

Linking Environmental Goals with Business Risk Management Programs in Canadian
Agriculture

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Executive Summary

The general theme of this research project is to link environmental goals to Canadian Business Risk Management (*BRM*) programs. *BRM* programs have been the center piece of Canadian agricultural policy since 1958, but recently there is growing interest in linking the payments from *BRM* programs to commitments by producers to achieve environmental goals. Environmental cross compliance links agricultural program payments to producer efforts, initiatives or commitments to achieve agri-environmental policy goals. The objective of this study is to determine the feasibility of using cross compliance to achieve environmental goals in a Canadian policy context. The report is comprised of two parts: the first part is a manuscript that has been submitted to a special issue, “Canadian Agricultural Policy in the Twenty-First Century: Looking Back and Going Forward” of the Canadian Journal of Agricultural Economics; and the second part (Appendix A) is a review of the regulations that apply to cross compliance in the U.S. and European Union. This report considers the potential application of similar approaches to cross-compliance for Canadian agriculture. Policy options are considered which link current business risk management (*BRM*) programs to alternative environmental regulations (wildlife habitat preservation, nutrient management plans, and beneficial management practices for nutrient management). In general individual Canadian agricultural support program do not provide sufficient incentives for farmers to participate in cross compliance. However, if support programs are combined, it is better to link programs that redistribute income, with environmental programs, than to link agriculture programs that address specific market failures.

INTRODUCTION

The Calgary Statement released in July 2016 provided objectives and principles to guide the Next Policy Framework (*NPF*) for the Canadian agri-food sector. There are five priority areas under the *NPF*, including risk management, which includes the continued provision of a suite of Business Risk Management (*BRM*) programs. These support programs have evolved from the price-based, mandatory, commodity-specific programs under the Agriculture Stabilization Act (1958-75), to the current whole farm programs (2007-present) – *AgriStability* and *AgriInvest* - that are voluntary and put a lower bound on overall net farm income. The idea behind current programming is that because the support is generally available to most agricultural activities, the impact on production decisions will be minimal. Research on *BRM* programs has focused on issues such as program performance and output effects (e.g. Turvey 2012, Schaufele et al. 2010, Rude and Ker 2013), but for the most part the research has not addressed the effect of these programs on environmental externalities and associated policies.

Environmental sustainability and climate change, which involves improving the environmental performance of the sector, is another one of the *NPF*'s five priority areas. Policies designed to reduce the environmental impacts from agriculture have traditionally been in the form of voluntary cost sharing arrangements with funding provided jointly by federal and provincial governments. A typical example of such a program is the Stewardship Plans Program implemented in Alberta starting under Growing Forward 1 and extended under Growing Forward 2. The Program provides grant funding of up to half of eligible expenses for a suite of beneficial management practices (*BMPs*) with the maximum amount varying with the type of *BMP*. Such programs are popular amongst farmers due to their voluntary nature and the provision of funds to support the purchase of new equipment but there are questions surrounding the cost effectiveness

of using uniformly available measures to deal with specific environmental issues (Weersink et al. 1998).

Although identified as separate priority areas in the *NPF*, there is growing interest in linking the payments from *BRM* programs to commitments by producers to achieve environmental goals (Seguin 2012). Cross-compliance in an agri-environmental context refers to any measure that makes eligibility for the receipt of a non-environmental program benefit conditional on meeting a specific environmental requirement. Farmers may find cross-compliance appealing because it is a way of justifying continued income support. However, the approach will only be acceptable if the costs of compliance are less or equal to the foregone government support that may occur if they don't comply with the desired environmental regulations. Governments may find cross-compliance appealing because it allows them to address two objectives (income support and environmental health) with only one policy instrument. Participation by farmers may be higher and administrative costs may be lower by tying *BRM* funds to environmental compliance. Alternatively, it may be more effective to use a specific targeted agri-environmental scheme rather than cross-compliance as the latter violates Tinbergen's (1952) rule for efficiency in which the number of policy instruments should equal the number of policy goals.

Canadian policy makers have flirted with cross-compliance, but with the exception of phosphorous regulations for Quebec hog farms, have never adopted this approach. Cross-compliance has been used since 1985 in the United States (U.S.), where soil and water conservation programs were tied to commodity support programs. Since 2005, the European Union (EU) has also made cross-compliance a requirement. The EU approach ties the Single Farm Payment to statutory management requirements (directives and regulations) and

requirements for the maintenance of land to meet certain minimum conditions such as landscape and soil conservation. The U.S. and EU approaches are quite different in terms of the design of the support program, how the conditions are targeted at environmental goals, the type of standards, and the degree of sanctions for non-compliance. These differences provide lessons for the potential feasibility of adopting cross-compliance in Canada.

The objective of this paper is determine the feasibility of using cross compliance to achieve environmental goals within the Canadian agricultural sector. The paper starts with a review of agri-environmental policy including the policy options available for tying to a support program, the assessment criteria to evaluate a chosen policy's performance, and the complications for designing effective environmental policy to reduce residuals from agricultural production. The resulting implications for cross compliance are also discussed including issues such as incentive compatibility and environmental performance measurement. Given this conceptual framework, the following section examines cross-compliance from the experience of the U.S. and the EU. The fifth section considers the practical implications of cross compliance for Canada given current *BRM* programs and agri-environmental issues. The paper concludes with policy recommendations and suggestions for future research.

AGRI-ENVIRONMENTAL POLICY

Environmental Issues associated with Agriculture

The OECD (2015) has spent a considerable effort developing a set of consistent agri-environmental indicators across member countries over the last 35 years. Comparing the situation in 2001 to that of 1981, Lefebve *et al.* (2005) identified two broad areas of concern on the basis of these indicators: (1) deterioration of nature conservation and biodiversity, and (2) increasing risk of water contamination with nitrogen and phosphorus fertilizer. Similarly, Eilers

et al. (2010) found that *Habitat Capacity* indices were stable with an index of 57 between 1986 and 1996, but by 2006 the index had declined to 52 with much of the change specific to certain regions and land types. Small changes in unimproved pasture, woodland, wetland and riparian areas can have large changes for the *Habitat Capacity* index.

Arguably, the most significant environmental impact from Canadian agriculture is associated with excess nutrient loadings. For example, AAFC's water quality agri-environmental performance index¹ fell from desired (85 out of 100) in 2001 to good (78 out of 100) in 2006 (AAFC 2015b). The impacts are particularly significant in the Great Lakes region where agriculture has been identified as a major contributor to the decline in water quality as evidenced recently by the appearance of large algae blooms in Lake Erie (International Joint Commission 2014). Reducing excess fertilizer applications can improve water quality and also reduce greenhouse gas (GHG) emissions. Approximately 10% of Canada's total GHG emissions are from crop and livestock production with 25% of this total in the form of nitrous oxide associated with fertilizer use (ECCC 2016). The extent of the excess loadings into water or air vary with the intensification of production.

In addition to spatial differences in the environmental issues associated agriculture, the issues also change over time. While nutrient loadings and greenhouse gas emissions are the current focus, reducing soil erosion was the major target for agri-environmental policy during the 1970s and 1980s in North America. However, the problem of soil erosion has been reduced over time due to the adoption of practices, such as conservation tillage and complex crop rotations, that have become profitable for farmers to implement over time. Environmental objectives can

¹ The Water Quality Agri-Environmental Performance Index combines indices for water contamination by nitrogen (N), phosphorus (P), coliforms and pesticides.

change over space and time and this dynamic should be accounted for in the design of cross compliance programs.

Agri-Environmental Policy Options

There are four major categories of agri-environmental policies: (1) institutional support; (2) advisory measures; (3) command-and-control regulations, and (4) economic instruments (Weersink and Wossink 2005). Institutional support involves the clear definition, assignment, and enforcement of the property rights for a natural resource. While appropriate for cases where there a few parties involved with a pollution event in which the cause-and-effect are known, the assignment of property rights does not lend itself to implementing a cross compliance program.

Advisory measures are the most commonly employed agri-environmental policy option, often in conjunction with other policy efforts, due to their relatively low cost and political acceptability. The intent of these programs is to provide information to farmers on the detrimental impact of their current practices on the environment and on the *BMPs* that can reduce that impact. An example of such a program is the Environmental Farm Plan (EFP) implemented by Ontario in 1993 and subsequently in most other Canadian provinces. Farmers voluntarily agree to conduct an EFP, and through participation in workshops and the completion of a confidential risk assessment, farmers self-identify the environmental risks associated with their operation and develop an action plan to reduce those risks. Funding is provided to encourage participation but not for the implementation of the action plan. Alternative technical assistance programs on *BMPs*, such as the *Greencover Canada Program* and the *Agricultural Greenhouse Gas Program* developed by AAFC, have been developed by governments often in conjunction with producer organizations. Such education programs are effective if farmers are

unaware of the environmental impact of their current practices and/or the relative profitability of alternative farming systems.

Command-and-control regulations involve the government directly mandating the desired environmental behaviour into law. The mandates could be in terms of emission levels (performance-based) or on the farming practices employed (design-based). Performance-based standards are relatively uncommon in agriculture but firms in many other sectors must file reports on their pollutant levels to provincial Ministries of the Environment. Fines or other penalties can be imposed if emissions exceed the allowable standards. In contrast to performance-based standards, design-based standards are commonly used for agri-environmental purposes in Canada. Initially, the restrictions were focused on the availability of pesticides but the standards have broadened to include other inputs and practices. For example in many municipalities, livestock producers cannot apply manure during the winter time or cannot receive a building permit for a new barn unless restrictions are met on the location and sizing of the new facility, such as minimum separation distance from waterways and manure storage capacity.

Economic instruments create incentives for farmers to act in the desired manner rather than directly force them to abide in that manner as with command-and-control options. The incentives could be in the form of charges or subsidies, and both forms could be imposed on emissions (performance-based) or practices (design-based). Economic instruments could also include tradable rights for either emissions or associated inputs.

Performance-based charges or subsidies require the ability to accurately measure or estimate emissions at relatively low cost. Since it is less costly to observe practices than to measure pollutant levels from individual farms, design-based rather than performance-based economic instruments are commonly employed, particularly in the form of cost-share programs

for the purchase of *BMPs*. In addition to the Stewardship Plans Program mentioned in the Introduction, another example is the Agricultural Greenhouse Gases Program (AGGP) which is a \$27 million, five-year (2016-2021) program from AAFC intended to enhance the adoption of *BMPs* that will mitigate agricultural GHG emissions partially through cost-share grants. Similarly, the Great Lakes Agricultural Stewardship Initiative (*GLASI*) is a 2016 initiative to improve soil health and water quality through promoting the adoption of *BMPs*. The Farmland Health Incentive Program (*FHIP*) under *GLASI* offers financial support to implement the appropriate *BMPs* with funding provided by the federal (AAFC) and provincial government ministries (OMAFRA) and is delivered by the Ontario Soil Crop Improvement Association (OSCIA).

Assessment Criteria

The socially optimal environmental target involves minimizing the damages caused by the residual, the abatement costs incurred by firms to reduce those residuals, and the administrative/implementation costs to the government. Whether socially optimal or not, policy makers start with an environmental target so one of the first criteria to assess a given policy is its ability to meet this goal; otherwise known as its environmental effectiveness.

The costs of achieving a given environmental target will vary with the type of option. For example, economic instruments generally result in lower total abatement costs than command-and-control regulations since the farms have the incentive to find the lowest cost means to reduce emissions. The extent of the difference between the options will vary with the degree of heterogeneity in abatement costs among farmers and the extent of this heterogeneity will depend on the number of technological options to reduce residuals (Helfand and House 1995). Economic instruments also have the cost advantage of providing incentives for continual

improvement in environmental performance. Note abatement costs also include the transaction costs to the farmers of participating in a program; and these will vary depending on the receptivity to participate, the degree of irreversibility and the specificity of the abatement effort.

The administrative costs of implementing a policy option can offset other cost advantages. Governance costs include the costs of monitoring and evaluating environmental performance. The greater the number of emitters and the greater the difficulty in tracing emissions, the greater the measurement cost for performance-based instruments compared to design-based options. Governance costs will be lower if the policy can be incorporated within an existing administrative organization as opposed to the development of a new governmental structure. Finally, if non-compliance to the standard or incentive is observed, there is a cost to enforcing the consequences of not meeting the policy regulations.

The abatement and governance costs must be balanced against legal and political constraints (Richards 2000). The regulatory powers of government may be limited or there can be conflicts between the federal, provincial and municipal jurisdictional divisions of government. Political constraints include the feasibility of the program options with current government objectives- subsidies for green initiatives are less likely than taxation for a government focused on fiscal restraint. The distributional implications of policies differ and so will their political acceptability. Subsidies imply the government (or the beneficiaries of the environmental improvement) pay for the reduction in emissions, while charges or direct regulations imply the polluters pay for the consequences of their actions. The latter can alter the relative cost structure of farms, and the government may be reluctant to impose such a policy if enhancing the competitiveness of the sector is a government objective. Even within the farm sector, the acceptability of a policy will depend if it is universally applied or targeted to a select few.

Complications in Agri-Environmental Policy Design

There is not a single policy option consistently used to improve the environmental performance of agriculture due to the complications of the production process generating both agricultural output and residuals that are by-products. One complication is the large number of small potential contributors to the environmental problem, which makes it difficult to assess either the practices used or the emissions generated from each operation. The larger the number of emitters, the more difficult it is to separate damages across farms and the less likely those farms are to work together to solve the problem.

Assigning liability is further complicated by the complexity of the production and environmental fate process further enhancing the difficulty in measuring the emissions from each individual farm. While certain *BMPs* such as tillage or crop choice can be observed, the actual level of residuals from a given location employing those *BMPs* depends on a number of other practices that are more difficult to observe such as its timing. There is no fixed proportions relationship between individual farm management practices and residual levels; instead these interact with each other in idiosyncratic ways. As a result, there is not an exact, deterministic linkage between farm practices and emissions making it difficult to determine the environmental effectiveness of a policy and to encourage participation of farmers.

Spatial, temporal, and technological heterogeneity in the generation of residuals from agricultural production influences the distributional consequences of the policy and thus its acceptability. The levels of residual generated and the impact of these residuals on environmental health will depend not only on the farming system but also on geographical factors such as soil type and weather. Similarly, the time lag between the actions of a producer and damages resulting from those actions will depend on the type of residual and location. For

example, the time it takes for excess nitrogen to build up nitrate levels in the groundwater is influenced by the depth of the water table and soil type. The differences in soil type can also influence the abatement cost of implementing a *BMP* such as conservation tillage. Farmers on sandy soil are likely to adopt conservation tillage without regulation. The greater the spatial, temporal, and technological heterogeneity, the greater the efficiency of targeted policy options.

The political acceptability of a policy option is weakened by the indirect linkage between the actions of farmers and environmental health. Not only is the link indirect but it is also subject to the influence of random factors outside the farmer's control, such as weather events. The acceptability of any agri-environmental policy, even if it can be effectively designed, is further compromised by uncertain net benefits. The implementation costs are often perceived to be greater than the benefits of regulatory actions, which tend to be in the form of reduced water treatment costs, enhanced recreational opportunities, and improved wildlife habitat rather than lowering direct human health risks.

Cross Compliance

Cross-compliance combines the use of one of the agri-environmental programs discussed above with a non-environmental one. The non-environmental policy is often an income support or *BRM* type initiative that is considered to be the carrot that cannot be received unless the environmental target is met with the consequences of not meeting the target considered the stick. The evaluation of cross compliance requires assessing whether bundling both programs together is more effective than having separate income support and environmental efforts. Program participation, the attainment of policy goals, and total compliance costs to the administrator and farmer influence the value of cross compliance.

Program Participation

An initial step in evaluating the effectiveness of a cross compliance program involves comparing participation with its requirement of meeting the agri-environmental target in order to access *BRM* programs to participation with the alternatives. There could be separate risk management and agri-environmental programs, the current practice, or with cross compliance both programs are implemented. Participation depends on the relative incentives between cross compliance and the alternatives. Farmers will comply with cross compliance efforts if the rewards from the support program are greater than the abatement costs of achieving the environmental goal. Evaluation of the net benefits to cross compliance versus separate initiatives depends on the design of the programs under each option.

Information asymmetries between a principal (regulatory agency) and agents (farmers) can lead to unintended consequences for the design of cross-compliance schemes. Asymmetry associated with adverse selection, where the principal cannot discriminate between agents with different costs of compliance, can influence the cost efficiency of an agri-environmental policy. Efficiency can be improved by targeting incentives/disincentives to the appropriate agents with alternative contractual mechanisms. However, in the case of income support cross-compliance the payments cannot be targeted (other than through sanctions) because the primary objective of the program is income support or stabilization. With cross-compliance the major issues concern monitoring of non-compliance and not contract design (Latacz-Lohmann, 1999).

Income support programs where the payouts are unknown before production decisions are made, may provide compliance incentives for risk averse individuals, because getting caught for non-compliance would increase risks in addition to already uncertain program income. Furthermore, support programs that offer more money may be more consistent with compliance because the higher the reward the riskier the decision not to comply.

The idea is that mechanism design can be used to help frame the appropriate income support criteria. Both the participation constraint and the incentive compatibility constraint should provide insights into the appropriate types of income support programs to use in conservation compliance design. Programs with very low payouts either do not create enough incentive to participate or the possible sanctions act as a very low deterrent to comply if the farmer does choose to participate. Ozanne *et al.* (2002) find that risk aversion ameliorates the moral hazard problem. Fraser and Fraser (2004) go so far as to argue that by complementing targeting with appropriate adjustments to monitoring/penalty parameters, it is possible to exploit the risk aversion to completely eliminate cheating by those participants in the non-targeted group. Risk averse producers who face uncertainty in both their market income and program income are more likely to comply with the requirements of an environmental standard. Countercyclical type support payments, that offset income losses in depressed markets, should tip the balance back toward potential moral hazard and non-compliance. Moreover, uncertainty with respect to support payments should reduce participation, as the farmer is uncertain if the costs of abatement and demonstrating compliance will be offset.

Non-compliance can reduce abatement costs and thus increase the likelihood of participation in cross compliance, but consequently reduce the environmental benefit of the program as discussed further in the next section. Problems of compliance derive from information asymmetries between the regulator and participating farmers resulting in hidden information (adverse selection) and hidden actions (moral hazard) (Latacz-Lohmann, 1999). The inability to enforce compliance comes down to an inability to detect, which may result from imperfect or incomplete monitoring, and from inadequate deterrence incentives in the first place. The effectiveness of conservation compliance largely depends on three factors: (1) the type of

conservation actions or activities required of the participants, (2) the strength of the compliance mechanism (the penalty is dependent on participation in different activities) and (3) the level of enforcement (Ozanne *et al.*, 2001). The compliance approach has to be flexible enough to account for both alternative tolerance levels for scientific metrics that determine the degree of the externality and minimizing the cost of compliance for the participant.

Environmental Performance

Cross compliance could result in higher levels of participation than no programs (or separate *BRM* and *BMP* efforts) but poor design could nonetheless result in the environmental target not being met. Whether achieving this target through cross compliance or through a separate agri-environmental policy effort, one of the questions facing policy makers is determining the appropriate environmental problem to target and the type of remedial actions to alleviate the problem.

The remedy for an environmental externality should be tied directly to the externality generating mechanism, and not to some related symptom or action by the producer. This necessitates the measurement of the externality. However, as noted in the previous sub-section, it is difficult to measure individual farm emissions due to the number of potential contributors and the complexity of the biological process from the generation of the emissions to their impact on the environment. Measurement depends on scientific metrics and these metrics are localized, case-specific and have to reflect the heterogeneity among farmers.

Performance-based standards or economic instruments directly target the specific metric desired and, are thus the policy tool to most efficiently achieve the environmental target. Tools focused directly on the environmental target maximize the flexibility to achieve this goal. Performance-based measures are also more likely to encourage participation in a cross-

compliance program because the flexibility minimizes abatement costs compared to alternative options. However, the difficulty in measuring environmental health metrics directly in agriculture means the most common agri-environmental regulations are design-based tied to input use, and production techniques (e.g. crop rotations). Ideally the input, or production process of the design-based tool is linked to the externality in a fixed proportions relationship. The more variable these relationships are, the looser is the tie, and therefore the lower the environmental effectiveness.

Whether performance-based or design-based, the efficiency in meeting the environmental objective can be improved by targeting the policy tool. Those farms with the lowest abatement costs and/or the highest marginal damages from emissions should be targeted. The greater the spatial, temporal, and technological heterogeneity in the costs and benefits of environmental improvement, the greater the efficiency of targeted efforts versus uniformly available policy options. However, since cross compliance is likely to be a provincial initiative, the environmental metric is likely to be the same over that geographical region, thereby decreasing the environmental effectiveness compared to localized policy tools.

The environmental effectiveness of cross compliance can also be influenced by the nature of the support program in addition to the agri-environmental tool. A common motivation for cross-compliance is to reduce the negative environmental spillovers (input residuals and cultivation of sensitive land) from increased production induced by the support program. Programs that create little incentive to produce more should be more efficient at addressing environmental problems. However, so called decoupled payments do nothing to correct for externalities and the wealth effect of the program may make farmers less risk averse and more likely not to comply.

The OECD ranks production effects by program types (OECD 2002 and 2005). They find input subsidies to be the most distorting, followed by unconditional output subsidies. Fixed payments where the farmer cannot affect the size of the payout by changing his behaviour (decoupling) are the least distorting type of production incentive. Income stabilization programs fall somewhere between product specific output subsidies and fixed payments in terms of distortion potential. Fixed payments are less production enhancing than other programs and the predictability of payments should induce participation in cross-compliance programs. However, the wealth effects may reduce risk aversion and adversely affect compliance.

Intervention purchases and deficiency payments create a floor price for specific commodities. This affects crop mix (between program and non-program crops), and induces land and input use. Market variability and the associated variability in program payments potentially lower participation. On the other hand, variability increases risk premiums and may encourage compliance. Given a trade-off in the incentives to comply between increased monitoring and larger sanctions, the nature of these product specific floor prices should make larger sanctions preferable to more monitoring.

Income insurance or income stabilization schemes are mostly whole farm programs and negative correlations between prices, yields, and costs (within and across commodities) create off-setting effects stabilizing the net margin that should limit production inducing incentives from the programs. However, these payments are also countercyclical which may discourage participation. On the other hand, the uncertainty of the payout should induce risk averse farmers to be more likely to comply.

Finally, government subsidized crop insurance can be thought of as an input subsidy.

Sumner and Zulauf (2012) describe three ways that subsidized crop insurance can induce production: (1) premium subsidies raise the net revenue per hectare and encourage production of crops with higher subsidy rates; (2) the availability of crop insurance encourages producers to participate in more risky ventures; and (3) reduced yield losses encourage producers to undertake fewer other risk mitigating practices and focus more on increased productivity. The crop specific nature of crop insurance and the high degree of subsidization put this instrument closer to the more distorting end of the OECD spectrum for production distortion. Certainly programs that encourage producers to participate in riskier ventures may have detrimental environmental impacts because more sensitive land is brought into production and more inputs are used.

Compliance Costs

The type of support program and environmental policy tool chosen with or without a compliance program will influence the administration and transaction costs of delivering the options. In both cases, there is a continuum of choices between flexibility and rigidity and between simplicity and complexity. Simplicity reduces transactions costs and encourages participation while complexity addresses multiple objectives. These choices influence the compliance costs for any instrument but the factor influencing the attractiveness of cross compliance is whether there are economies of scope in administrative costs from delivering the programs jointly rather than individually.

EXPERIENCE WITH CROSS-COMPLIANCE IN OTHER COUNTRIES

Appendix A provides details on the cross-compliance policy requirements for the EU, and the US. The following sections summarize these requirements and consider the potential for application to Canadian agriculture.

United States

Floor prices for major crops were established in the United States through the 1933 *Agricultural Adjustment Administration*. The non-recourse loan program established loan rates for wheat and coarse grains. When market prices fell below the loan rate, grain was collected as collateral for the loans by government and the resulting purchase set a floor for crop prices. The loan rate is still used today for major grains, but the method of supporting prices has moved on from intervention stock purchases to a loan deficiency payment (*LDPs*) that creates the floor price (Westcott and Price, 2001).

Measures linking support programs to erosion control were first used in U.S. agricultural policy in 1936 (Kramer and Batie, 1986). The addition of the *Agricultural Conservation Program (ACP)* required producers to take actions to prevent soil erosion. If the farmers did not meet the standards of the *ACP*, their support could have been reduced or they could lose the loan guarantee (Kramer and Batie, 1986).

The 1985 U.S. *Food Security Act*² introduced cross-compliance with respect to soil erosion by: *i*) encouraging farmers to adopt appropriate management practices for vulnerable (highly erodible) cropland (Conservation Compliance); *ii*) providing disincentives for converting highly erodible soils that were not cropped before 1985 (Sodbuster); and *iii*) discouraging farmers from converting wetlands into arable lands (Swampbuster) (OECD 2010). Subsequent Farm Bills – 1990, 1996, 2002, and 2014, retained compliance mechanisms with only minor technical revisions.

The budgetary payments that are subject to cross-compliance include *Direct Payments* (decoupled payments), *LDPs* and *MLA* payments (which are the modern loan rate delivery

² The ACP was terminated in the 1985 farm bill and was replaced by the Environmental Quality Incentive Program (EQIP). Cross-compliance was formally introduced as a condition to receive program payments and EQIP payments were one form of support payments that were subject to cross-compliance.

mechanisms), and *Counter-Cyclical Payments/Acreage Crop Revenue Election (CCP/ACRE)* (which is a version of a deficiency payment which is fixed with respect to base yields and area).³ The original 1985 legislation also included federally subsidized crop insurance, but this program was removed from cross-compliance in the 1996 Farm Bill (Claassen, 2004). These income support programs have varying impacts on production decisions with *Direct Payments* being the most neutral program. *Target Prices and Deficiency Payments* would be somewhat more distorting but production enhancement was limited by land set-aside provisions and the *CCP* version payments were limited by fixed base areas and yields that muted the production effects. *Loan rates* and *LDPs* are open ended and crop specific so have the most potential to induce production and were considered to have induced land conversions, which affected highly erodible land and wetlands. Crop insurance by its nature allows producers to take on risks and may have contributed to land extension. However, Goodwin and Smith (2003) found that crop insurance and other government programs did not lead to increased soil erosion. Furthermore, Goodwin et al. (2004) found relatively small production increases due to insurance availability.

US cross-compliance mechanisms are tied to performance (outcome) standards (e.g. level of soil erosions or amount of wetlands converted). Because the approach that accounted for both soil erosion and the cost of erosion reduction without imposing a fixed erosion standard, producers are given a great deal of flexibility in terms of how they meet these standards (e.g. conservation tillage, crop residues, buffer strips, etc.).

The U.S. conservation compliance programs are focused on measurable targets. The targeting of cross-compliance has been aimed at *highly erodible land (HEL)* and wetland conservation. Therefore, the US focuses mainly on externalities that are a by-product of

³ Cross-compliance also covers agri-environmental payments including: Conservation Reserve Program; Environmental Quality Incentive Program; Wetland Reserve Program; Emergency Conservation Program; and Conservation Security Program

extensive farming. This approach allows for the development of objective metrics – whether a particular field meets or exceeds an erosion index. So the programs have a spatial nature that takes account of geological conditions and as a result the geographic distribution of payments is stable year to year even though crop conditions are not.

US penalties for non-compliance include refunding all program payments, on all fields operated and barring the offender from certain loan programs (Baylis *et al.*, 2008). The USDA's primary enforcement mechanism is the annual *Compliance Status Review (CSR)* which each year samples compliance status (Claassen *et al.* 2004). Each year 5% of the land subject to compliance is reviewed, with a combination of random and non-random checks (OECD, 2010). The CSR reports very high levels (98%) of compliance (Claassen *et al.* 2004).

The US system relies on high penalties rather than excessive monitoring to motivate compliance. The system is built around flexibility by employing outcome standards. Targeting increases the simplicity of the approach. Because the program targets new problems rather than existing statutes the program can be considered to have an element of additionality. Finally the payment system is not as production neutral as a completely decoupled subsidy so induced production may increase negative externalities (input related) that are by-products of intensive farming. However, the uncertainty of payments encourages increased compliance by risk averse agents. Finally because payments are negatively correlated with commodity prices farmers are less likely to enroll in conservation schemes when crop prices are high.

The overall performance of the US system of cross-compliance has been quite effective with respect to soil erosion. Between 1982 and 1997, cropland erosion declined by about 40 percent, and 25% of this reduction can be directly attributed to cross-compliance (Claassen

2004). With high reported rates of compliance and a significant reduction in soil erosion the program appears to have been effective.

European Union

The European Union's agricultural income support has a history going back to the origin of the Common Agricultural Policy (CAP) in 1962 (EU Commission, 2015a). Income support policies have evolved over time from an initial system that supported floor prices through intervention purchases and stock holding to the current system which provides direct payments. The intervention purchase system covered arable crops (excluding oilseeds and vegetables) and livestock (beef and dairy but excluding swine). Since intervention prices were more than double world prices, induced production caused excess stocks and budgetary problems. By 1992 genuine reform was required and scaled back intervention prices in return for compensation payments that offered fixed per unit payments based on current area and livestock numbers. The compensatory payments were viewed as partially decoupled with respect to input decisions (per unit payments were fixed) but not with respect to area decisions. In 2003 the EU introduced the *Single Farm Payment* (SFP) in an attempt to decouple production decisions from income support. Since the SFP was based entirely on historic compensatory payments producers could not affect the size of the payout by changing their production decisions and theoretically should be neutral (Rude, 2008).

Environmental policy in the EU is different from the US in that policy focuses mainly on externalities that are a by-product of intensive farming (i.e. use of too many non-land inputs per unit of land). This contrasts with the US approach that focuses on by-products from too extensive land use (extensification) (Baylis *et al.* 2008). Europe also takes a broader view of agricultural externalities including both negative (especially nutrient and chemical leaching, too

much irrigation, and a decline in agri-biodiversity) and positive (e.g. landscape amenities) externalities. As consequence the choice of remedial actions are quite different than the modalities used in the US. While the US favours targeted outcome standards (targeted to land characteristics) the EU largely relies on process standards. As a result the approach is much less flexible and prone to increasing compliance costs. Furthermore, the remedies actively encourage extensification such as the requirement to keep land in good agricultural condition (Hart *et al.*, 2012). In addition to being less flexible the approach is very broad-brush addressing many more perceived spillover effects across a broader variety of agricultural products.

The EU introduced voluntary cross-compliance in 2003 with the initiation of the SFP. However this voluntary approach was not successful (Osterberg, 2007) and in 2005 cross-compliance became mandatory. The EU rationale for cross-compliance is somewhat ambiguous with justification for continued high levels of support and a mishmash of incentives to encourage a broad variety of beneficial activities relating to the environment, food safety, animal health and animal welfare. The approach bridges *CAP Pillar I* (farm income support) with *Pillar II* (rural development) using the second pillar as a justification for the first. The approach was also intended to allay fears that decoupling of support would lead to deteriorated management of farmland and the risk of land abandonment (Hart *et al.* 2012).

The conditionality of EU cross-compliance ties the *SFP* to existing legislation (a selection of 18 Articles from EU legislation covering the environment⁴, food safety and animal health and welfare) which are described as *Statutory Management Requirements* (SMR) (EU Commission, 2015b). The SMRs are complimented by additional standards for *Good Agriculture and Environment Conditions* (GAEC). The GAEC regulations allow considerable scope for national and regional standards. These regulations not only vary region but broadly

⁴ Conservation of wild birds and natural habitats, ground water protection, and nitrate water pollution

cover the management of soils and minimum levels of maintenance of pastures, stocking rates, retention of landscape features (stopping anything that would encroach on agricultural land).

The EU's broad-brush approach is not suited to targeting outcomes⁵ and rather it targets regions and individuals without regard to spatial disaggregated environmental concerns. This approach ties *Pillars I and II* together through multiple objectives, but given the lack of tangible outcomes, process standards have to be adjusted to the SMR (community wide) and GAEC (regional) specifications.

The EU enforces individual compliance by monitoring through samples, with site checks, of 1% of EU farms each year. Of this sample 20-25% is random and the remainder is chosen according to risk criteria (Hart *et al.*, 2012). The risk analysis is based on the type of SMR or GAEC that the farm is responsible for, the size of the payment, and prior infringements. Additional information is obtained through the *Integration of Environmental Concerns into Agriculture Policy* (IRENA) project, which provides a set of environmental indicators and related data bases (Baylis *et al.*, 2008). However, IRENA is primarily a response to differential monitoring abilities among member states, and is not used (as the US Environmental Benefits Index is) as method of detailed targeting environmentally sensitive lands. In fact the EU doesn't target particularly sensitive land (Hart *et al.*, 2012).

Failure to follow compliance requirements, through negligence, can cost the violator between 1-5% of their SFP in the current year. Repeat offences can result in a sanction of up to 15% of the SFP, and intentional failure to comply (whatever that is) can result in a penalty of between 15-100% of that year's SFP. The sanctions are not permanent and are reviewed on a year to year basis (Baylis *et al.* 2008).

⁵ Nitrate management would be obvious target as nitrates are one Europe's biggest pollution problems

The choice of a decoupled SFP fixed payment has several implications. First the payment likely does not induce much additional production and the associated externalities. However, cross-compliance conditions themselves can distort this production neutrality (similar to a production requirement) by holding land in agricultural production that should be in other uses. While there was initial concern that high compliance costs may dissuade participation, these concerns have not come to be realized (Hart *et al.*, 2012). The second concern is that although program payment variability could create an incentive for increased compliance for risk averse individuals, there is no variability and hence no incentive effect from the fixed SFP. The fixed payment reduces these risks and may even increase the incentive not comply. Moreover, Fraser and Fraser (2005) argue that the high cost of monitoring results in less monitoring and a very low probability of getting caught for non-compliance. They argue for targeting based on past performance (increasing the risk of detection) and monitoring sub-groups of individuals (selection would be based on a set of common characteristics with respect to an environmental sensitivity). Given resource constraints not everyone can be monitored and individuals, not in these sub-groups, would have a lower probability of being detected and increased incentives to cheat. To counter this potential Fraser and Fraser recommend increasing the size of the penalty for the non-targeted agents. This is consistent with the US approach of applying very large sanctions in return for lower levels of monitoring recognizing the trade-off between monitoring frequency and the size of the sanctions.

The EU system relies on extensive monitoring rather than large penalties to motivate compliance. The SFP payment system is by and large production neutral so induced production does not increase negative externalities. However, emphasize on extensification may lead to other types of environmental externalities. The certainty of the payment structure may

encourage reduced compliance by risk averse agents. The system is relatively rigid because process standards are employed. A lack of targeting increases the complexity of the approach, but allows multiple objectives to be addressed. Because the program targets existing statutes the program lacks additionality.

CROSS COMPLIANCE IN CANADA

Past and Current Experience with Cross Compliance

Although Canada has only implemented one cross-compliance program (in the Quebec hog industry) Canadian interest in cross-compliance has an extensive history. The 1990 Federal-Provincial Agriculture Committee on Environmental Sustainability recommended “prompt consideration” of cross-compliance (Ziegler 1995). This call was echoed in reports of the House of Commons Standing Committee on Agriculture (1992), and the Auditor General of Canada (1993) (Ziegler 1995). The responsibility of the federal government to ensure that farm support programs (safety nets) do not contribute to environmental degradation is contained in the 1991 *Farm Income Protection Act* (FIPA). Federal/provincial agreements on *Crop Insurance* (CI), *Gross Revenue Insurance Program* (GRIP), and *Net Income Stabilization* (NISA) included a requirement for environmental assessments for each program. Moreover, *FIPA* required the federal-provincial agreements to set out "the circumstances and conditions under which insurance may be withheld, restricted or enhanced for the purpose of protecting the environment and of encouraging sound management practices to ensure environmental sustainability" (FIPI, 1991). At that time, the Environment Bureau of AAFC commissioned two reports on the feasibility of cross-compliance (Benbrook, 1994 and Price Waterhouse, 1994).

Despite the interest and a flurry of activity in the mid-1990's, no action was taken to implement cross-compliance conditions with respect to federal-provincial income support

programs. Nonetheless in 2001 the Province of Québec introduced Bill 184 which adopted cross-compliance. This approach was part of a larger plan for sustainable development of hog production in Québec. 2005 saw the introduction of the first Canadian cross-compliance measure. Under the Québec *Agricultural Operations Regulation*⁶ all operators of livestock production facilities have to produce a *Phosphorous Report* by May 15 of each year. Initially failure to comply led to the loss of the right to any compensation, indemnity or participation in *Farm Income Stabilization Insurance* program (ASRA), *Crop Insurance* program (ASREC), Agri-Québec and Agri-Québec Plus programs⁷ (FADQ, 2014). In 2014 the non-compliance sanctions were reformed so that in the first year of non-compliance program payments were only reduced by 25% while a second year of non-compliance resulted in a loss of all the benefits (FADQ, 2014).

The Federal/Provincial policy framework *Growing Forward II* re-introduced the possibility of cross-compliance conditions. Individual provinces or territories “may require participants to comply with certain criteria before they are eligible to receive government contributions under *AgriInvest*” (AAFC 2013a). The criteria were broadly defined to include traceability, the environment, business development, and innovation. Our understanding is that this was a last minute decision initiated by the minister’s office and not by AAFC officials. *AgriInvest* is a savings account where each year producers can deposit up to 100% of *Allowable Net Sales*.⁸ When producers deposit up to 1% of their allowable net sales they receive a matching government contribution. Although they are allowed to make additional contributions, beyond

⁶ http://www.fadq.qc.ca/en/about_us/sustainable_development/phosphorus_report.html

⁷ These are top up programs for *AgriStability* .

http://www.fadq.qc.ca/en/about_us/sustainable_development/phosphorus_report.html

⁸ Allowable net sales subtract out purchases of the same product that that is being sold. This is done to prevent inflating allowable net sales by buying more of the product and selling it again.

this point, no additional government deposits are available (AAFC, 2015). Producers have the flexibility to withdraw funds at any time throughout the year.

The money set aside can be used to manage risks for small income shortfalls, or to make investments to reduce on-farm risks. At first blush, this approach has potential to distort production decisions because producers could attempt to produce more, and take more risks, in order to increase their allowable net sales and thereby increase government contributions. But this situation only holds if the producer is already contributing 1% or more of their net eligible sales. If they are not contributing to this level, they can increase government payments simply by depositing more into their *AgriInvest* accounts. AAFC records indicate that for the period 2008-2010 producer deposits were 87.6% of their maximum allowable contributions for government matching.⁹ Although these contribution levels were high, participants still had room to increase matching government contributions without increasing production.

Even those producers that contribute up to this maximum will not necessary increase production. The decision rule for extra productive investments trades off the extra government induced profitability of the investment against an added opportunity cost of investment because potential dollars for these investments are tied up in *AgriInvest* savings accounts. Only if the added profitability equals or exceeds the added opportunity costs will farmers decide to produce more. Furthermore, the overall sums of money do not appear to be that large as the annual upper limit on matching government contributions is \$15,000, so it is likely that decisions are primarily made on the basis of market considerations. Therefore, it is expected that the potential for *AgriInvest* to induce production, and associated negative environmental externalities, is minimal.

Cross Compliance Design

⁹ This information was obtained through personal correspondence with AAFC officials. During this time period government contributions could be up to 1.5% of allowable net sales.

Given the current carrot for cross compliance is *AgriInvest* with potential use of *AgriStability*, the remaining questions surrounding its implementation include: What is the appropriate environmental issue(s) to address with cross-compliance? What is the stick(s) or agri-environmental policy to ensure compliance? Is cross compliance worth it? These questions and corresponding assessment for potential cross compliance options are summarized in Table 1.

What (and Who) to Target?

The major environmental issues stemming from Canadian agriculture are associated with water and air quality as noted previously. While it would be most efficient to target the negative externality from the associated pollutants, such as nitrates into ground water or methane into air, from each individual farm, it would be too costly to do so. As a result, the next best target is the *BMPs* that are highly correlated with emissions and can be monitored easily. *BMPs* that reduce nutrient loadings would cut both nitrate and phosphate levels into water bodies as well as nitrous oxide emissions into the air. Thus, we will assume the target of the cross compliance will be *BMPs* associated with organic and inorganic fertilizer. These include the 4Rs associated with source, rate, time and place (Fertilizer Canada, 2015).

The difficulty in measuring residual levels as an environmental target also implies it is difficult to determine who should be the target of the cross compliance effort. Selecting farmers with the lowest abatement costs and/or the highest impacts on the environment would improve the efficient delivery of the program. The former would imply identifying low cost farmers through programs such as reverse auctions in which farmers provide bids on the environmental services provided. The latter would imply focusing delivery on farmers closest to ecologically sensitive water bodies. Given the current political unacceptability of targeting farmers for the

same set of practices, we will assume that the programs focused on *BMPs* for nutrient management are universally available.

An alternative environmental goal that does lend itself to targeting is wildlife habitat conservation. There is Canadian federal legislation aimed at biodiversity conservation (*Migratory Birds Convention Act* (1994), *Canada Wildlife Act* (1985), and *Species at Risk Act* (2002)). The objective of enhancing ecological diversity can most efficiently be achieved by focusing on environmentally sensitive areas rather than necessarily all agricultural lands, as would be the case with the reduction of nutrient loadings. Focusing on areas of high ecological value, and generally low agricultural value, is similar to the area focus of the U.S. cross-compliance programs *Swamp-buster* and *Sodbuster*. These lands can be clearly defined and observable design-standards, as discussed below, can be enforced in order to receive compliance benefits.

What Stick to Use?

The environmental goals associated with nutrient loadings and wildlife habitat can be achieved by requiring farmers to adopt a set of beneficial management practices. Rajsic *et al.* (2012) find a strong similarity between Canadian *BMPs* and the Good Agriculture and Environment Conditions (GAEC) practices used within cross compliance in the EU; both are design-based standards that include activity permits and management plans. Currently, the Growing Forward framework identifies 28 eligible *BMP* categories with the most common being conservation tillage, environmentally friendly crop mixes, buffer strips and adoption of nutrient management plans (Vercammen, 2011).

Given current agri-environmental policies and based on the U.S. and EU experiences with cross compliances, we will assume eligibility for *BRM* support (*AgriInvest*) can be accessed through the following options (see Table 1):

- 1) Establishment of design-based standards targeted specifically for the conservation of ecological sensitive lands. Standards, such as establishment of a riparian buffer or the planting of perennials, are presently in place across many provinces (i.e. Ontario's Wetland Farm Stewardship Incentive Program).
- 2) Completion of a Nutrient Management Plan (*NMP*). The completion of a *NMP* would force a farmer to be aware of crop nutrient requirements as well as the fertilizer management practices to minimize excess loadings specifically for their farm operation.
- 3) Completion of a *NMP* with adoption of a *BMP* identified as a means to reduce environmental risk as identified in the *NMP*. The financial costs of the *NMP/BMP* could be mitigated through a cost share program.

Assessment of Cross Compliance

Participation

A farmer will participate in one of the three compliance options if the abatement costs from the stick are less than the benefits received from *AgriInvest*. *AgriInvest* is not likely to distort production decisions but neither is it expected to generate significant benefits to induce farmers to opt into a cross compliance program. Under *AgriInvest*, producers can receive a matching contribution from the government of 1% of allowable net sales up to a maximum of \$15,000 (AFFAC 2015a). AAFC records indicate that for the period 2008-2010, 78.3% of eligible producers participated in *AgriInvest*. The approximately one-fifth of eligible producers

not using *AgriInvest* are likely to operate small farms with small potential benefits relative to the transaction costs of entering the program (Rude, 2000). While there are benefits to the greater savings rate for funds in an *AgriInvest* account, a maximum benefit from the carrot in a cross compliance program with *AgriInvest* will be 1% of sales for most commercial farmers.

The costs to cross compliance are the abatement costs associated with the agri-environmental policy in each of the above 3 options. The lowest cost will be associated with the completion of a nutrient management plan (option 2). Many farmers will have submitted a *NMP* as part of other activities ranging from accessing a building permit for a new barn to obtaining funds for a *BMP* from a cost-share program. (figures on the number who have completed an *EFP* in Ontario or *NMP* in general). The *NMP* can be updated annually at relatively low cost. For those who have previously completed an assessment of their farm nutrient demand and supply, the cost is largely the time of the operator (estimate of time and/or cost of a consultant to complete).

The costs of the other two options are higher than those associated with the completion of the *NMP* as actual *BMPs* are required to be adopted. Practices currently not part of the profit-maximizing choice by producers but identified by stewardship program to enhance wildlife habitat (option 1) or by the *NMP/BMP* (option 3) are assumed to reduce net returns. While the Porter hypothesis suggests being forced to meet environmental standards may increase profits to the firm (Ambec et al 2013), it is assumed here that farm returns will fall with the environmental stick required under cross compliance.

The establishment costs of riparian buffers and perennial vegetation under option 1 can be amortized over the period of compliance. In addition to the direct costs, there are opportunity costs of taking these lands out of production but it is assumed these will be minimal; it is not

highly productive farmland but rather environmentally sensitive regions that would be targeted. The costs of changing nutrient management practices can be significant although there are also risk aspects that explain the reasons that farmers tend to apply more fertilizer than recommended (Rajacic and Weersink 2009). In a survey of the costs of agricultural environmental compliance Fox and Kidon (2002) found the average cost in Canadian agriculture to be in the range of 2-4% of overall costs. Lintner and Weersink found compliance cost necessary to meet phosphorus standard to be equivalent to 1.5% of total costs. Further evidence of the costs are the adoption rates for subsidized *BMP* activities of between 40% and 50% (Brethour *et al.*, 2007). For some practices the adoption rates are only 10% while for others the adoption rates are close to 80% where the gap between marginal private and social benefits is much smaller. A broad brush cross-compliance instrument would be a blunt instrument in reconciling these differences in adoption rates.

Given the approximate abatement costs from the compliance program are 2-4% of total costs and that the benefits are in the form of *AgriInvest* government contributions are a maximum 1% of allowable net sales, participation in the cross compliance options (1) and (3) involving the uptake of *BMPs* will be limited. Participation in option (2) is expected to be significant given the additional costs are relatively small for many producers. This result is consistent with earlier analysis of the feasibility of cross compliance, such as Ziegler (1995), which showed that government augmented savings based programs such *AgriInvest* and its precursor *NISA* did not provide enough income support to motivate farmers to participate in cross-compliance. Government contributions under *NISA* ultimately were 3% of allowable net sales while an earlier version of *AgriInvest* limited government contributions to 1.5% of allowable net sales.

While compliance costs are relatively constant for a given *BMP* and given farmer, participation could potentially be increased by offering a more lucrative carrot. One option would be to replace *AgriInvest* with *AgriStability*. However, participation in *AgriStability* is limited largely to crop and red meat farmers, and enrolment amongst this group of farmers is steadily decreasing (Uzea *et al.* 2015). In addition, Rude and Ker (2013) found that *AgriStability* induced modest increases in crop production and encouraged the use of purchased inputs, such as pesticides and fertilizers. Thus, its inclusion in a cross compliance program will likely contribute to deteriorating nutrient balances. The trigger mechanism for *AgriStability* was reformed in *Growing Forward II* increasing the necessary decline in production margins (roughly equal to net income) to trigger a government payment from 15% of a base reference margin to 30% of that margin. This reform should make *AgriStability* more production neutral, but the declining participation rates in this program alone suggest the carrot is not big enough to induce significant cross compliance participation.

Environmental Performance

The ecological effectiveness of cross compliance depends on the combination of program participation and the relationship between the practice induced and the environmental target. Option 2 is projected to have the highest participation rate but its environmental performance will be limited. The completion of the *NMP* identifies means by which nutrient loading can be reduced by the individual farmer but there is no requirement that the suggested practices be adopted. In addition, the option is universally available and not targeted to farmers located closest to affected waterbodies.

The participation rate is reduced significantly if a *BMP* identified in the *NMP* is forced to be adopted. While the uptake could be increased if a cost-share was incorporated to stimulate

BMP adoption, the environmental performance also depends if the regulation is followed by the farmer. While some of the suggested management practices to reduce nutrient loading are easily observable (i.e. use of cover crops), many other practices, such as timing and rate of application, are difficult to observe. In contrast, the *BMPs* for wildlife habitat conservation are directly related to the use of the identified ecologically-sensitive lands. The *BMPs* are objective outcomes that are visible and directly related to desired targets such as wildlife counts.

Compliance Costs

Assuming the private net benefits of cross compliance are sufficient to induce the adoption of the *BMPs* under the alternative options and the ecological goals are addressed, total net social benefits from cross compliance could be negative depending on the administrative costs. Both elements of a cross compliance program are currently being delivered. The *BRM* programs are generally delivered through provincial ministries of agriculture while many jurisdictions have either nutrient management plan requirements or voluntary cost share *BMP* programs. The latter are often delivered through a combination of government and producer organizations. Thus, the additional administrative costs are unlikely to significantly alter total compliance costs and consequently, the net social benefits of cross compliance.

CONCLUSIONS

A clause in *Growing Forward II* opens the door for any province to implement cross-compliance as an approach to agri-environmental regulation. The type of income support available as the carrot is currently limited to *AgriInvest*. However, the approximate benefits of 1% of net sales under *AgriInvest* probably will not provide enough incentive for farmers to participate in cross-compliance given compliance costs of at least 2% of sales. In addition to limited voluntary participation, the environmental benefits are likely to be constrained given the stochastic and

indirect linkage between the *BMPs* and the nutrient loadings in water and/or air and universality of the program rather than targeting efforts to ecologically sensitive regions. Earlier studies also concluded that cross-compliance for Canadian agriculture would result in negative net benefits (e.g. Ziegler, 1995). From our understanding it was also the basis of the hesitancy with AAFC, in the mid-1990's, to pursue cross-compliance as an environmental policy.

Cross compliance participation could potentially be increased if the suite of income support programs was broadened to include *AgriStability* and maybe crop insurance. One definite requirement for a feasible cross-compliance framework is that the non-environmental program (the carrot) involve an income transfer and not a policy to correct a non-environmental market failure. *AgriInvest* and *AgriStability*, despite assertions that they are stabilization instruments, can for all intents and purposes be considered instruments to redistribute income to agriculture. Crop insurance, even though it has a large subsidy component addresses a market failure – a missing contingency market to share production risk. Multiple peril crop insurance is not provided by the private sector (or at least completely supported by governments) in any developed country. Therefore, including crop insurance as the non-environmental program benefit, may have unintended consequences both in terms of correcting for environmental externalities and market failures with respect to insurance.

Table 1. Assessment of Cross Compliance Options for Canadian Agriculture

AgriInvest with	Assessment Criteria		
	Participation	Environmental Goal	Administrative Costs
Wildlife Habitat Preservation	Limited to areas with ecologically sensitive areas	Medium- in targeted areas	Low- current programs in place and practices easily observed
Nutrient Management Plan (<i>NMP</i>)	High- cost of compliance low for many currently with a <i>NMP</i>	Low- many farmers but additionality low and awareness high	Low- <i>NMP</i> a current requirement for many
<i>NMP</i> with suggested beneficial management practice (<i>BMP</i>)	Low- abatement costs increase with requirement of <i>BMP</i>	Low- limited due to participation and non-targeted efforts	Medium- <i>BMP</i> adoption programs in place in some localities

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Appendix A. Cross Compliance Inventory

This appendix contains details on the cross-compliance policy requirements for the EU, and the US.

European Union:

Common Agricultural Policy (CAP)

Participants

Cross-compliance is applied to any beneficiary receiving:

- direct payments;
- payments for "Restructuring and conversion of vineyards" and "Green harvesting" in the wine sector;
- annual premia for afforestation and creation of woodland, establishment of agroforestry systems, agri-environment-climate measures, organic farming, Natura 2000 and Water Framework Directive payments, payments to areas facing natural or other specific constraints, animal welfare payments and Forest-environmental and climate services and forest conservation in the rural development programmes (European Commission 2015).

Requirements

Cross-compliance in the EU includes two major requirement categories: statutory management requirements (SMRs) and good agricultural and good agricultural and environmental conditions (GAECs). SMRs refer to requirements that are already defined in existing EU regulations and directives related to the environment, food safety, animal and plant health, and animal welfare (European Commission 2015). GAECs are requirements specific to keeping land in good agricultural and environmental condition with standards relating to soil, habitats, and water

management (European Commission 2015). Member states and regions can adapt GAEC practices as they see fit, so long as the standards are in compliance with the outline provided in the legislation. The specific SMR and GAEC cross-compliance requirements are provided below in Tables A1 (SMRs) and A2 (GAECs).

Table A1. Statutory Management Requirements (SMRs) Necessary for EU Cross-Compliance

SMRs	Source	Requirements
<i>Environment, climate change, good agricultural condition of land</i>		
<i>Water</i>		
SMR 1	Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources. Articles 4 and 5.	<p>Article 4</p> <p>1. With the aim of providing for all waters a general level of protection against pollution, Member States shall, within a two-year period following the notification of this Directive:</p> <p>(a) establish a code or codes of good agricultural practice, to be implemented by farmers on a voluntary basis, which should contain provisions covering at least the items mentioned in Annex II A;</p> <p>(b) set up where necessary a programme, including the provision of training and information for farmers, promoting the application of the code(s) of good agricultural practice.</p> <p>2. Member States shall submit to the Commission details of their codes of good agricultural practice and the Commission shall include information on these codes in the report referred to in Article 11. In the light of the information received, the Commission may, if it considers it necessary, make appropriate proposals to the Council.</p> <p>Article 5</p> <p>1. Within a two-year period following the initial designation referred to in Article 3 (2) or within one year of each additional designation referred to in Article 3 (4), Member States shall, for the purpose of realizing the objectives specified in Article 1, establish action programmes in respect of designated vulnerable zones.</p> <p>2. An action programme may relate to all vulnerable zones in the territory of a Member State or, where the Member State considers it appropriate, different programmes may be established for different vulnerable zones or parts of zones.</p> <p>3. Action programmes shall take into account:</p> <p>(a) available scientific and technical data, mainly with reference to respective nitrogen contributions originating from agricultural and other sources;</p> <p>(b) environmental conditions in the relevant regions of the Member State concerned.</p> <p>4. Action programmes shall be implemented within four years of their establishment and shall consist of the following mandatory measures:</p> <p>(a) the measures in Annex III;</p> <p>(b) those measures which Member States have prescribed in the code(s) of good agricultural practice established in accordance with Article 4, except those which have been superseded by the measures in Annex III.</p> <p>5. Member States shall moreover take, in the framework of the action programmes, such additional measures or reinforced actions as they consider necessary if, at the outset or in the light of experience gained in implementing the action programmes, it becomes apparent that the measures referred to in paragraph 4 will not be sufficient for achieving the objectives specified in Article 1. In selecting these measures or actions, Member States shall take into account their effectiveness and their cost relative to other possible preventive measures.</p> <p>6. Member States shall draw up and implement suitable monitoring programmes to assess the effectiveness of action programmes established pursuant to this Article.</p> <p>Member States which apply Article 5 throughout their national territory shall monitor the nitrate content of waters (surface waters</p>

and groundwater) at selected measuring points which make it possible to establish the extent of nitrate pollution in the waters from agricultural sources.

7. Member States shall review and if necessary revise their action programmes, including any additional measures taken pursuant to paragraph 5, at least every four years. They shall inform the Commission of any changes to the action programmes.

Biodiversity

SMR 2

Directive
2009/147/EC of
the European
Parliament and of
the Council of 30
November 2009
on the
conservation of
wild birds. Articles
3(1), 3(2)(b), 4(1),
(2) and (4).

Article 3(1&2b)

1. In the light of the requirements referred to in Article 2, Member States shall take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Article 1.

2. The preservation, maintenance and re-establishment of biotopes and habitats shall include primarily the following measures:
(b) upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones;

Article 4(1&2&4)

1. The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

In this connection, account shall be taken of:

(a) species in danger of extinction;

(b) species vulnerable to specific changes in their habitat;

(c) species considered rare because of small populations or restricted local distribution;

(d) other species requiring particular attention for reasons of the specific nature of their habitat.

Trends and variations in population levels shall be taken into account as a background for evaluations.

Member States shall classify in particular the most suitable territories in number and size as special protection areas for the conservation of these species in the geographical sea and land area where this Directive applies.

2. Member States shall take similar measures for regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection in the geographical sea and land area where this Directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance.

4. In respect of the protection areas referred to in paragraphs 1 and 2, Member States shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article. Outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats.

SMR 3	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. Articles 6(1) and (2)	<p>Article 6</p> <p>1. For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites.</p> <p>2. Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive.</p>
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Public health, animal health and plant health

Food safety

SMR 4	Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. Articles 14, 15, 17(1), 18, 19, and 20.	<p>Article 14</p> <p>Food safety requirements</p> <p>1. Food shall not be placed on the market if it is unsafe.</p> <p>2. Food shall be deemed to be unsafe if it is considered to be:</p> <p>(a) injurious to health;</p> <p>(b) unfit for human consumption.</p> <p>3. In determining whether any food is unsafe, regard shall be had:</p> <p>(a) to the normal conditions of use of the food by the consumer and at each stage of production, processing and distribution, and</p> <p>(b) to the information provided to the consumer, including information on the label, or other information generally available to the consumer concerning the avoidance of specific adverse health effects from a particular food or category of foods.</p> <p>4. In determining whether any food is injurious to health, regard shall be had:</p> <p>(a) not only to the probable immediate and/or short-term and/or long-term effects of that food on the health of a person consuming it, but also on subsequent generations;</p> <p>(b) to the probable cumulative toxic effects;</p> <p>(c) to the particular health sensitivities of a specific category of consumers where the food is intended for that category of consumers.</p> <p>5. In determining whether any food is unfit for human consumption, regard shall be had to whether the food is unacceptable for human consumption according to its intended use, for reasons of contamination, whether by extraneous matter or otherwise, or through putrefaction, deterioration or decay.</p> <p>6. Where any food which is unsafe is part of a batch, lot or consignment of food of the same class or description, it shall be presumed that all the food in that batch, lot or consignment is also unsafe, unless following a detailed assessment there is no evidence that the rest of the batch, lot or consignment is unsafe.</p> <p>7. Food that complies with specific Community provisions governing food safety shall be deemed to be safe insofar as the aspects covered by the specific Community provisions are concerned.</p>
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8. Conformity of a food with specific provisions applicable to that food shall not bar the competent authorities from taking appropriate measures to impose restrictions on it being placed on the market or to require its withdrawal from the market where there are reasons to suspect that, despite such conformity, the food is unsafe.

9. Where there are no specific Community provisions, food shall be deemed to be safe when it conforms to the specific provisions of national food law of the Member State in whose territory the food is marketed, such provisions being drawn up and applied without prejudice to the Treaty, in particular Articles 28 and 30 thereof.

Article 15

Feed safety requirements

1. Feed shall not be placed on the market or fed to any food-producing animal if it is unsafe.

2. Feed shall be deemed to be unsafe for its intended use if it is considered to:

- have an adverse effect on human or animal health;

- make the food derived from food-producing animals unsafe for human consumption.

3. Where a feed which has been identified as not satisfying the feed safety requirement is part of a batch, lot or consignment of feed of the same class or description, it shall be presumed that all of the feed in that batch, lot or consignment is so affected, unless following a detailed assessment there is no evidence that the rest of the batch, lot or consignment fails to satisfy the feed safety requirement.

4. Feed that complies with specific Community provisions governing feed safety shall be deemed to be safe insofar as the aspects covered by the specific Community provisions are concerned.

5. Conformity of a feed with specific provisions applicable to that feed shall not bar the competent authorities from taking appropriate measures to impose restrictions on it being placed on the market or to require its withdrawal from the market where there are reasons to suspect that, despite such conformity, the feed is unsafe.

6. Where there are no specific Community provisions, feed shall be deemed to be safe when it conforms to the specific provisions of national law governing feed safety of the Member State in whose territory the feed is in circulation, such provisions being drawn up and applied without prejudice to the Treaty, in particular Articles 28 and 30 thereof.

Article 17

Responsibilities

1. Food and feed business operators at all stages of production, processing and distribution within the businesses under their control shall ensure that foods or feeds satisfy the requirements of food law which are relevant to their activities and shall verify that such requirements are met.

Article 18

Traceability

1. The traceability of food, feed, food-producing animals, and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.

2. Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed.

To this end, such operators shall have in place systems and procedures which allow for this information to be made available to the

competent authorities on demand.

3. Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. This information shall be made available to the competent authorities on demand.

4. Food or feed which is placed on the market or is likely to be placed on the market in the Community shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.

5. Provisions for the purpose of applying the requirements of this Article in respect of specific sectors may be adopted in accordance with the procedure laid down in Article 58(2).

Article 19

Responsibilities for food: food business operators

1. If a food business operator considers or has reason to believe that a food which it has imported, produced, processed, manufactured or distributed is not in compliance with the food safety requirements, it shall immediately initiate procedures to withdraw the food in question from the market where the food has left the immediate control of that initial food business operator and inform the competent authorities thereof. Where the product may have reached the consumer, the operator shall effectively and accurately inform the consumers of the reason for its withdrawal, and if necessary, recall from consumers products already supplied to them when other measures are not sufficient to achieve a high level of health protection.

2. A food business operator responsible for retail or distribution activities which do not affect the packaging, labelling, safety or integrity of the food shall, within the limits of its respective activities, initiate procedures to withdraw from the market products not in compliance with the food-safety requirements and shall participate in contributing to the safety of the food by passing on relevant information necessary to trace a food, cooperating in the action taken by producers, processors, manufacturers and/or the competent authorities.

3. A food business operator shall immediately inform the competent authorities if it considers or has reason to believe that a food which it has placed on the market may be injurious to human health. Operators shall inform the competent authorities of the action taken to prevent risks to the final consumer and shall not prevent or discourage any person from cooperating, in accordance with national law and legal practice, with the competent authorities, where this may prevent, reduce or eliminate a risk arising from a food.

4. Food business operators shall collaborate with the competent authorities on action taken to avoid or reduce risks posed by a food which they supply or have supplied.

Article 20

Responsibilities for feed: feed business operators

1. If a feed business operator considers or has reason to believe that a feed which it has imported, produced, processed, manufactured or distributed does not satisfy the feed safety requirements, it shall immediately initiate procedures to withdraw the feed in question from the market and inform the competent authorities thereof. In these circumstances or, in the case of Article 15(3), where the batch, lot or consignment does not satisfy the feed safety requirement, that feed shall be destroyed, unless the competent authority is satisfied otherwise. The operator shall effectively and accurately inform users of the feed of the reason for its withdrawal, and if necessary, recall from them products already supplied when other measures are not sufficient to achieve a high level of health protection.

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2. A feed business operator responsible for retail or distribution activities which do not affect the packaging, labelling, safety or integrity of the feed shall, within the limits of its respective activities, initiate procedures to withdraw from the market products not in compliance with the feed-safety requirements and shall participate in contributing to the safety of food by passing on relevant information necessary to trace a feed, cooperating in the action taken by producers, processors, manufacturers and/or the competent authorities.
 3. A feed business operator shall immediately inform the competent authorities if it considers or has reason to believe that a feed which it placed on the market may not satisfy the feed safety requirements. It shall inform the competent authorities of the action taken to prevent risk arising from the use of that feed and shall not prevent or discourage any person from cooperating, in accordance with national law and legal practice, with the competent authorities, where this may prevent, reduce or eliminate a risk arising from a feed.
 4. Feed business operators shall collaborate with the competent authorities on action taken in order to avoid risks posed by a feed which they supply or have supplied.
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<p>SMR 5</p>	<p>Council Directive 96/22/EC of 29 April 1996 concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and beta-agonists, and repealing Directives 81/602/EEC, 88/146/EEC and 88/299/EEC. Articles 3(a), (b), (d), (e), 4, 5, and 7.</p>	<p>Article 3 Member States shall prohibit:</p> <ul style="list-style-type: none"> (a) the administering to a farm or aquaculture animal, by any means whatsoever, of substances having a thyrostatic, oestrogenic, androgenic or gestagenic action and of beta-agonists; (b) the holding, except under official control, of animals referred to in (a) on a farm, the placing on the market or slaughter for human consumption of farm animals or of aquaculture animals which contain the substances referred to in (a) or in which the presence of such substances has been established, unless proof can be given that the animals in question have been treated in accordance with Articles 4 or 5; (d) the placing on the market of meat of the animals referred to in (b); (e) the processing of the meat referred to in (d). <p>Article 4 Notwithstanding Articles 2 and 3, Member States may authorize:</p> <ol style="list-style-type: none"> 1. the administering to farm animals, for therapeutic purposes, of oestradiol 17 β, testosterone and progesterone and derivatives which readily yield the parent compound on hydrolysis after absorption at the site of application. Veterinary medicinal products used for therapeutic treatment must comply with the requirements for placing on the market laid down in Directive 81/851/EEC and be administered only by a veterinarian, by injection or for the treatment of ovarian dysfunction in the form of vaginal spirals, but not by implant, to farm animals which have been clearly identified. Treatment of identified animals must be registered by the veterinarian responsible. The latter must record at least the following details in a register, which may be the one provided for in Directive 81/851/EEC: <ul style="list-style-type: none"> - type of treatment, - the type of products authorized, - the date of treatment, - the identity of the animals treated. <p>The register must be made available to the competent authority at its request;</p> 2. the administering for therapeutic purposes of authorized veterinary medicinal products containing: <ol style="list-style-type: none"> (i) allyl trenbolone, administered orally, or beta-agonists to equidae and pets, provided they are used in accordance with the manufacturer's instructions; (ii) beta-agonists, in the form of an injection to induce tocolysis in cows when calving. <p>Such substances must be administered by a veterinarian or, in the case of the veterinary medicinal products referred to in (i), under his direct responsibility; treatment must be registered by the veterinarian responsible, who shall record at least the details referred to in point 1.</p> <p>Farmers shall be prohibited from holding veterinary medicinal products containing beta-agonists which may be used for induction purposes in the treatment of tocolysis.</p> <p>However, without prejudice to the first subparagraph of point 2 (ii), therapeutic treatment of production animals, including breeding animals at the end of their reproductive life, shall be prohibited.</p> <p>Article 5 Notwithstanding Article 3 (a) and without prejudice to Article 2, Member States may authorize the administering to farm animals,</p>
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for the purpose of zootechnical treatment, of veterinary medicinal products having an oestrogenic, androgenic or gestagenic action which are authorized in accordance with Directives 81/851/EEC and 81/852/EEC. Such veterinary medicinal products must be administered by a veterinarian to clearly identified animals; the treatment must be recorded by the veterinarian responsible in accordance with point 1 of Article 4.

However, Member States may allow the synchronization of oestrus and the preparation of donors and recipients for the implantation of embryos to be effected not by the veterinarian direct, but under his responsibility.

With regard to aquaculture animals young fish may be treated for the first three months for the purpose of sex inversion with veterinary medicinal products that have an androgenous action and are authorized in accordance with Directives 81/851/EEC and 81/852/EEC.

In the cases provided for in this Article, the veterinarian shall make out a non-renewable prescription, specifying the treatment in question and the quantity of the product required and shall record the products prescribed.

However, zootechnical treatment of production animals, including during the fattening period for breeding animals at the end of their reproductive life, shall be prohibited.

Article 7

1. For the purpose of trade, Member States may authorize the placing on the market of animals for breeding and breeding animals at the end of their reproductive life which, during the latter period, have undergone a treatment referred to in Articles 4 and 5 and may authorize the affixing of the Community stamp to meat from such animals where the conditions laid down in Articles 4 and 5 and the minimum withdrawal periods laid down in Article 6 (2), under (a) (ii) or (b) respectively or the withdrawal periods provided for in the authorization to place on the market are complied with.

However, trade in high-value horses, and in particular racehorses, competition horses, circus horses or horses intended for stud purposes or for exhibitions, including registered equidae to which veterinary medicinal products containing allyl trenbolone or beta-agonists have been administered for the purposes referred to in Article 4, may take place before the end of the withdrawal period, provided that the conditions governing administration are fulfilled and that the type and date of treatment are entered on the certificate or passport accompanying these animals.

2. Meat or products from animals to which substances having an oestrogenic, androgenic or gestagenic action or beta-agonists have been administered in accordance with the dispensatory provisions of this Directive may not be placed on the market for human consumption unless the animals in question have been treated with veterinary medicinal products complying with the requirements of Article 6 and in so far as the withdrawal period laid down was observed before the animals were slaughtered.

Identification and registration of animals

SMR 6	Council Directive 2008/71/EC of 15 July 2008 on identification and registration of pigs. Articles 3, 4, and 5.	Article 3 1. Member States shall ensure that: (a) the competent authority has an up-to-date list of all the holdings which keep animals covered by this Directive and are situated on its territory, specifying the keepers of the animals; such holdings must remain on that list until three consecutive years have elapsed with no animals on the holding. That list must also include the mark or marks which permit the identification of the holding in accordance with the first subparagraph of Article 5(2) and Article 8; (b) the Commission and the competent authority can have access to all information obtained under this Directive. 2. Member States may be authorised in accordance with the procedure referred to in Article 18 of Directive 90/425/EEC to exclude from the list in paragraph 1(a) of this Article natural persons who keep one single animal which is intended for their own use or
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consumption, or to take account of particular circumstances, provided that this animal is subjected to the controls laid down in this Directive before any movement.

Article 4

1. Member States shall ensure that any keeper contained in the list provided for in Article 3(1)(a) keeps a register stating the number of animals present on the holding.

That register shall include an up-to-date record of movements (numbers of animals concerned by each entering and leaving operation) at least on the basis of aggregate movements, stating as appropriate their origin or destination, and the date of such movements.

The identification mark applied in conformity with Articles 5 and 8 shall be stated in all cases.

In the case of pure-bred and hybrid pigs, which are entered in a herd-book in accordance with Council Directive 88/661/EEC of 19 December 1988 on the zootechnical standards applicable to breeding animals of the porcine species (10), an alternative registration system based on individual identification allowing the animals to be identified may be recognised in accordance with the procedure referred to in Article 18 of Directive 90/425/EEC if it offers guarantees equivalent to a register.

2. Member States shall also ensure that:

(a) any keeper supplies the competent authority, upon request, with all information concerning the origin, identification and, where appropriate, the destination of animals which he has owned, kept, transported, marketed or slaughtered;

(b) any keeper of animals to be moved to or from a market or collection centre provides a document, containing details of the animals in question, to the operator, on the market or in the collection centre, who is a keeper of the animals, on a temporary basis. That operator may use the documents obtained in accordance with the first subparagraph to carry out the obligations laid down in the third subparagraph of paragraph 1;

(c) the registers and information are available on the holding and to the competent authority, upon request, for a minimum period to be determined by the competent authority but which may not be less than three years.

Article 5

1. Member States shall ensure that the following general principles are respected:

(a) identification marks must be applied before animals leave the holding of birth;

(b) no mark may be removed or replaced without the permission of the competent authority.

Where a mark has become illegible or has been lost, a new mark shall be applied in accordance with this Article;

(c) the keeper shall record any new mark in the register referred to in Article 4 in order to establish a link with the previous mark applied to the animal.

2. Animals must be marked as soon as possible, and in any case before they leave the holding, with an eartag or tattoo making it possible to determine the holding from which they came and enabling reference to be made to any accompanying document which must mention such eartag or tattoo and to the list referred to in Article 3(1)(a).

Member States may, by derogation from the second subparagraph of Article 3(1)(c) of Directive 90/425/EEC, apply their national systems for all movements of animals in their territories. Such systems must enable the holding from which they came and the holding on which they were born to be identified. Member States shall notify the Commission of the systems which they intend to introduce for this purpose. In accordance with the procedure referred to in Article 18 of Directive 90/425/EEC, a Member State may be asked to make amendments to its system where it does not fulfil that requirement.

Animals bearing a temporary mark identifying a consignment must be accompanied throughout their movement by a document which enables the origin, ownership, place of departure and destination to be determined.

SMR 7	Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council Regulation (EC) No 820/97. Articles 4 and 7.	<p>Article 4</p> <p>1. All animals on a holding born after 31 December 1997 or intended for intra-Community trade after 1 January 1998 shall be identified by an ear tag approved by the competent authority, applied to each ear. Both ear tags shall bear the same unique identification code, which makes it possible to identify each animal individually together with the holding on which it was born. By way of derogation from the above requirement, animals born before 1 January 1998 which are intended for intra-Community trade after that date may be identified in accordance with Directive 92/102/EEC until 1 September 1998. By way of derogation from the first subparagraph, animals born before 1 January 1998 which are intended for intra-Community trade after that date with a view to immediate slaughter may be identified in accordance with Directive 92/102/EEC until 1 September 1999. Bovine animals intended for cultural and sporting events (with the exception of fairs and exhibitions) may, instead of by an ear tag, be identified by an identification system offering equivalent guarantees and authorised by the Commission.</p> <p>2. The ear tag shall be applied within a period to be determined by the Member State as from the birth of the animal and in any case before the animal leaves the holding on which it was born. The period may not be longer than 30 days up to and including 31 December 1999, and not longer than 20 days thereafter. However, at the request of a Member State and in accordance with the procedure referred to in Article 23(2), the Commission may determine the circumstances in which Member States may extend the maximum period. No animal born after 31 December 1997 may be moved from a holding unless it is identified in accordance with the provisions of this Article.</p> <p>3. Any animal imported from a third country which has passed the checks laid down in Directive 91/496/EEC and which remains within Community territory shall be identified on the holding of destination by an ear tag complying with the requirements of this Article, within a period to be determined by the Member State but not exceeding 20 days following the aforesaid checks, and in any event before leaving the holding. However, it is not necessary to identify the animal if the holding of destination is a slaughterhouse situated in the Member State where such checks are carried out and the animal is slaughtered within 20 days of undergoing the checks. The original identification established by the third country shall be recorded in the computerised database provided for in Article 5 or, if this is not yet fully operational, in the registers provided for in Article 3, together with the identification code allocated to it by the Member State of destination.</p> <p>4. Any animal from another Member State shall retain its original ear tag.</p> <p>5. No ear tag may be removed or replaced without the permission of the competent authority.</p> <p>6. The ear tags shall be allocated to the holding, distributed and applied to the animals in a manner determined by the competent authority.</p>
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7. Not later than 31 December 2001 the European Parliament and the Council, acting on the basis of a report from the Commission accompanied by any proposals and in accordance with the procedure provided for in Article 95 of the Treaty, shall decide on the possibility of introducing electronic identification arrangements in the light of progress achieved in this field.

Article 7

1. With the exception of transporters, each keeper of animals shall:

- keep an up-to-date register,
- once the computerised database is fully operational, report to the competent authority all movements to and from the holding and all births and deaths of animals on the holding, along with the dates of these events, within a period fixed by the Member State of between three and seven days of the event occurring. However, at the request of a Member State and in accordance with the procedure referred to in Article 23(2), the Commission may determine the circumstances in which Member States may extend the maximum period and provide for special rules applicable to movements of bovine animals when put out to summer grazing in different mountain areas.

2. Where applicable and having regard to Article 6, each animal keeper shall complete the passport immediately on arrival and prior to departure of each animal from the holding and ensure that the passport accompanies the animal.

3. Each keeper shall supply the competent authority, upon request, with all information concerning the origin, identification and, where appropriate, destination of animals, which he has owned, kept, transported, marketed or slaughtered.

4. The register shall be in a format approved by the competent authority, kept in manual or computerised form, and be available at all times to the competent authority, upon request, for a minimum period to be determined by the competent authority but which may not be less than three years.

<p>SMR 8</p>	<p>Council Regulation (EC) No 21/2004 of 17 December 2003 establishing a system for the identification and registration of ovine and caprine animals and amending Regulation (EC) No 1782/2003 and Directives 92/102/EEC and 64/432/EEC. Articles 3, 4, and 5.</p>	<p>Article 3</p> <p>1. The system for the identification and registration of animals shall comprise the following elements:</p> <ul style="list-style-type: none"> (a) means of identification to identify each animal; (b) up-to-date registers kept on each holding; (c) movement documents; (d) a central register or a computer database. <p>2. The Commission and the competent authority of the Member State concerned shall have access to all information covered by this Regulation. The Member States and the Commission shall take the measures necessary to ensure access to that information for all parties having an interest, including consumers' organisations recognised by the Member State, provided that the data protection and confidentiality requirements prescribed by national law are complied with.</p> <p>Article 4</p> <p>1. All animals on a holding born after 9 July 2005 shall be identified in accordance with paragraph 2 within a period to be determined by the Member State as from the birth of the animal and in any case before the animal leaves the holding on which it was born. That period shall not be longer than six months.</p> <p>By way of derogation Member States may extend the period, which may not, however, exceed nine months, for animals kept in extensive or free-range farming conditions. Member States concerned shall inform the Commission of the derogation granted. If necessary, implementing rules may be laid down in accordance with the procedure referred to in Article 13(2).</p> <p>2. (a) Animals shall be identified by a first means of identification which complies with the requirements of Section A.1 to A.3 of the</p>
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Annex, and,

(b) by a second means of identification approved by the competent authority and conforming to the technical characteristics listed in Section A.4 of the Annex.

(c) However, until the date referred to in Article 9(3), the second means of identification may be replaced by the system set out in Section A.5 of the Annex, except in the case of animals involved in intra-Community trade.

(d) Member States which introduce the system referred to in (c) shall apply to the Commission to have it approved under the procedure provided for in Article 13(2). For this purpose the Commission shall examine documentation submitted by Member States and shall conduct the audits necessary to evaluate the system. When those audits have been completed the Commission shall, within 90 days of receipt of the request for approval, submit to the Standing Committee on the Food Chain and Animal Health a report together with a draft of appropriate measures.

3. However for animals intended for slaughter before the age of 12 months and intended neither for intra-Community trade nor for export to third countries, the identification method described in Section A.7 of the Annex may be authorised by the competent authority as an alternative to the means of identification mentioned in paragraph 2.

4. Any animal imported from a third country, which has undergone after 9 July 2005 the checks laid down by Directive 91/496/EEC and which remains within the territory of the Community shall be identified, in accordance with paragraph 2, at the holding of destination where livestock farming is carried out within a period, to be determined by the Member State, of no more than 14 days from undergoing those checks and, in any event, before leaving the holding.

The original identification established by the third country shall be recorded in the holding register provided for in Article 5 together with the identification code allocated to it by the Member State of destination.

However, the identification provided for in paragraph 1 is not necessary for an animal intended for slaughter if the animal is transported directly from the veterinary border inspection post to a slaughterhouse situated in the Member State where the checks referred to in the first subparagraph are carried out and the animal is slaughtered within five working days of undergoing those checks.

5. Any animal originating in another Member State shall retain its original identification.

6. No means of identification may be removed or replaced without the permission of the competent authority. Where a means of identification has become illegible or has been lost, a replacement bearing the same code shall be applied as soon as possible in accordance with this Article. In addition to the code and distinct from it, the replacement may bear a mark with the version number of the replacement.

However, the competent authority may, under its control, allow the replacement means of identification to bear a different code, provided that the objective of traceability is not compromised, in particular in the case of animals identified in accordance with paragraph 3.

7. The means of identification shall be allocated to the holding, distributed and applied to the animals in a manner determined by the competent authority.

8. Member States shall communicate to each other and to the Commission the model of the means and the method of identification used in their territory.

9. Until the date referred to in Article 9(3), Member States which have introduced electronic identification on a voluntary basis in accordance with the provisions of Section A.4 and A.6 of the Annex shall ensure that the individual electronic identification number and the characteristics of the means used are mentioned in the relevant certificate pursuant to Directive 91/68/EEC accompanying animals involved in intra-Community trade.

Article 5

1. Each keeper of animals, with the exception of the transporter, shall keep an up-to-date register containing at least the information listed in Section B of the Annex.
2. Member States may require keepers to enter further information in the register referred to in paragraph 1, in addition to that listed in Section B of the Annex.
3. The register shall be in a format approved by the competent authority, kept in manual or computerised form, and be available at all times on the holding and to the competent authority, upon request, for a minimum period to be determined by the competent authority but which may not be less than three years.
4. By way of derogation from paragraph 1, the register of information required by Section B of the Annex shall be optional in any Member State where a centralised computer database which already contains this information is operational.
5. Each keeper shall supply the competent authority, upon request, with all information concerning the origin, identification and, where appropriate, the destination of animals which the keeper has owned, kept, transported, marketed or slaughtered in the last three years.
6. Member States shall communicate to each other and to the Commission the model of the holding register used in their territory, and, where applicable the derogation granted from the provisions of paragraph 1.

Animal diseases

SMR 9

Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies. Articles 7, 11, 12, 13, and 15.

Article 7

Prohibitions concerning animal feeding

1. The feeding to ruminants of protein derived from mammals is prohibited.
2. Furthermore, the prohibition referred to in paragraph 1 shall be extended to animals and products of animal origin in accordance with point 1 of Annex IV.
3. Paragraphs 1 and 2 shall apply without prejudice to the provisions set out in point 2 of Annex IV.
4. Member States, or regions thereof, in category 5 shall not be permitted to export or store feed intended for farmed animals which contains protein derived from mammals or feed intended for mammals, except for dogs and cats, which contains processed protein derived from mammals.
Third countries, or regions thereof, in category 5 shall not be permitted to export to the Community feed intended for livestock which contains protein derived from mammals or feed intended for mammals, except for dogs and cats, which contains processed protein derived from mammals.
5. Detailed rules for the implementation of this Article, in particular rules on the prevention of cross-contamination and on the methods of sampling and analysis required to check compliance with this Article, shall be adopted in accordance with the procedure referred to in Article 24(2).

Article 11

Notification

Without prejudice to Directive 82/894/EEC(12), the Member States shall ensure that any animal suspected of being infected by a TSE is notified immediately to the competent authorities.
Member States shall regularly inform each other and the Commission of the cases of TSE notified.

The competent authority shall without delay take the measures laid down in Article 12 of this Regulation, together with any other necessary measures.

Article 12

Measures with respect to suspect animals

1. Any animal suspected of being infected by a TSE shall be placed under an official movement restriction until the results of a clinical and epidemiological examination carried out by the competent authority are known, or killed for laboratory examination under official control.

If BSE is suspected in a bovine animal at a holding in a Member State, all other bovine animals from that holding shall be placed under an official movement restriction until the results of the examination are available.

If BSE is suspected in an ovine or caprine animal at a holding in a Member State on the basis of objective evidence such as the results of tests capable of differentiating in a practical way between the various TSEs, all other ovine and caprine animals from that holding shall be placed under an official movement restriction until the results of the examination are available.

If there is evidence that the holding where the animal was present when BSE was suspected is not likely to be the holding where the animal could have been exposed to BSE, the competent authority may decide that only the animal suspected of being infected shall be placed under an official movement restriction. If considered necessary, the competent authority may also decide that other holdings or only the holding of exposure shall be placed under official control depending on the epidemiological information available.

Under the procedure referred to in Article 24(2) and by way of derogation from the requirements of the second, third and fourth subparagraphs of this paragraph, a Member State may be exempted from the application of official restrictions on the movement of animals if it applies measures offering equivalent safeguards.

2. Where the competent authority decides that the possibility of infection with a TSE cannot be ruled out, the animal shall be killed, if it is still alive; its brain and all other tissues as the competent authority may determine shall be removed and sent to an officially approved laboratory, the national reference laboratory provided for in Article 19(1) or the Community reference laboratory provided for in Article 19(2), for examination in accordance with the testing methods laid down in Article 20.

3. All parts of the body of the suspect animal including the hide shall be retained under official control until a negative diagnosis has been made or shall be destroyed in accordance with Annex V, point 3 or 4.

4. Rules for the implementation of this Article shall be adopted in accordance with the procedure referred to in Article 24(2).

Article 13

Measures following confirmation of the presence of a TSE

1. When the presence of a TSE has been officially confirmed, the following measures shall be applied as soon as possible:

(a) all parts of the body of the animal shall be completely destroyed in accordance with Annex V apart from material retained for records in accordance with Annex III, Chapter B, III, 2;

(b) an inquiry shall be carried out to identify all animals at risk in accordance with Annex VII, point 1;

(c) all animals and products of animal origin referred to in Annex VII, point 2, that have been identified as being at risk by the inquiry referred to in (b), shall be killed and completely destroyed in accordance with Annex V, points 3 and 4.

By way of derogation from this paragraph, Member States may apply other measures offering an equivalent level of protection, if those measures have been approved in accordance with the procedure referred to in Article 24(2).

2. Pending the implementation of the measures referred to in paragraph 1(b) and (c), the holding on which the animal was present when the presence of a TSE was confirmed shall be placed under official control and all movement of animals susceptible to TSEs and products of animal origin derived from them from or to the holding shall be subject to authorisation by the competent authority, with a view to ensuring immediate tracing and identification of the animals and products of animal origin concerned. If there is evidence that the holding where the affected animal was present when the TSE was confirmed is not likely to be the holding where the animal was exposed to the TSE, the competent authority may decide that both holdings or only the holding of exposure shall be placed under official control.
3. Member States which have implemented a substitute scheme offering equivalent safeguards provided for in the fifth subparagraph of Article 12(1) may, by way of derogation from the requirements of paragraph 1(b) and (c), be exempted in accordance with the procedure referred to in Article 24(2) from the requirement to apply official restrictions on the movement of animals and from the requirement to kill and destroy animals.
4. Owners shall be compensated without delay for the loss of the animals that have been killed or products of animal origin destroyed in accordance with Article 12(2) and paragraph 1(a) and (c) of this Article.
5. Without prejudice to Directive 82/894/EEC, the confirmed presence of any TSE other than BSE shall be notified to the Commission on an annual basis.
6. Rules for the implementation of this Article shall be adopted in accordance with the procedure referred to in Article 24(2).

Article 15

Live animals, their semen, embryos and ova

1. Placing on the market or, if need be, export of bovine, ovine or caprine animals and their semen, embryos and ova shall be subject to the conditions laid down in Annex VIII, or, in the case of imports, to the conditions laid down in Annex IX. The live animals and their embryos and ova shall be accompanied by the appropriate animal health certificates as required by Community legislation, in accordance with Article 17 or, in the case of imports, Article 18.
2. The placing on the market of first generation progeny, semen, embryos and ova of TSE suspect or confirmed animals shall be subject to the conditions laid down in Annex VIII, Chapter B.
3. Rules for the implementation of this Article shall be adopted in accordance with the procedure referred to in Article 24(2).

SMR 10	Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. Article 55, first and second sentence.	Article 55 Use of plant protection products Plant protection products shall be used properly. Proper use shall include the application of the principles of good plant protection practice and compliance with the conditions established in accordance with Article 31 and specified on the labelling.
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Animal welfare

Animal welfare

SMR 11	Council Directive 2008/119/EC of 18 December 2008 laying down minimum standards for the protection of calves. Articles 3 and 4.	<p>Article 3</p> <p>1. From 1 January 1998, the following provisions shall apply on all newly built or rebuilt holdings and on all those brought into use after that date:</p> <p>(a) no calf shall be confined in an individual pen after the age of eight weeks, unless a veterinarian certifies that its health or behaviour requires it to be isolated in order to receive treatment. The width of any individual pen for a calf shall be at least equal to the height of the calf at the withers, measured in the standing position, and the length shall be at least equal to the body length of the calf, measured from the tip of the nose to the caudal edge of the tuber ischii (pin bone), multiplied by 1,1.</p> <p>Individual pens for calves (except those for isolating sick animals) must not have solid walls, but perforated walls which allow the calves to have direct visual and tactile contact;</p> <p>(b) for calves kept in groups, the unobstructed space allowance available to each calf shall be at least equal to 1,5 m² for each calf of a live weight of less than 150 kilograms, at least equal to 1,7 m² for each calf of a live weight of 150 kilograms or more but less than 220 kilograms, and at least equal to 1,8 m² for each calf of a live weight of 220 kilograms or more.</p> <p>However, the provisions of the first subparagraph shall not apply to:</p> <p>(a) holdings with fewer than six calves;</p> <p>(b) calves kept with their mothers for suckling.</p> <p>2. From 31 December 2006, the provisions provided for in paragraph 1 shall apply to all holdings.</p> <p>Article 4</p>
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Member States shall ensure that the conditions for rearing calves comply with the general provisions laid down in Annex I.

SMR 12	Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the protection of pigs. Articles 3 and 4.	<p>Article 3</p> <p>1. Member States shall ensure that all holdings comply with the following requirements:</p> <p>(a) the unobstructed floor area available to each weaner or rearing pig kept in a group, excluding gilts after service and sows, must be at least:</p> <p>Live weight (kg):[m2]</p> <p>Not more than 10:[0,15]</p> <p>More than 10 but not more than 20:[0,20]</p> <p>More than 20 but not more than 30:[0,30]</p> <p>More than 30 but not more than 50:[0,40]</p> <p>More than 50 but not more than 85:[0,55]</p> <p>More than 85 but not more than 110:[0,65]</p> <p>More than 110:[1,00]</p> <p>(b) the total unobstructed floor area available to each gilt after service and to each sow when gilts and/or sows are kept in groups must be at least 1,64 m² and 2,25 m² respectively. When these animals are kept in groups of fewer than six individuals the unobstructed floor area must be increased by 10 %. When these animals are kept in groups of 40 or more individuals the unobstructed floor area may be decreased by 10 %.</p> <p>2. Member States shall ensure that flooring surfaces comply with the following requirements:</p> <p>(a) for gilts after service and pregnant sows: a part of the area required in paragraph 1(b), equal to at least 0,95 m² per gilt and at least 1,3 m² per sow, must be of continuous solid floor of which a maximum of 15 % is reserved for drainage openings;</p> <p>(b) when concrete slatted floors are used for pigs kept in groups:</p> <p>(i) the maximum width of the openings must be:</p> <ul style="list-style-type: none">— 11 mm for piglets,— 14 mm for weaners,— 18 mm for rearing pigs,— 20 mm for gilts after service and sows; <p>(ii) the minimum slat width must be:</p> <ul style="list-style-type: none">— 50 mm for piglets and weaners, and— 80 mm for rearing pigs, gilts after service and sows. <p>3. Member States shall ensure that the construction of or conversion to installations in which sows and gilts are tethered is prohibited. From 1 January 2006 the use of tethers for sows and gilts shall be prohibited.</p> <p>4. Member States shall ensure that sows and gilts are kept in groups during a period starting from four weeks after the service to one week before the expected time of farrowing. The pen where the group is kept must have sides greater than 2,8 m in length. When fewer than six individuals are kept in a group the pen where the group is kept must have sides greater than 2,4 m in length. By way of derogation from the first subparagraph, sows and gilts raised on holdings with fewer than 10 sows may be kept individually during the period mentioned in that subparagraph, provided that they can turn around easily in their boxes.</p> <p>5. Member States shall ensure that, without prejudice to the requirements laid down in Annex I, sows and gilts have permanent access to manipulable material at least complying with the relevant requirements of that Annex.</p>
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6. Member States shall ensure that sows and gilts kept in groups are fed using a system which ensures that each individual can obtain sufficient food even when competitors for the food are present.
7. Member States shall ensure that all dry pregnant sows and gilts, in order to satisfy their hunger and given the need to chew, are given a sufficient quantity of bulky or high-fibre food as well as high-energy food.
8. Member States shall ensure that pigs that have to be kept in groups, that are particularly aggressive, that have been attacked by other pigs or that are sick or injured may temporarily be kept in individual pens. In this case the individual pen used shall allow the animal to turn around easily if this is not in contradiction with specific veterinary advice.
9. The provisions laid down in paragraphs 1(b), 2, 4, 5 and the last sentence of paragraph 8 shall apply to all holdings newly built or rebuilt or brought into use for the first time after 1 January 2003. From 1 January 2013 those provisions shall apply to all holdings. The provisions laid down in the first subparagraph of paragraph 4 shall not apply to holdings with fewer than 10 sows.

Article 4

Member States shall ensure that the conditions for rearing pigs comply with the general provisions laid down in Annex I.

SMR 13 Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes. Article 4.

Article 4

Members States shall ensure that the conditions under which animals (other than fish, reptiles or amphibians) are bred or kept, having regard to their species and to their degree of development, adaptation and domestication, and to their physiological and ethological needs in accordance with established experience and scientific knowledge, comply with the provisions set out in the Annex.

Table A2. Good Agricultural and Environmental Conditions (GAECs) Necessary for EU Cross Compliance	
GAECs	Requirements
<i>Water</i>	
GAEC 1	Establishment of buffer strips along water courses.
GAEC 2	Where use of water for irrigation is subject to authorisation, compliance with authorisation procedures.
GAEC 3	Protection of ground water against pollution: prohibition of direct discharge into groundwater and measures to prevent indirect pollution of groundwater through discharge on the ground and percolation through the soil of dangerous substances, as listed in the Annex to Directive 80/68/EEC in its version in force on the last day of its validity, as far as it relates to agricultural activity.
<i>Soil and carbon stock</i>	
GAEC 4	Minimum soil cover.
GAEC 5	Minimum land management reflecting site specific conditions to limit erosion.
GAEC 6	Maintenance of soil organic matter level through appropriate practices including ban on burning arable stubble, except for plant health reasons.

Source: European Parliament 2013.

Policy Controls

Member states are required to ensure a minimum level of “on-the-spot checks” required to effectively enforce the policy and verify that participants are in compliance (European Parliament 2013). When non-compliance is found to be due to negligence, the reduction of direct payments must be less than, or equal to, 5%. When non-compliance is found to be a reoccurrence, the reduction of direct payments must be less than, or equal to, 15%. When non-compliance is found to be intentional, the reduction of direct payments will be at least 20%, and may result in total exclusion from aid programs (European Parliament 2013).

United States:

Participants

United States' cross-compliance policy, referred to as "conservation compliance", applies to any land that is considered highly erodible or land containing a wetland that is owned or farmed by participants of United States Department of Agriculture (USDA) programs. This includes most individuals or entities participating in programs administered by the Farm Service Agency (FSA), the Natural Resources Conservation Service (NRCS), and the Risk Management Agency (RMA) (NRCS 2015).

Requirements

The conservation compliance requirements in the US are specific to highly erodible land conservation (HELCS) and wetland conservation (WC) standards, with the aim of protecting both erosion-prone lands and wetlands (NRCS 2015a).

Compliance with the HELCS and WC provisions involves the completion of form AD-1026 certifying that producers will not:

- Plant or produce an agricultural commodity on highly erodible land without following an NRCS approved conservation plan or system;
- Plant or produce an agricultural commodity on a converted wetland; or
- Convert a wetland which makes the production of an agricultural commodity possible (NRCS 2015a).

Additionally, activities that may impact a producer's HELCS or WC compliance must be disclosed to the FSA.

Optional management practices for HELCS compliance are determined on a case-by-case basis through an NRCS approved plan. For WC compliance, the NRCS encourages a number of management options provided in Table A3 below.

Table A3. US Wetland Conservation Compliance Options

Option	Notes
Leave the wet areas intact and unaltered.	Continue to conduct farming activities around the wetland area, or farm the area if dry conditions exist but do not make any land manipulations, such as draining, filling low spots or clearing woody vegetation, without consulting with NRCS on its potential impact to wetlands.
Enroll in a USDA voluntary program that provides resources to restore and protect wetlands.	Such programs include the Conservation Reserve Program (CRP) administered by the FSA, the Agriculture Conservation Easement Program-Wetland Reserve Easement (ACEP-WRE) administered by the NRCS, and the Environmental Quality Incentives Program (EQIP) administered by the NRCS.
Enroll in a wetland mitigation bank.	If the wetland area is partially drained or altered it could be eligible for enrollment in a wetland mitigation bank. Mitigation banks are comprised of restored wetlands that are protected by a conservation easement. The wetland credits generated can then be sold to individuals and entities interested in mitigating wetland alterations at another location.
Alter your wetland acreage.	<p>If you wish to alter your wetland acreage, discuss the following options with NRCS:</p> <ul style="list-style-type: none"> • Mitigate any wetland losses by compensating for the lost wetland functions and values through the restoration, enhancement or creation of a new wetland that is within the same watershed. The compensation cannot be at the cost of the Federal Government. Mitigation sites may be created, restored or maintained on your land, another person’s land, or land held by a mitigation bank. • Where available, purchase wetland credits through a wetland mitigation bank to compensate for the expected adverse impacts of converting a wetland while at the same time maintaining eligibility for USDA programs. • Request a minimal effect determination. Producers who are planning a wetland manipulation can request a minimal effect determination from NRCS. If NRCS determines the planned activity has minimal or insignificant effect on the wetland, the conversion activity would be allowed without further need for mitigation. Minimal effect determinations vary by State and often are limited to very small acreages.
Drain the wetland, so long as the area is not for production of an agricultural commodity.	If you plan to drain wetlands in areas for production of a crop that is not an agricultural commodity (i.e., a crop which does not involve annual tilling of the soil and planting such as an apple orchard or grape vineyard) the USDA wetland conservation provision do not apply. The wetland may be drained for those purposes without affecting eligibility status for USDA programs. However, wetland drainage activities may be subject to provisions under the Clean Water Act. Producers should contact their local Army Corps of Engineers office regarding the possible need for a Section 404 Clean Water Act Permit prior to undertaking any draining activity.

Source: NRCS 2015b.

Policy Controls

The USDA enforces conservation compliance standards each year by conducting random and non-random checks on 5% of the land subject to compliance (OECD 2010). Non-compliance with HELC and WC requirements can disqualify producers from crop insurance, FSA, NRCS, and RMA programs. Participants who violate the HELC and WC standards, but who are found to have acted in good faith without intent to violate may request to regain eligibility for the violation period to the FSA. If approved, the producer must take corrective action within a defined period of time.