



# Involving Agriculture in Water Quality Trading Markets

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#### Summary

Based on listening sessions with agricultural producers, the following steps will help ensure their participation in an emerging market: 1) Engage agriculture early in the process: Fully engage the agriculture industry in the creation and operation of these markets; 2) Design a strong, credible and defensible market: The market must produce real credits with a genuine value. There must be an agreed upon way to measure outcomes and the trades must be credible to all stakeholders. The market should help point and nonpoint sources work together to improve water quality more rapidly and not as just a way for regulated entities to avoid dealing with pollutants. The market also must be consistent over time so farmers are comfortable signing up for contracts and can rely on payments being made; 3) Provide transparency: The market operation should be as transparent as possible and the process used to generate and sell credits must be clear to all; 4) Use trusted science: Base the market's measures, practices and policies on trusted science from credible sources; 5) **Provide a fair payment:** Agricultural producers must receive a fair and realistic price for the services rendered and payment amounts must be substantial enough to justify participation; 6) Maintain trust: The parties engaged in trading must trust one another. For producers, this means the market should provide reasonable assurance that any information revealed about their participation does not expose them to potential enforcement or increased regulatory action; 7) Offer flexibility: The system must be sufficiently flexible to accommodate new crops, improved conservation practices, new market conditions, or other altered circumstances in agriculture. When unforeseen circumstances arise (like extreme weather events), producers need to be able to terminate contract obligations without undue consequences; 8) Use an independent clearinghouse or registry: The market should operate through a clearinghouse run by a trusted third party that can provide participants with information about credit values and practices; and 9) Consider early outreach and inclusion since this can lead to a more robust market: Educate farmers, environmentalists and the public as to the benefits and operations of these markets.

#### Concerns and Suggestions from Producers about Water Quality Trading (WQT) Markets

The following concerns and suggestions are taken from a series of listening sessions with producers and their service providers primarily convened by American Farmland Trust, between 2008 to 2011, in Iowa, Minnesota, Ohio, Kentucky, Indiana, Oregon and Washington (see References).

#### Understand BMP use to help select BMPs for credit generation

Credits must be clearly defined and ecologically and economically defensible. Farmers generate these credits by using agreed-upon BMPs. The effectiveness of the BMP depends on site-specific conditions, implementation and how well it is maintained. Markets typically address this uncertainty about performance by: 1) Conducting research on performance of practices under different conditions; 2) Addressing the liability issue within the market structure (e.g., establishing a reserve pool of credits that can be used by regulated point sources when an offset project fails to produce the

expected number of credits); and 3) Establishing an uncertainty ratio (requiring more than one unit of NPS discharge reduction to offset one unit of PS discharge).

Enlisting farmers to help decide which BMPs to use may increase the chances that farmers will sign up and that the pre-approved BMPs will work for the type of farming in the watershed. Understanding which BMPs are considered "conventional" and which are considered "cutting edge" can help programs focus on BMPs that farmers are receptive to implementing and better understand the degree of technical assistance that might be needed. It is also important to keep in mind that practices that take corn acres out of production (like buffers) can reduce subsidy payments for that farmer since the corn base is used to calculate certain farm payments. Should the BMP income from WQT fail, the loss of farm payments until the corn base is re-established is a notable risk.

In the Ohio River Basin (ORB), farmers identified economics as the driving force for producers and this determines which practices are considered "conventional." While 80 percent of the grain producers use filter strips, only 20 percent of the livestock producers use them because of economic considerations. The farmers not only identified likely BMPs, they also provided additional information about costs, timing and the importance of flexible standards:

- <u>Grass waterways</u>: USDA NRCS specifies a seeding date in September for grass waterways. WQT programs could extend the planting window for grass waterways while requiring producers to follow NRCS specifications. Also, grass waterways do not qualify under Conservation Reserve Program (CRP) and may not qualify under Environmental Quality Incentives Program (EQIP) so they may be good for WQT.
- <u>Cover crops</u>: Cover crops can save producers money without reducing production yields. In the ORB, they should be planted before the first of October but most are not planted until the middle or end of October. This means little growth through the winter. WQT could offer an incentive to plant shorter season crops, allowing the producer to harvest earlier and have enough time to get cover crops in. For the producer, this may mean reduced yields (e.g., to harvest the second week of September, producers need to plant 107 day corn instead of 112 day corn with higher yields). WQT could help cover this yield loss. WQT could also offer technical assistance since the use of cover crops is more of an art then a science at the present.
- <u>Retention of CRP land</u>: Some producers might prefer to keep land in the CRP but may not want to follow NRCS re-seeding instructions after 10 years. This might be an opportunity to gain some credits.
- <u>GPS guidance systems</u>: Global Positioning Systems (GPS) can help precisely target fertilizers, saving costs and reducing the potential loss of nutrients. This can also reduce nitrous oxide emissions (a very potent greenhouse gas). It can cost \$10,000 to \$15,000 to subscribe on an annual basis and larger farmers are able to more rapidly recoup those costs because they farm more acres [Note: AFT is leading a USDA NRCS Conservation Innovation Grant (2012-1014) to develop WQT crediting protocols for Precision Agriculture variable rate technology and GPS guidance systems].

 <u>Hay-in buffers</u>: There is a continuing demand for feed and when producers use EQIP funding, they cannot cut hay before September 15 and must use an alfalfa-hay mix. The CRP program also invests in grass buffers (40 to 60 feet wide next to ditches) and also restricts haying. Participants could see some merit in installing strips that could be routinely cut for hay with both the credit payments and hay sales supporting the practice. Grass buffer strips need routine maintenance and may need to be reseeded.

#### Decide how to address the costs of BMP and timing of payments

The costs of installing a BMP may factor into a producer's decision. Many structural practices have high upfront costs and programs may have to cover most of these costs in the first payment rather than providing equalized annual payments. Annual practices, like cover crops, may have lower costs. The Miami Conservancy offered an annual payment for putting in cover crops after they verified a cover crop was growing at the end of the year. The SWCD held the lump sum payment for the practice and used the interest generated from the lump fund to cover inspection fees. Most of the producers we talked to preferred receiving the largest payments up front and smaller payments late. One participant suggested tying payments for credits to crop yields with higher payments in low yield years. However, contract flexibility seemed to be more important than the payment to most producers.

## Recruit "late adopters" or producers with critically undertreated acres into the market to achieve larger nutrient reductions

Simplicity and flexibility may be key to getting "late adopters" to enter WQT markets. In addition, late adopters are not likely to adopt practices until there is 'proof' that they work. If practices reduce yield, they may perceive this as reduced profit. In some cases, yield is a bigger factor than net profit, especially if landowner/landlord compensation is based upon yield.

High rates of adoption tend to occur in areas where there is one-on-one competent high-quality technical assistance over a sustained period of time. In addition to funding, programs need to build in technical assistance and have a pool of expertise from which farmers can chose and utilize for free. This is particularly important for the smaller acreage farmers. Along with SWCDs, there may be Certified Crop Advisers who can help deliver the credited BMPs.

#### Practices that take land out of production may not be very popular

There is limited tolerance for WQT markets that take quality land out of agriculture and limited interest by individual landowners in practices that require them to do so. High quality agricultural lands are rapidly fragmenting and disappearing. This undermines the critical mass of agriculture needed to support suppliers, processors and service businesses and it makes it difficult for farmers to find and afford farmable and productive land. Retirement programs may convert productive lands into natural vegetation or wetlands and lose the cash cropping aspects of farming. Programs should encourage farmers to "farm the best and buffer the rest." If the opportunity cost of not adopting the conservation practice is obvious or high enough, i.e., if one can

show it costs producer to NOT have the buffer strip in, then this argument may be persuasive.

**Non-operating landowners may influence the participation of their tenants in WQT** Absentee landowners comprise more than 40 percent of people who own agricultural land in the United States and can have a potentially significant impact on what conservation practices are used on their lands. If rental agreements have restrictions, it might impact participation. One potential model for programs to consider is the 2008 Farm Bill Average Crop Revenue Election (ACRE) program. USDA allocates the risk between the landowner and the leasing farmer over a five-year period to allow leased land to participate. Programs can also consider flexible options. USDA NRCS allows farmers on leased land to move a cover crop to a different field if the farmer drops out of the lease agreement. In the Great Miami Conservancy District WQT program, farmers can sign up leased land but if it drops out, they don't receive any payments. Another option (used by the MN sugar beet cooperative) is to over-sign letters of intent with farmers and only pay for crops that emerge.

WQT contracts may be a positive mechanism to tie operators to landowners for a longer period. They may provide a legal mechanism to allow both parties to enter into longer agreements. We are beginning to see this with five- year EQIP contracts where both parties sign up so the land operator winds up having, in effect, a five-year rental agreement instead of a one-year agreement. The landlord could co-sign the contracts and agree to rent to the farmer over the life of the contract. This might be a real boon to farmers who now struggle with year-to-year leases. Most of time, the landowners don't want more dollars out of their pockets, so as long as the incentive does not cost the landowner, the operator may be interested.

#### Easy-to-use tools can help producers decide if trading will work for them

Producers may need convincing evidence that trading will benefit their bottom line. For example, the World Resources Institute's Nutrient Net allows registered users to evaluate different trading options and assesses the combination of practices that work best for a farm with a particular set of resource characteristics. The USDA NRCS Nutrient Tracking Tool allows farmers to enter geographic, agronomic and land use information to estimate baseline nitrogen loadings and changes in management practices or land use to calculate nitrogen load reductions that are the basis for credits in a trading market. The U.S. EPA Region 5 spreadsheet model estimates pollutant reductions for (a) sediment; (b) sediment-borne phosphorus and nitrogen; (c) feedlot runoff; and (d) commercial fertilizer, pesticides and manure utilization. Farmers do not need to know the exact variables being calculated as long as the models and credit calculators utilize local inputs for the calculations.

#### Adequate technical assistance must be available for landowners

Since producers may have limited time to spend learning about and understanding a WQT market, the market should consider building in a technical assistance component (SWCDs, certified crop advisers, fertilizer dealers, etc.) to assist farmers. The areas of WQT complexity where assistance may be critical include complicated credit estimation

processes, inability to evaluate and select the optimum BMP(s) for a given site to be cost-competitive in the market, and paperwork and reporting requirements for facilitation of credit certification and annual tracking. Producers felt there should be one to two people in each sub-basin (represented by eight digit Hydrologic Unit Codes (HUC) and averaging 700 square miles) to support a fully functioning trading program.

#### Farmers must trust market intermediaries

Some of the challenges associated with agricultural runoff have been addressed in WQT programs by creating an intermediary between credit sellers (nonpoint sources or NPS) and credit buyers (point sources or PS). Such intermediaries (referred to as aggregators, credit banks or brokers) can reduce the transaction costs of finding trading partners, and credit verification and monitoring. Intermediaries may also potentially bear some liability for delivering pollution reductions specified in trading agreements. Agricultural producers generally prefer to deal with an agency or organization that is known and trusted and that they feel will represent their best interests. This is especially true for those entering a new, unfamiliar area like a WQT market. And the aggregator or technical service provider will be more effective if they have experience with, and are supportive of, the agricultural producers that provide the supply of services.

Trusted points of contact include certified crop advisers, SWCD staff or private sector consultants. In general, SWCDs are trusted. Five landowners sit on the SWCD Boards and the SWCD staff answer to those landowners. The board is elected and answerable to landowners. For SWCD participation, we were advised to secure buy-in from District Supervisors and County Commissioners and provide training for the SWCD offices. In any case, if the technical assistance providers for WQT programs are also familiar with farm bill conservation incentive programs, they can dovetail both appropriately to maximize use of available dollars and programs.

The broker/aggregator is probably going to be different than the technical service provider but some certified crop advisers or technical service providers may be able to perform both functions. Aggregators can provide an interface for large buyers by assembling the credits from a multitude of small, individual farm, ranch or forest landowners into a single, larger, market-significant deal. Aggregators can also: 1) help break long-term obligations to buyers into shorter-term contracts with farmers; and 2) spread lump sum payments into long-term obligations if that is preferred. Farmers could work with existing aggregators or they might decide they want to create a new, farmer-led organization to fill this role. A single statewide or regional organization, friendly to agriculture, could serve a role as aggregator, technical service provider, and/or negotiating agent for individual farmers in conservation market transactions.

#### Reasonable monitoring of BMPs is critical

Private landowners generally hesitate to allow regulators or other official or semi-official monitoring and inspection to take place on their land. Market arrangements that minimize this kind of intrusion are likely to be more appealing. On the other hand, if the monitoring is efficiently and professionally done, is clearly tied to the legitimate needs of

the transaction, and if the compensation is sufficient to cover the time and inconvenience, many farmers may simply accept it as a part of doing business. Programs must build trust with the producers by hiring qualified individuals and calling ahead to access the site with the individual. Inspections and inspectors can be tied to other program farm site visits if performed by SWCD staff, NRCS staff, Technical Service Providers or licensed professionals such as professional engineers or Certified Crop Advisers.

Farmers are familiar working with USDA's Farm Service Agency and the SWCDs and are used to being monitored. They want to know the rules of the program and what they should do if they are out of compliance. They do expect someone who knows about farming. Markets can reach out to existing professionals who are already doing monitoring in the area, already on farms and familiar with the farm operations. Someone who is independent should handle the monitoring (e.g., certified crop advisers, fertilizer dealers or independent crop consultants) and report back to the entity administering the contract using a practice verification form. That form can eventually be sent to the buyer. To avoid conflict of interest, the professionals involved in monitoring should not work or live in the same county where the BMP is being implemented. If proximity cannot be avoided, someone who is locally known and trusted can complete the initial compliance check but once a deficiency is spotted, the case is turned over to a technical committee or verifier from another area to resolve.

#### Balance the need for public accountability with privacy concerns

The Clean Water Act requires point sources with NPDES permits to provide the public with complete information on pollutant discharges and how they are addressing them. If NPDES permits include trading with farmers as an option, the public may want to know the location of those BMPs. Some producers will be concerned that the location of their farm and the BMPs they implement to generate credits may be subject to a Freedom of Information Act request and this may reduce participation. However, markets need to make sure that producers are aware that submitted materials may be subject to public requests for disclosure. Producers seem comfortable with information attributed to a county or HUC10 level (watershed or 227 square miles) but caution against publicizing producer names and dollar amounts. Programs need to decide how to balance the public's right to know with the privacy concerns expressed by participants.

#### Design a market structure that works for farmers

As programs start to design the market structure, they need to work with producers to address a number of issues with the complexity of the market, administrative support, contracts and pricing. To participate in a WQT program, the learning curve and access to the market must be low cost, readily available and as simple as possible. Programs should take steps to simplify the information or its delivery so that producers readily understand the program and its commitments. This may include short, simple contracts, easy to understand educational materials and knowledgeable program staff. Even with efforts to simplify the WQT process for producers, challenges and difficulties could remain. Areas of WQT complexity include complicated credit estimation processes, inability to evaluate and select the optimum BMP(s) for a given site to be

cost-competitive in the market, and paperwork and reporting requirements for facilitation of credit certification and annual tracking. To overcome the complexity associated with these procedures, a trained facilitator or service provider can assist the producer. Producers are already wrestling with many complex decisions even prior to considering WQT and would rather have trusted representatives (preferably ones with which they have already developed a relationship) to walk them through these steps.

Markets can support trading through aggregators and brokers and/or allow direct trading by individual farmers. If using the aggregator/broker model, markets need to make sure there are enough aggregators to support demand. To encourage direct trading, a clearinghouse structure may work best. Examples include the World Resources Institute Nutrient Net and Pennvest in Pennsylvania. In addition, the Ohio River Basin WQT pilot project is working with Markit Environmental to establish an on-line registry for the ORB. The Willamette Partnership, acting as Market Administrator for the Ecosystem Credit Accounting System in the Willamette Basin in northwestern Oregon has also partnered with Markit Environmental Registry.

#### Work with the agricultural sector to establish equitable baselines

Deciding which farmers can participate and which credits qualify is a critical decision for WQT markets. Known as agricultural "baselines," these requirements help ensure that any credits entering the market are additional water quality improvements that would not otherwise have taken place. Baselines provide additional reassurance that the WQT program is helping contribute to water quality goals and not in some way undermining them. Baselines should be transparent, easy to verify and result in real and meaningful pollution reductions at a reasonable cost. If baseline requirements are too stringent and expect farmers to implement a lot of conservation practices at their own expense before trading, few farmers will participate. But if they are too lax, they may fail to harness the incentive power that markets potentially have to facilitate environmental improvements.

Most producers feel that WQT should be an incentive for both early adopters of BMPs (who have already significantly reduced nutrient run-off) and late adopters of BMPs (whose farm operations may have high reduction potentials). They struggle with the resulting issues of fairness in trying to balance these two competing objectives. If all farmers are eligible to trade (no baseline), the market may stimulate larger nutrient reductions more quickly but may inadvertently reward farmers who have done little if anything to reduce nutrient runoff on their farms ("late adopters"). On the flip side, farmers who are currently using BMPs ("early adopters") might be priced out of the market because they had already significantly reduced nutrient runoff and additional practices might be prohibitively expensive. One possibility is to have the market agree on a starting date for the program (e.g., three years before the trading plan is signed). A date-based baseline (current practices from a designated point forward) may be the most efficient by providing incentives for poor stewards to adopt BMPs while not pushing good stewards or early adopters entirely out of the market. Another option may be to pay early adopters to provide credits for the reserve pool.

#### Five year contracts may make the most sense

Success for many agricultural businesses can depend upon keeping their land use options flexible so they can adapt to changing needs in a shifting market. Long-term contract and other obligations might reduce that flexibility. Conversely, some conservation activities may require a significant initial investment—either financially or in self-education, preparation and in integrating the changes into an ongoing successful farming operation. In this case, a landowner might want a long -term commitment that will justify this initial investment. However, most producers we have talked to feel a three to five year contract is realistic. Since NPDES permits are valid for five years, five year contracts may make the most sense. One of the potential roles an aggregator might play can be to translate long-term obligations to large buyers into short-term obligations for farmer or rancher suppliers of services.

#### The legal and fiscal liability for the landowner should be clear

Will there be any legal liability for landowners should a practice fail to meet its pollutant reduction potential? Will the financial risk/liability reside with the aggregator? And if an aggregator or company gets fined for not meeting a permit condition, will the fine trickle down to the landowner? Producers offered the possibility of building an extra year into the contract. One of the SWCDs in the Miami Conservancy District WQT program built an extra year into their contracts, offering a six-year contract (the standard MCD contract is for five years). This gives the producer an extra year to get back in line. They also built in an appeals process in case the practice doesn't work because of weather or verification indicates it is not up to specification and gave the farmer time to rectify the situation before dropping out. Programs can also use a mediator that can monitor and enforce the trading contract. In any case, programs should establish a bank or insurance/reserve credit pool. For example, when the program collects 120 credits, they only use 100 credits so they have 20 credits in reserve that they can use to cover problems.

#### Make sure the price and price structuring make sense

Farmers are in business so the price offered for the services they can supply will be a significant consideration. Some will certainly act, at least partly, out of community altruism. But, for purposes of creating a genuine marketplace, it is important to treat the price as the significant motivation for participating. The price offered should be clear and easy to understand so individual farmers can easily assess what they might earn. Markets can be structured in various ways: Farmers might individually negotiate their compensation; They might be offered a simple schedule of services and payments; They might be paid by performance, in a lump sum, or over time; Or, they could simply be asked to apply with a competitive offer.

#### Create synergies between WQT and existing conservation incentive programs

Producers want WQT to work seamlessly with the other conservation incentive programs available to them. Currently, most WQT programs do not allow farmers to sell credits from practices they've installed with the use of state or federal cost-share funds even though USDA permits the sale of federally financed credits. However, if WQT is coordinated with other available programs, allowing state or federal cost share funds to

generate credits increases efficiency because both programs jointly influence farmers' marginal decisions. To avoid the appearance of "double dipping," markets could discount credits that result from federal or state cost-share payments. For example, if the cost-share incentive payment covered half of the cost of installing a grass buffer, the resulting credits would be discounted by 50 percent. In this case, the WQT program is covering the other half of the costs of installing and maintaining the buffer. Another option would to establish a higher baseline but make more farmers eligible to trade by targeting federal and state cost share payments to bring them up to the higher baseline. The state and federal cost share payments could be used to get farmers and ranchers to a level of BMP adoption that would make them eligible for trading programs. Conceivably, a buyer could also help pay for these practices and negotiate pricing for additional practices that could generate credits. Using public funds in this manner seems to have universal support.

However, linking programs might be challenging to execute, requiring a level of targeting that is unusual in incentive programs. The most likely partnership for WQT programs is with the Environmental Quality Incentives Program (EQIP), a very popular program that is habitually over-subscribed. The challenge is that WQT favors projects based on their cost effectiveness whereas EQIP uses limited environmental targeting and has a fuzzier accounting of benefits, weaker focus on cost-effectiveness, lower eligibility requirements and minimal monitoring. On the other hand, EQIP and WQT policy are more or less aligned philosophically and some state ranking procedures now favor targeting, benefit calculation and cost-effectiveness. In these cases, the conservation districts (local EQIP administrators) could recruit farmers for EQIP and later target the same farmers for WQT once they have met the baseline requirements. To make this happen, WQT programs would have to work directly with the state and county NRCS technical advisory committees-and obtain the blessing of NRCS at the federal level. Regardless of what programs decide, it makes intuitive sense for WQT to partner with at least some of these over-subscribed public cost-share incentive programs as a way to recruit farmers whose applications addressed water quality issues but were not funded.

## Outreach and publicity to engage agriculture in developing the market framework is necessary but can be challenging to manage

Transforming farmers to willing credit sellers may require a substantial length of set-up time (up to three years) to develop common language, concepts and trust through a transparent process with legitimate representatives of farmers. Before the market structure is fully functioning, markets may find themselves constantly balancing between having enough information to engage agriculture and insufficient information to retain their attention. For markets that span large areas, the best approach may be to recruit 10 to 20 representatives to speak on behalf of farmers and help make critical decisions. To fully engage producers in developing the market structure, consider: 1) Hold listening sessions with producers to vet concerns and solutions; 2) Use these concerns to help inform and develop the market structure; 3) Try pilot trades to test and refine various elements of the trading structure; and, 4) Vet draft program structures based on the pilot trades.

When doing outreach on WQT, producers warned us against using big terminology because it is too intimidating and would lose farmers' attention. Descriptions should be put into terms that local people can understand. For example, the major utilities have a lot of money. How much are they willing to invest and how much could producers benefit? If projects produce materials to use with producers (e.g., mailers, fact sheets), commodity groups, along with SWCDs, might be willing to distribute the materials. Any outreach should be sensitive to and respect the producers' time and all aspects should be as convenient as possible. They also cautioned about mentioning "regulators.' One farmer commented that the word "trading" gives the impression that middlemen are taking part of the profits. To distribute information about the program, they suggested piggybacking the information with a trusted resource, such as information from co-ops or trade association newsletters. If we distributed information on its own, they said it would probably be ignored.

The most commonly expressed concern by producers is whether or not WQT is a valid environmental program and not just "another way for polluters to pay less to continue to pollute." Producers do not want to be viewed as "enablers." Programs must address this issue head-on and demonstrate that the market structure does not let point sources off the hook. Although the primary goal of WQT markets is to improve water quality at a lower cost, markets can also help encourage early progress towards water quality standards and achieve water quality improvements more quickly. They also provide greater environmental benefits then standard regulatory options and can secure longterm improvements in water quality (through retirement of credits). Finally, WQT markets encourage a more holistic watershed approach and provide incentives to develop new, more accurate and reliable quantification protocols and procedures.

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