit, developed under the open access initiative

*Where are governments leading
their agricultural sectors?
Comparative lessons from agri-environmental
measures promoted in the U.S., Europe and Brazil*

Introduction

There is a growing global interest in support of agriculture becoming a more sustainable sector (FAO, 2017). Therefore, it is fundamental to understand the possibilities, but also the shortcomings, for promoting sustainable agricultural development (WEST *et al.*, 2014). Besides markets (GODAR *et al.*, 2016; PACHECO; SCHONEVELD; DJAMA, 2018), governmental policies often have great immediate influence on farm business pathways, specifically on the adoption of sustainable farming practices (SUTHERLAND *et al.*, 2014).

Although key agricultural players worldwide have long term running agricultural policies (OECD, 2015), consistent efforts for considering environmental issues in the existing agricultural policies are relatively new. Such efforts date back to the 1977 Soil and Water Resources Conservation Act in the U.S. (ARBUCKLE, 2013), to the 1992 MacSharry reform in the European Common Agricultural Policy (POTTER; TILZEY, 2007) and to the launch of the Low-Carbon Agriculture Program of 2009 in Brazil (ANGELO, 2012).

At this point in time, some global agricultural producing countries have relevant ongoing experiences with different policy instruments for promoting sustainable agriculture. For example, in the U.S. key actual measures include dedicated environmental programs for both land retirement and working lands programs (CHITE, 2014), plus efforts to tie eligibility to certain Farm Bill incentives to the implementation of environment-related measures through Conservation Compliance (ARBUCKLE, 2013).

¹ Doutor em Ciências Naturais pela Universidade de Freiburg na Alemanha, pós-doutor em Políticas Ambientais pelo Imperial College London no Reino Unido com bolsa da Capes, professor e coordenador do Programa de Pós-Graduação em Agronegócio da Universidade Federal de Goiás (UFG). E-mail: gabriel.silva.medina@gmail.com.

In Europe, there is an effort to tie eligibility of the Common Agricultural Policy (CAP) direct payment to the implementation of environmental-related measures (Cross compliance and Greening) and dedicated environmental-related programs (INGRAM *et al.*, 2013). In Brazil, efforts include law enforcement reducing deforestation and restoring illegally deforested areas while also providing a new subsidised rural credit line for promoting sustainable agricultural practices (AZEVEDO *et al.*, 2017).

The effectiveness of these efforts to promote agri-environmental measures through agricultural policies has been assessed by important studies at the national level (RUNDQUIST; COX, 2016; ZIMMERMANN; BRITZ, 2016). However, we still do not have a systematic comparative assessment on the actual relevance of agri-environmental measures as part of each country's agricultural policies, nor an assessment of their effectiveness and opportunities for improvement. We still lack a broad picture based on where exactly governments are trying to drive their agriculture sector toward and what has been accomplished by their agri-environmental measures.

This study aims to learn comparative lessons from current efforts for promoting sustainable agriculture. Specifically, we aim to answer the following questions in the cases of the U.S., Europe and Brazil:

- a. To what extent are governments prioritizing conservation efforts in their agricultural policy budget?
- b. Are the existing agri-environmental measures delivering results according to the expectations?
- c. Is there room for implementing improvements in order to meet each country's current and specific environmental challenges?

Methodology

This study is based on interviews held with farmers and key lobbying organizations, as well as a literature review. Official documents published by governments were used for estimating the investments made in each of the main policy measures used for promoting sustainable agriculture. A literature review of key scientific findings was completed to critically assess both the accomplishments and the shortcomings of key agri-environmental measures. Finally, interviews were held with key lobbying groups for a greater understanding of the perspectives framing the current and future agricultural policy approaches. These interviews were preceded by a review of official legislative policy documents published by lobbying organizations when relevant.

The interviews were held with stakeholders based in Iowa for the U.S., in the UK for the EU, and in Goiás for Brazil. Iowa is one of the most important agricultural states in the U.S. (NASS, 2017). The UK is one of the key agricultural producers in Europe and has a long term history in

implementing agri-environmental schemes at the farm level (POTTER; TILZEY, 2007). Goiás is the Brazilian state with the largest proportion the Rural Environmental Registry (CAR) data processed and is the leading Brazilian state to receive ABC sustainable credit line investments.

Results

Main policy measures and their budget

U.S.

The overwhelming share (99%) of estimated total net outlays is concentrated in four Farm Bill titles: farm commodity support, crop insurance, conservation and nutrition (Figure 1). In the current Farm Bill, which was enacted in 2014, 5.8% of the total outlays are for the conservation programs, which represent an annual increase of 2.6% when compared to the 2008 Farm Bill (JOHNSON; MONKE, 2014). Key Farm Bill conservation-related policies include: working lands programs, such as the Conservation Stewardship Program (CSP) and Environmental Quality Incentive Program (EQIP); land retirement programs, such as the Conservation Reserve Program (CRP); and other programs such as Conservation Compliance (JOHNSON; MONKE, 2014).

The CSP rewards good stewards for existing behaviour and promotes further improvements by sharing the costs which farmers have for implementing conservation practices that help ensure the sustainability of their operation. The EQIP also addresses natural resource concerns on private lands by providing cost-sharing to farmers for implementing soil and water conservation practices (REIMER; GRAMIG; PROKOPY, 2013).

The CRP facilitates the removal of environmentally sensitive lands from agricultural production for the length of the contract period (either 10 or 15 years) and provides financial assistance for the installation of resource-conserving practices (HENDRICKS; ER, 2018). Conservation Compliance establishes that a portion of crop insurance subsidies or other USDA benefits can be lost if a producer is found to produce an agricultural commodity on highly erodible lands (HEL) without implementing an approved conservation plan or qualifying exemption, or if a producer converts a wetland to crop production (ARBUCKLE, 2013).

EU

Since the implementation of the 1992 reforms, the CAP has been promoting multifunctional farming systems which, besides food production, also deliver environmental goods and services (POTTER, 1998). Taken together, the recent changes to the CAP have transformed what once was a blanket-rule policy focused on production, into a multi-

targeted set of instruments which now also encompasses environmental targets (MEDINA; POTTER, 2016).

The CAP's first pillar includes support for farmers' incomes mainly through direct payments (Figure 1). In the more recent CAP reforms, there has been a trend to tie 70% of the direct payments to the adoption of cross-compliance environment-related measures (implemented in the 2003 reform) and the other 30% to the adoption of greening instruments (implemented in the 2013 reform). The three greening measures are: crop diversification, the maintenance of permanent grasslands and the establishment of ecological focus areas (EFA).

Reforms also include the creation of the second pillar of the CAP in 1999 and the establishment of modulation as a means for transferring resources from the first pillar to the second pillar. The second pillar is implemented through the Rural Development Program (RDP), which currently represents 23% of the CAP budget. In the RDP, the agri-environment schemes (AES) also established in 1999, are considered the main environment-targeted policy instrument currently available in the CAP with a minimum allocation of 25% of the RDP budget (ESPINOSA-GODED; BARREIRO-HURLÉ; DUPRAZ, 2013). Farmers have to apply for agri-environment schemes and payments are received in addition to the direct payment. The aim of this is to compensate for income foregone by the establishment of environment-related measures which go above and beyond the cross-compliance and greening norms.

Around 5.75% of the PAC budget is allocated to AES (25% of the second pillar, which represents 23% of the CAP budget), but this figure varies between countries. While cross-compliance and greening are standardised measures implemented across the EU with little room for local adjustments, agri-environment schemes vary enormously between member states, as the implementation of the second pillar is discretionary to local authorities.

Brazil

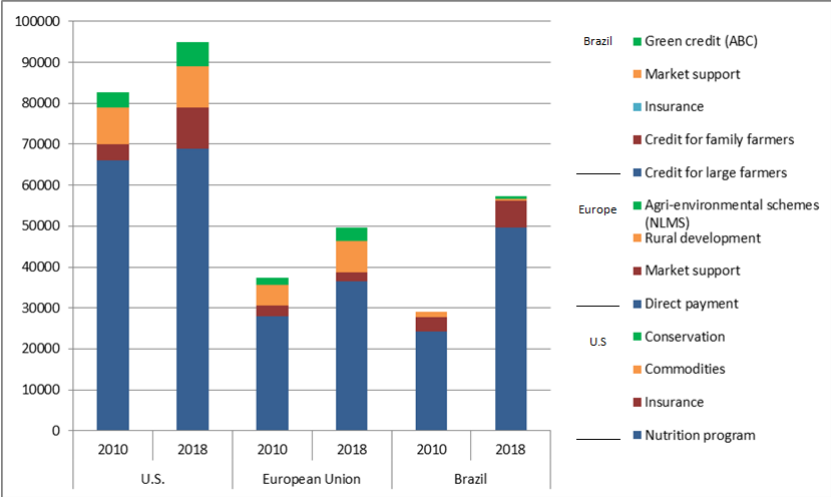
Brazilian environmental policy is based on command and control and also on subsidized credit for farmers. Environmental impacts from the expanding boundaries of Brazilian agriculture have initiated new governmental regulations and controls, specifically focused on reducing illegal logging of native vegetation and areas under the application of the Brazilian Forest Code (NEPSTAD *et al.*, 2014). In order to comply with the 2012 Brazilian Forest Code and to continue having access to government-subsidised credit lines, landowners have to join the 2012 Code introduced Rural Environmental Registry (CAR, Portuguese acronym). Farmers that are not in compliance with environmental norms are supposed commit to an official government management plan for recovering illegally

deforested areas (Portuguese acronym, PRA). Key CAR environmental compliance measures include the maintenance of legal reserves (the percentage of every farm that should remain forested according to the biome the farm belongs to) and of areas of permanent preservation (basically river and pond margins and also slope areas).

Subsidised credit is the largest percentage of the increase in the Brazilian agricultural budget. For example, of the 200 billion real (BRL) budget of the Agricultural & Livestock Plan of 2017/2018 (PAP) that is invested in mid-market and large sized producers, 150 billion (BRL) is destined for credit costs and commercialization and only 38 billion (BRL) is for investment credit (MAPA, 2017). Additionally, the Safra Plan for family agriculture of 2017/2020 anticipates 30 billion (BRL) a year for Pronaf credit (SEAD, 2017).

As part of the effort to promote more sustainable systems of production, Brazilian agricultural policies included the Low-Carbon Agriculture credit line in 2009 (FGV, 2016). The ABC program is part of a voluntary dedication to reducing greenhouse gas emissions based mainly on promoting sustainable farming (MEDINA; DOS SANTOS, 2017). The ABC program makes 2.9 billion Brazilian reals per year in subsidized loans available for supporting the adoption of specific agricultural practices, such as no-till agriculture and the restoration of degraded pastures. This amount represents 1.25% of the whole Brazilian agricultural policy budget (Figure 1).

Figure 1 – Budget of conservation programs (in green) in comparison with other items of the agricultural policies of key agricultural producing countries



Assessment of the effectiveness of current measures

U.S.

Working lands

Working lands programs cover costs farmers have for testing environment-friendly farming practices. Overall, the CSP has provided farmers an incentive to enhance their conservation practices on their farms as a whole, which are often through the implementation of reduced tillage² and nutrient management plans. The EQIP has also aided in conservation adoption, by often incentivising farmers to use cover crops (ROESCH-MCNALLY *et al.*, 2017).

Avoiding tillage is used to reduce erosion and improve soil quality. It typically involves conversion from a clean-tilled (conventional tilled) system to no-till or strip-till system. Iowan farmers made substantial changes to their tillage approaches over the last decade (ARBUCKLE, 2016). A little over half (54 percent) of farmers increased their use of conservation tillage methods (Figure 2) and 46 percent reported an increase in their use of continuous no-till (ARBUCKLE, 2016). Forty-eight percent of farmers indicated that maintaining eligibility for Farm Bill programs was an important or very important reason for non-tilling (ARBUCKLE, 2016).

Cover crops are widely viewed by the soil and water conservation community to be an effective means for reducing soil erosion, nutrient loss and increasing soil health. However, in 2012 only 2.3% of the total agricultural lands in the Midwestern USA were using cover crops (ROESCH-MCNALLY *et al.*, 2017).

Land retirement

Land retirement programs, particularly the CRP, promote practices that improve wildlife habitat and water quality, such as pollinator habitat and buffer strips. Between 2007 and 2012, the acreage of land in the CRP was reduced by a little over 25 percent, from 32.5 to 24.2 million acres. Over half of that acreage became cropland, while another third became pastureland (USDA, 2015). The Agricultural Act of 2014 extended the CRP, setting a maximum enrolment of 9.7 million ha (24 million acres) in 2017 (HELLERSTEIN, 2017). Consequently, the goal of 24 million acres enrolled in the CRP is virtually attained at this moment (Figure 2).

Price increases in the commodities market raise the risk that reserve areas may be reconverted into agricultural areas in the future. The pattern

² U.S. farmers define reduced tillage practices as follows: conservation tillage – tillage with some residue left covering soil; strip-tillage – disturbs only the portion of the soil that is to contain the seed row; no-till – no soil disturbance. Conventional tillage is defined as tillage with no residue left covering soil.

of cropland reversion during periods of high commodity crop prices substantiates concerns about whether farmers will continue to participate in the CRP and other conservation programs, as biofuel production contributes to high demand for commodity crops (MCGRANAHAN *et al.*, 2015). Crop expansion from 2008 to 2012 was promoted by the biofuel policy to a great extent (Energy Independence and Security Act), resulting in substantial transformation of the landscape (LARK; MEGHAN SALMON; GIBBS, 2015).

Conservation compliance

Conservation compliance covers about 104 million acres, or 28% of U.S. cropland in production. Although farmers have high compliance rates (Figure 2), this program depends a great deal on the relative economic importance of benefits that could be lost in the case of noncompliance (ARBUCKLE, 2013). Conservation compliance that specifically targets HEL is more efficient than the conservation policy of aggregation approach (ARBUCKLE, 2013). However, if even a fraction of sensitive lands are left untreated, problems can persist (disproportionality principle) (ARBUCKLE, 2013).

General outcomes

To a greater extent, the purpose of the Farm Bill conservation programs has been to reduce soil erosion on private farmland (LICHTENBERG, 2015), and progress has indeed been made in this area as soil erosion on cropland has been reduced by an estimated 43% since 1982 (NRCS, 2012). Nevertheless, following declines in erosion between 1982 and 1997, soil erosion has continued at a rate of around 1.75 billion tons per year (NRCS, 2012) and research indicates that more can be done to improve soil health (COX; HUG; BRUZELIUS, 2011; MCGRANAHAN *et al.*, 2015).

Recent studies have brought the need for agricultural policies that better address water quality and nutrient management, not just soil erosion, to the attention of decision-makers (STUART *et al.*, 2018). Prioritization of environmental protection at the landscape level is also needed as scientists recognize the need for a holistic, scalable approach to soil and water quality conservation (LICHTENBERG, 2015). Some promising landscape-level, multi-stakeholder initiatives are already being reported, but so far they exist mainly as pilot projects (CHURCH; PROKOPY, 2017).

Initial research results provide empirical evidence at the regional scale that conservation practices have had a larger statistically detectable effect on nitrogen than on phosphorus loadings in the streams and rivers of the Upper Mississippi Basin (GARCÍA *et al.*, 2016). Regional nitrogen reductions were estimated to range from 5 to 34% and phosphorus reductions from 1 to 10% in the major river basins of the Upper Mississippi region (GARCÍA *et al.*, 2016).

EU

Cross compliance and greening

With few exceptions, both intensive and extensive farmers tend to comply with cross-compliance and greening in order to receive full direct payments (Figure 2). For extensive farmers, environmental measures appear to be less of a challenge to cope with, and instead are an opportunity to access greater support (MEDINA; POTTER; POKORNY, 2015).

While the impact of the greening practices is limited in terms of land use, there were positive environmental effects. For 10 countries studied in the EU, the crop diversification measure has resulted in an increase in the diversity of cultivated crops over 0.8% of the arable area, with farms affected by these changes accounting for 6% of arable land (EUROPEAN COMMISSION, 2017). Farmers declared a much higher proportion of their eligible arable area as EFA than required (9.7% compared to the required 5%), encompassing 8.5 million ha, or 14% of EU arable land (EUROPEAN COMMISSION, 2017). In contrast, declines in the ratio of permanent grasslands are already evident in 12 Member States in 2015/2016, of which five already appear to be over the 5% threshold (EUROPEAN COMMISSION, 2017).

Agri-environmental schemes

Over 38 million hectares (20.9% of the total Utilized Agricultural Area) were under some kind of AES in the EU-27 in 2009 (ESPINOSA-GODED; BARREIRO-HURLÉ; DUPRAZ, 2013). A higher uptake of the AES wetland, catch crop/no autumn tillage, environmental protection measures and culturally significant landscape elements were associated with reduced nutrient (nitrogen and phosphorus) runoff (ERIK; MARTIN, 2018).

The UK is the EU country with the second largest area under AES (12,320,683 ha), after France. Participation in AEMs is more likely in less intensive production systems, where AEM premiums tend to be lower per committed hectare (ZIMMERMANN; BRITZ, 2016). This differs from extensive farmers, who tend to enrol most of their farms into environment-related practices in order to access the high level of the AES, intensive farmers either do not access or access the basic (entry) level of the AES in order to avoid taking land out of production (MEDINA; POTTER; POKORNY, 2015).

Outcomes

Soil erosion is the key underlying process behind land degradation and desertification, threatening European long-term productive capacity. In the EU, 9% of the total land area is subject to soil erosion as a result of

agricultural practices and this is expected to increase in the future (RSPB, 2009).

Nutrient pollution from agriculture is a key factor in the eutrophication of freshwater and coastal marine habitats. Twice as much nitrogen and three times as much phosphorus is present in current natural systems when compared to 1960 (RSPB, 2009). Farming is also responsible for biodiversity loss as well as 9% of EU greenhouse gas emissions. Europe's farmland bird populations have declined by over 40% in the past 25 years and agricultural intensification is the main driver of this loss in Europe (RSPB, 2009).

Brazil

Forest code

By June 2018, the Brazilian Environmental Ministry had received 4,484,555 CAR registries which represent 86.64% of the total rural households identified in the last national census (IBGE, 2006). This available data reveals a high level of non-compliance with the forest code. 92.75% of the registered farms need to restore their legal reserves and 34.44% have to restore their area of permanent preservation (MMA, 2018). Conversely, only 55.11% of the farmers have joined the PRA so far and it is expected to take a couple of decades to identify the percentage of farms that have actually implemented their management plans (MMA, 2018).

ABC program

From January 2013 to December 2016, a total of 4,467,868,578 Brazilian reais were invested for recovering degraded pastures in 17,986 loan contracts covering 2,838,084 hectares (FGV, 2016). The covered area represents 47.30% of the six million hectare goal for the period between 2011 and 2015. For the purpose of increasing the area under zero tillage, R\$ 2,436,784,354 was invested in 4,476 projects covering 1,743,019 hectares (FGV, 2016). This area represents 62.25% of the 2.8 million hectare goal for the period from 2011 to 2015.

One of the main reasons for the small ABC budget is the limited demand for the ABC credit line by farmers, as the ABC has stricter environmental requirements than other traditional agricultural loans (ANGELO, 2012). To be eligible, a farmer needs to prove compliance with environmental laws such as the Forest Code.

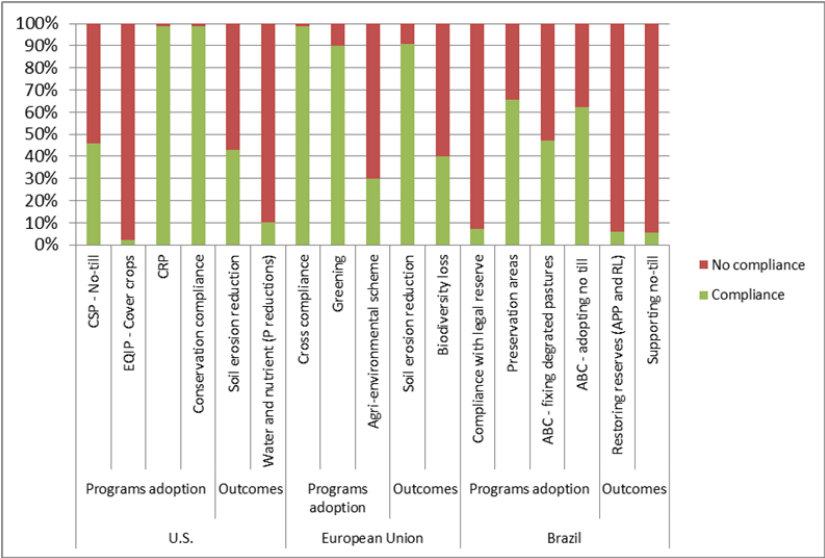
Outcomes

Studies indicate that registering with the CAR did not necessarily reduce illegal deforestation and that only 6% of registered producers reported taking steps to restore illegally cleared areas on their properties

(AZEVEDO *et al.*, 2017). Additionally, deforestation rates remain high in the Amazon (NEPSTAD *et al.*, 2014), as well as in the Cerrado regions (FERREIRA *et al.*, 2016).

From January 2013 to December 2016, the ABC program provided subsidised credits for farmers recovering degraded pastures in 2,838,084 hectares, which represents 5.42% of the total amount of degraded pastures in Brazil. Zero tillage was subsidised in 1,743,019 hectares (FGV, 2016), which represents 5.44% of the area under zero tillage in Brazil today and 3.27% of the grain harvested area in the country.

Figure 2 – Performance of key agri-environmental measures



Possibilities for improvements according to key lobbying groups’ perspectives

U.S.

Most of the farmers’ representatives maintain that current conservation programs have been effective at reducing soil erosion and have proposed incremental changes to them. Specific issues include simplifying the CSP, easing requirements attached to the EQIP, avoiding excessive CRP payments to compete with tenant farmers for good agricultural lands, and preventing farmers from being out of compliance on highly erodible land (FARM BUREAU, 2017). General issues recognized by farmer and agribusiness organizations include making current programs more

flexible, reducing “red tape” surrounding conservation, and better adapting management standards to farming dynamics (Figure 3). According to a Farm Bureau member: “We support voluntary conservation efforts, finding ways to incentivize efforts, but not creating a whole new set of regulations to penalize farmers in a one-size-fits-all approach” (MEDINA; ARBUCKLE; INSLEY, 2018).

Environmental NGOs promote targeting existing programs for critical areas. They argue that conservation programs cannot be seen as an alternative to support farm income (MEDINA; ARBUCKLE; INSLEY, 2018). Additionally, environmental NGOs argue that crop insurance should be more strongly linked with conservation practices, that Conservation Compliance should be more stringently enforced and extended to all agricultural land (RUNDQUIST; COX, 2016). According to an Environmental Working Group member: “We are arguing that after thirty-some years, it’s time to ask farmers to do more, and with a focus on water quality. So we’re proposing that the conservation requirements apply to all annually planted cropland, not just highly erodible cropland” (MEDINA; ARBUCKLE; INSLEY, 2018).

Water impairment and nutrient management are starting to be seen as greater challenges than soil management, particularly by environmental organizations. Farm externalities, particularly nitrogen and phosphorous runoff, bring attention to the need for scalable agricultural policies that address the issue of water impairment at a landscape level. Interviewees report a need for this landscape-level mentality, however, no interviewed stakeholder foresees transformative change happening for the next farm bill: “The reality is that’s [transformative change] not going to happen in this congress, but we think it’s really important to start talking about it” (Environmental Working Group member) (MEDINA; ARBUCKLE; INSLEY, 2018).

EU

The farming sector in the UK is highly heterogeneous. While larger farmers organizations are focused on maintaining the income support provided by direct payment, smaller farmers who get less from the first pillar for having smaller areas, tend to have a greater willingness to support capping the direct payments and modulation (MEDINA; POTTER, 2016). In all cases however, the CAP is still considered to be structural as an income support and safety net for farmers and rural communities.

Large farmers organizations emphasize the need for the modulation process to avoid ending up taking money away from farmers: “We would like to see rural development more balanced across the objectives, such as improving competitiveness as well as environment. In terms of the AES, we are concerned that there is leakage away from the farming industry

and the money going into Pillar 2 is not having the accountability to farmers” (National Farmers Union member) (MEDINA; POTTER, 2016). They would like to see rural development become more balanced across the objectives, such as improving competitiveness as well as environment.

As direct payments represent the largest part of the CAP budget, environmental organizations have a growing interest in tying them to environmental instruments. They believe that cross-compliance hasn’t achieved its potential in terms of environmental protection and enhancement, but its introduction has been important because it justifies linking these significant sums of money to a basic set of standards (MEDINA; POTTER, 2016). The greening proposals are important in attaching supposedly new requirements to part of the first pillar. Environmental organizations welcomed greening as it should be able to create a significant amount of environmental protection, even though it was not the necessary further advancement they would have preferred for the CAP [such as more money going to Pillar 2] (MEDINA; POTTER, 2016).

A stronger modulation process is favoured by environmentalist organizations, allowing the continued transfer of money from the first to the second pillar: “Certainly we need public resources to be used to tackle the market failures to reward environmental public goods. That is why we need to transfer more money to the second pillar” (RSPB member) (MEDINA; POTTER, 2016). In the second pillar, the environmentalists’ proposal is to maximize investments through AES (RSPB, 2009). Under the Brexit scenario, a move away from payments related to the area farmed towards a scheme based on the delivery of clearly delineated environmental benefits is expected to occur in the UK (INMAN *et al.*, 2018).

Brazil

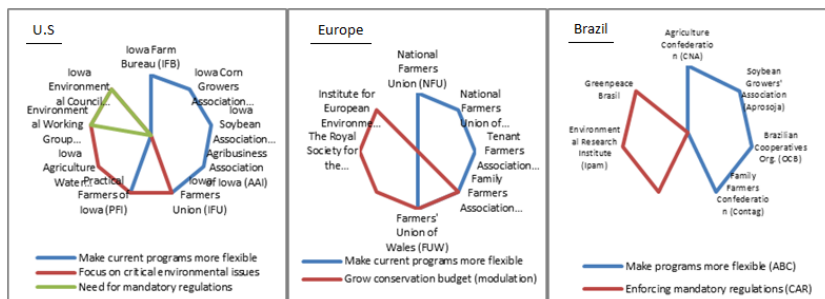
Brazilian stakeholders are also very polarized when it concerns promoting farming conservation practices (Figure 3). Farming lobby groups are particularly focused on making sure that the environmental policies do not hinder their competitiveness and that agricultural policy continues to focus mainly on subsidized credit to farmers with no strings attached (CNA, 2017). Farmers argue that “Brazilian rural properties represent 52.6% of native vegetation covered areas in the country, or that half of protected areas are privately owned” (CNA, 2018).

Farmers have championed other credit lines instead of the ABC program, as it is restricted to specific sustainable farming practices (CNA, 2017). The farming sector suggests more flexibility in the ABC: “The program needs to be revised with the purpose of fostering benefits for all productive systems [involved], having the premise of promoting greater

profits in productivity, and improving the management and fostering the adaptation of production systems. I suggest increasing the percentage of finance for environmental compliance of rural properties and working with interest rates and deadlines which are more suitable for financial activities” (CNA, 2018).

While, environmental organizations advocate for the enforcement of the forest code as a means to reduce deforestation, as well as lead farmers to restore their illegally deforested areas: “Inconsistent monitoring and enforcement, and the reluctance of state and municipal managers to punish landowners landowners within the CAR act as a safeguard for registered producers who continue deforesting. The resulting perception of impunity severely weakens environmental policies to control deforestation” (AZEVEDO *et al.*, 2017). Opposing perspectives between farmers and environmentalists became particularly radical during the Forest Code revision in 2012, leaving little room for current actual collaboration or common ground between them (SOARES-FILHO *et al.*, 2014).

Figure 3 – Stakeholders’ perspectives on improvements in the agricultural policies



Conclusion

Recently, environment-related mechanisms have gained a footing in the agricultural policy budgets of the case studied countries, but their relative importance is still limited when compared with other policy measures. Conservation-related practices represent 5.8% of the U.S., 5.75% of the European, and 1.25% of the Brazilian agricultural policy budget. These countries main budgetary priority is providing a safety net for farmers in the US, supporting farmers’ income in Europe and subsidising farming investments in Brazil.

Existing agri-environmental measures have supported the farming sector in adopting specific conservation practices which have resulted in

important environmental benefits. However, key issues remain poorly addressed such as: water and nutrient management in the U.S., which is comprehensively dealt with only in pilot projects delivering no more than 10% in phosphorus reductions; soil erosion and biodiversity loss in Europe, where farmland bird populations have declined by over 40% in the past 25 years due to agricultural intensification; and the restoration of sensitive areas and reserves in Brazil, which accounts for less than 6% of the country's farm restoration needs.

Given these challenges, environmental organizations advocate for the need for larger budgetary shares for conservation measures, as well as for transforming current mechanisms by, for example, having conservation compliance mandatory for all farmers in the U.S., having stricter norms for agri-environmental schemes in Europe and rigorously enforcing the forest code in Brazil. At the same time, the powerful farming lobby argue for the need to maintain current levels of support for the sector in order to remain competitive, stating that conservation has to be carried out without hindering the development of farming practices. This stalemate suggests we might expect minor adaptations but not incremental changes in agricultural policies for the near future.

References

- ANGELO, C. Brazil's fund for low-carbon agriculture lies fallow. *Nature*, v. 10, 2012.
- ARBUCKLE, J. *Iowa Farm and Rural Life Poll: 2015 Summary Report*. Extension Report PM 3016.
- ARBUCKLE, J. Farmer support for extending Conservation Compliance beyond soil erosion: Evidence from Iowa. *Journal of Soil and Water Conservation*, v. 68, n. 2, p. 99-109, 2013.
- AZEVEDO, A. A. *et al.* Limits of Brazil's Forest Code as a means to end illegal deforestation. *Proceedings of the National Academy of Sciences*, p. 201604768, 2017.
- CHITE, R. M. *The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side*. CRS Report 43076, 2014.
- CHURCH, S. P.; PROKOPY, L. S. The influence of social criteria in mobilizing watershed conservation efforts: A case study of a successful watershed in the Midwestern U.S. *Land Use Policy*, v. 61, p. 353-367, 2017.
- CNA. *Balanço 2017 Perspectivas 2018*. Brasília: CNA, 2017.
- CNA. *O Futuro é Agro 2018-2023*. Brasília: [s.n.].

- COX, C.; HUG, A.; BRUZELIUS, N. *Losing Ground*. Environmental Working Group, 2011.
- ERIK, G.; MARTIN, N. Estimating the impact of agri-environmental payments on nutrient runoff using a unique combination of data. *Land Use Policy*, v. 75, p. 388–398, 2018.
- ESPINOSA-GODED, M.; BARREIRO-HURLÉ, J.; DUPRAZ, P. Identifying additional barriers in the adoption of agri-environmental schemes: The role of fixed costs. *Land Use Policy*, v. 31, p. 526–528, 2013.
- EUROPEAN COMMISSION. *Evaluation study of the payment for agricultural practices beneficial for the climate and the environment*. [s.l.: s.n.].
- FAO. *The state of food and agriculture*. 1. ed. Rome: FAO, 2017.
- FARM BUREAU. *2017 Policy Book*. Missouri Farm Bureau, 2017.
- FERREIRA, M. E. *et al.* Considerations about the land use and conversion trends in the savanna environments of Central Brazil under a geomorphological perspective. *Journal of Land Use Science*, v. 11, n. 1, p. 33–47, 2016.
- FGV. *Análise dos Recursos do Programa ABC- safra15/16*. FGV, 2016.
- GARCÍA, A. M. *et al.* Regional Effects of Agricultural Conservation Practices on Nutrient Transport in the Upper Mississippi River Basin. *Environmental Science and Technology*, v. 50, n. 13, p. 6991–7000, 2016.
- GODAR, J. *et al.* Balancing detail and scale in assessing the sustainability of commodity supply chains. *Environmental Research Letters*, v. 11, n. 3, p. 1–12, 2016.
- HELLERSTEIN, D. M. The US Conservation Reserve Program: The evolution of an enrollment mechanism. *Land Use Policy*, v. 63, p. 601–610, 2017.
- HENDRICKS, N. P.; ER, E. Changes in cropland area in the United States and the role of CRP. *Food Policy*, v. 75, p. 15–23, fev. 2018.
- IBGE. *Censo Agropecuário 2006*. Disponível em: <https://biblioteca.ibge.gov.br/visualizacao/livros/liv61914.pdf>. Acesso em: 9 fev. de 2017.
- INGRAM, J. *et al.* Incorporating agri-environment schemes into farm development pathways: A temporal analysis of farmer motivations. *Land Use Policy*, v. 31, p. 267–279, 2013.
- INMAN, A. *et al.* An exploration of individual, social and material factors influencing water pollution mitigation behaviours within the farming community. *Land Use Policy*, v. 70, p. 16–26, 2018.
- JOHNSON, R.; MONKE, J. What Is the Farm Bill? *Congressional Research Service*, p. 1–13, 2014.
- LARK, T. J.; MEGHAN SALMON, J.; GIBBS, H. K. Cropland expansion outpaces agricultural and biofuel policies in the United States. *Environmental Research Letters*, v. 10, n. 4, p. 044003, 2015.

- LICHTENBERG, E. Conservation, the Farm Bill and US Agri-environmental policy. In: SMITH, V. (Ed.). *The economic welfare and trade relations implications of the 2014 Farm Bill*. 1. ed. Bingley: Emerald Group, 2015.
- MAPA. *Plano agrícola e pecuário 2017/2018*. Brasília: Ministério da Agricultura, Pecuária e Abastecimento, 2017.
- MCCRANAHAN, D. A. et al. Associating conservation/production patterns in US farm policy with agricultural land-use in three Iowa, USA townships, 1933-2002. *Land Use Policy*, v. 45, p. 76-85, 2015.
- MEDINA, G.; ARBUCKLE, J.; INSLEY, C. Promoting sustainable farming: stakeholders' perspectives on the US Farm Bill conservation programs. *Environment, Development and Sustainability*, 2018.
- MEDINA, G.; DOS SANTOS, A. Curbing enthusiasm for Brazilian agribusiness: The use of actor-specific assessments to transform sustainable development on the ground. *Applied Geography*, v. 85, p. 101-112, 2017.
- MEDINA, G.; POTTER, C. The nature and developments of the Common Agricultural Policy: Lessons for European Integration from the UK perspective. *Journal of European Integration*, v. In press, n. 4, 2016.
- MEDINA, G.; POTTER, C.; POKORNY, B. Farm business pathways under agri-environmental policies: Lessons for policy design. *Estudos Sociedade e Agricultura*, v. 23, n. 1, p. 5-30, 2015.
- MMA. *Cadastro ambiental rural*. Disponível em: <http://www.car.gov.br/publico/tematicos/regularidade>. Acesso em: 21 out. de 2017.
- NASS. *Iowa's rank in United States Agriculture*. Des Moines. USDA, National Agricultural Statistics Service: [s.n.]. Disponível em: https://www.nass.usda.gov/Statistics_by_State/Iowa/Publications/Rankings/IA_2017_Rankings.pdf.
- NEPSTAD, D. et al. Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. *Science*, v. 344, n. 6188, p. 1118-23, 2014.
- NRCS. *Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Upper Mississippi River Basin*. [s.l: s.n.].
- OECD. *Agricultural Policy Monitoring and Evaluation 2015*. [s.l: s.n.].
- PACHECO, P.; SCHONEVELD, G.; DJAMA, M. Governing sustainable palm oil supply: Disconnects , complementarities , and antagonisms between state regulations and private standards. n. August, 2018.
- POTTER, C. *Against the Grain: Agri-Environmental Reform In the United States and European Union*. [s.l.] CAB International, 1998.
- POTTER, C; TILZEY, M. Agricultural multifunctionality, environmental sustainability and the WTO: Resistance or accommodation to the neoliberal project for agriculture? *Geoforum*, v. 38, n. 6, p. 1290-1303,

2007.

REIMER, A. P.; GRAMIG, B. M.; PROKOPY, L. S. Farmers and conservation programs: Explaining differences in Environmental Quality Incentives Program applications between states. *Journal of Soil and Water Conservation*, v. 68, n. 2, p. 110–119, 2013.

ROESCH-MCNALLY, G. E. *et al.* The trouble with cover crops: Farmers' experiences with overcoming barriers to adoption. *Renewable Agriculture and Food Systems*, p. 1–12, 2017.

RSPB. *Could do Better*: How is EU Rural Development policy delivering for biodiversity ? [s.l: s.n.].

RUNDQUIST, S.; COX, C. *Fooling Ourselves*. Washington: EWG, 2016.

SEAD. *Plano Safra da Agricultura Familiar 2017-2020*: Fortalecer o campo para desenvolver o Brasil. Brasília. Secretaria Especial de Agricultura Familiar e do Desenvolvimento Agrário, , 2017. Disponível em: http://www.mda.gov.br/sitemda/sites/sitemda/files/user_img_1684/3Baixa_Cartilha_Plano_Safra_2017.pdf.

SOARES-FILHO, B. *et al.* *Cracking Brazil's forest code*. v. 344, n. April, p. 363–364, 2014.

STUART, D. *et al.* Farmer selection of sources of information for nitrogen management in the US Midwest: Implications for environmental programs. *Land Use Policy*, v. 70, p. 289–297, 2018.

SUTHERLAND, L. A. *et al.* Transition pathways towards sustainability in agriculture: case studies from Europe. In: [s.l.] CABI, 2014. p. 76–82.

USDA. *2012 National Resources Inventory*. Washington. Natural Resources Conservation Service (NRCS), 2015. Disponível em: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd396218.pdf.

WEST, P. C. *et al.* Leverage points for improving global food security and the environment. *Science*, v. 345, n. 6194, p. 325–328, 2014.

ZIMMERMANN, A.; BRITZ, W. European farms' participation in agri-environmental measures. *Land Use Policy*, v. 50, p. 214–228, 2016.

MEDINA, Gabriel da Silva. Where are governments leading their agricultural sectors? Comparative lessons from agri-environmental measures promoted in the U.S., Europe and Brazil. *Estudos Sociedade e Agricultura*, fevereiro de 2019, vol. 27, n. 1, p. 5- 23, ISSN 2526-7752.

Abstract: (Where are governments leading their agricultural sectors? Comparative lessons from agri-environmental measures promoted in the U.S.,

Europe and Brazil). This study aims to analyse comparative lessons from current efforts for promoting sustainable agriculture by key global food producing countries. Specifically, we aim to understand: 1) to what extent governments are prioritizing conservation efforts in their agricultural policy budget; 2) what existing agri-environmental measures actually deliver in terms of environmental conservation; and 3) what are the possibilities for improvement in the existing policies for meeting current environmental challenges. Interviews with farmers and experts, as well as a literature review, reveal that agri-environmental mechanisms have gained some footing but they represent only 5.8% of the American, 5.75% of the European, and 1.25% of the Brazilian agricultural policy budgets. Key conservation issues remain poorly addressed, such as water and nutrient management in the U.S., whose landscape-level management resulted in no more than 10% of phosphorus reductions; soil erosion and biodiversity loss in Europe, where farmland bird populations have declined by over 40%; and the restoration of reserves and sensitive land areas in Brazil, which account for less than 6% of the country's farms' restoration needs. While environmental organizations advocate for larger investments in conservation, farmers argue for the need to maintain the current levels of support for the sector in order to remain competitive. This stalemate indicates that we might expect minor adaptations, but not incremental changes, in agricultural policies for the near future.

Keywords: agricultural policies; agribusiness, environment.

Resumo: *(Para onde os governos estão direcionando seus setores agrícolas? Lições comparativas da promoção de medidas agro-ambientais pelos EUA, Europa e Brasil).* Este estudo tem como objetivo analisar as lições comparativas dos esforços atuais para promover agricultura sustentável pelos principais países produtores de alimentos no mundo. Especificamente, pretende-se entender: 1) até que ponto os governos estão priorizando os esforços de conservação em seu orçamento para a política agrícola; 2) o que as medidas agroambientais existentes realmente oferecem em termos de conservação ambiental; e 3) quais são as possibilidades de melhoria nas políticas existentes para enfrentar os desafios ambientais atuais. Entrevistas com agricultores e especialistas, bem como uma revisão de literatura, revelam que os mecanismos agroambientais ganharam algum espaço nos orçamentos das políticas agrícolas, mas representam apenas 5,8% do orçamento americano, 5,75% do europeu e 1,25% do orçamento brasileiro. Os principais impactos ambientais da agricultura seguem por ser enfrentados, como o manejo de água e nutrientes nos EUA, cuja gestão resultou em não mais do que 10% de redução de fósforo na água; erosão do solo e perda de biodiversidade na Europa, onde as populações de aves agrícolas diminuíram em mais de 40%; e a restauração de reserva legal e

de área de preservação permanente no Brasil, que responde por menos de 6% da necessidade das fazendas do país. Enquanto as organizações ambientais defendem maiores investimentos em conservação, os agricultores organizados defendem a necessidade de manter os atuais níveis de apoio para o setor se manter competitivo. Este impasse indica que podemos esperar pequenas adaptações, mas não mudanças estruturais nas políticas agrícolas no futuro próximo.

Palavras-chave: políticas agrícolas; agronegócio, meio ambiente.

Recebido em outubro de 2018.

Aceito em dezembro de 2018.