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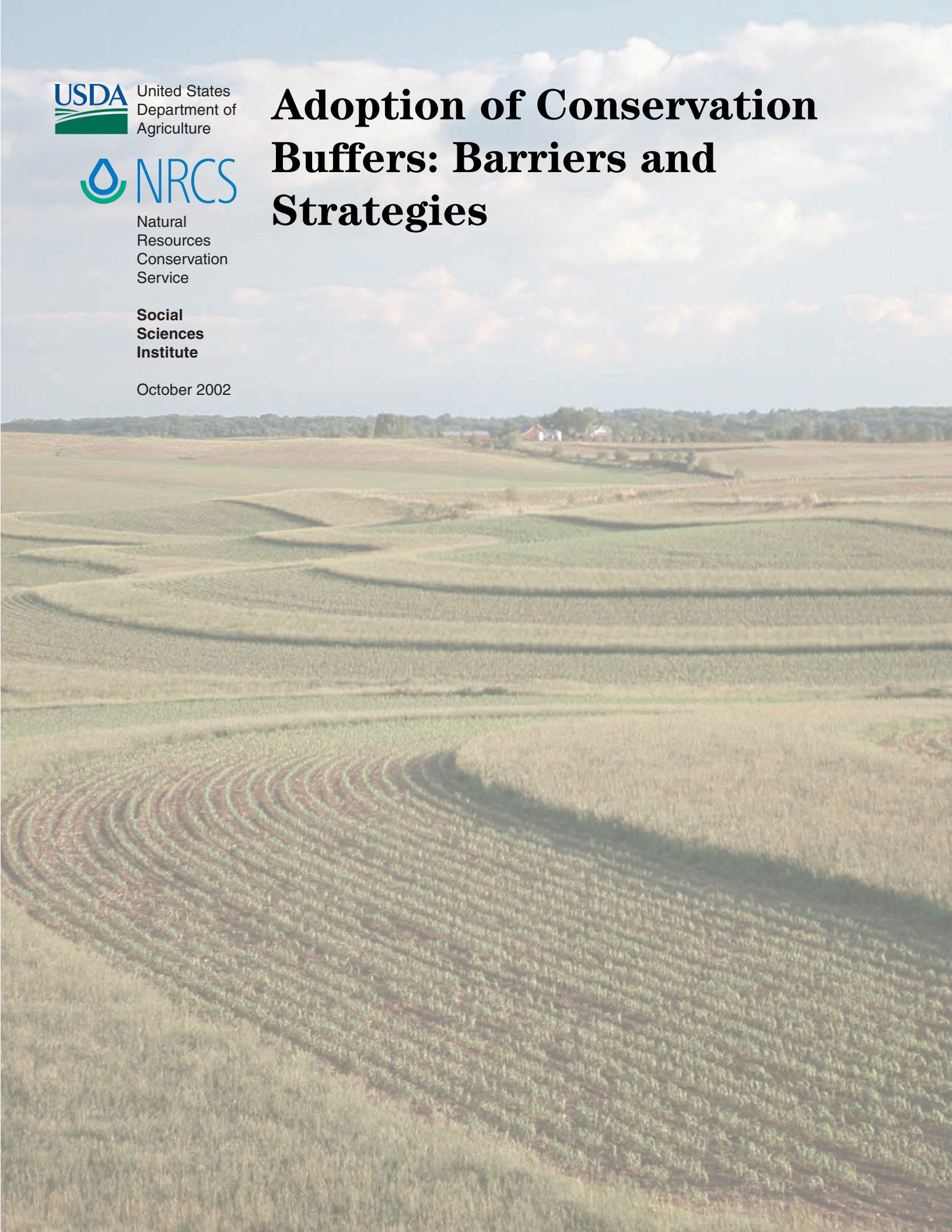
Adoption of Conservation Buffers: Barriers and Strategies



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Adoption of Conservation Buffers

Adoption of Conservation Buffers: Barriers and Strategies

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Adoption of Conservation Buffers

Adoption of Conservation Buffers: Barriers and Strategies

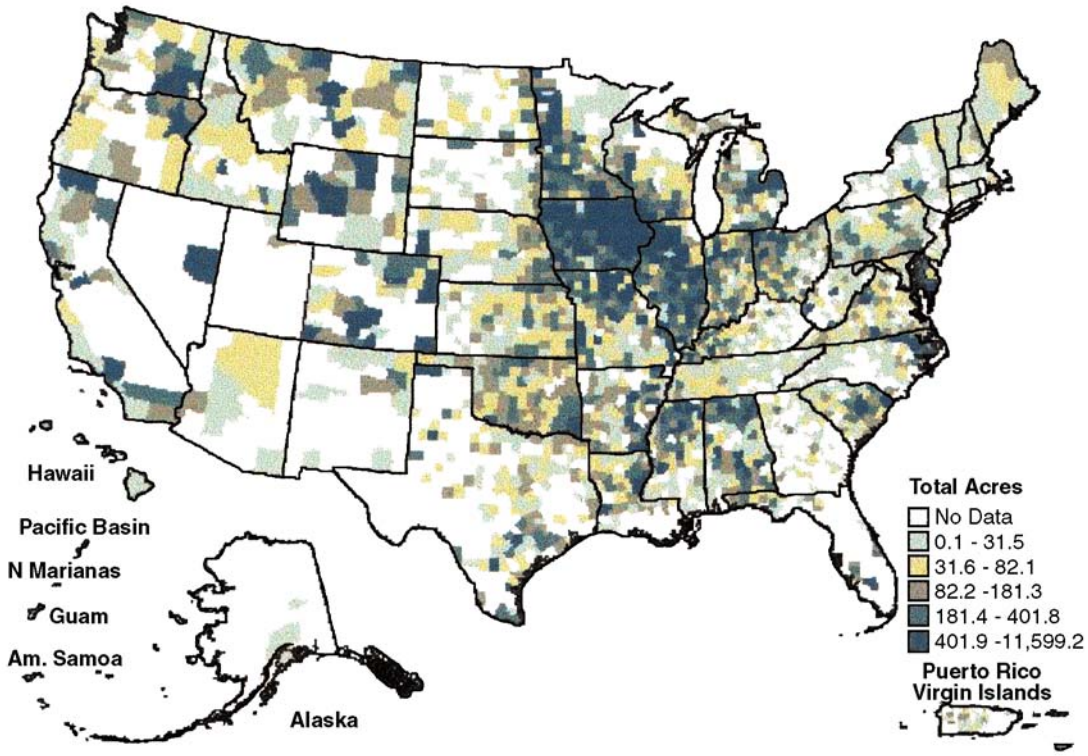
Introduction

The Natural Resources Conservation Service (NRCS) uses a voluntary approach in working with landowners to maintain and enhance natural resources. NRCS and the Conservation Technology Information Center emphasize four sets of conservation practices: conservation tillage, crop nutrient management, weed and pest management, and conservation buffers (fig. 1). The common name for these conservation practices/systems is **Core4**. NRCS in its Core4 training materials defines conservation buffers as areas or strips of land maintained in permanent vegetation to help control pollutants and manage other environmental problems. Specific practices include conservation buffers, alley cropping, contour buffer strips, cross wind trap strips, field borders, filter strips, grassed waterways with vegetated filter, herbaceous wind barriers, riparian forest buffers, vegetative barriers, and windbreak/shelterbelts.

This document examines attitudes and behaviors of several producer groups relative to the adoption and diffusion of conservation buffers. It summarizes general observations made by specialists and offers recommendations that field staff should consider when marketing conservation buffers. A technical transfer model in one state is described, four producer groups (all producers, livestock, low-income and minority, and American Indian) are examined, and barriers to the adoption of buffers and strategies that may address these barriers are listed for each group.

A variety of data sources were used to prepare this publication, including field interviews with producer groups, interviews with NRCS specialists, research publications, and materials published by NRCS and other organizations within the conservation partnership.

Figure 1—Conservation buffers regions.



Source: Web site **http://pmproductsvr.nrcs.usda.gov/prmsproducts/buffers.asp**

Summary of observations/ recommendations for marketing conservation buffers

The following observations/recommendations can be useful to NRCS field staff and other members of the conservation partnership in planning, designing, and implementing marketing and outreach activities relative to conservation buffers. These ideas are not exhaustive or especially innovative, but they represent a starting point for field staff to consider.

Producers use conservation buffers because of what buffers do for them, **not** what they do for USDA, NRCS, the district, or any other organization/association. Since the evaluation of benefits varies for each producer, field staff need to first find out the producers' interests (e.g., economics, environmental benefits, wildlife habitat, fish production, or legal issues), estimate these benefits, and present them in an understandable format.

Confusion typically surrounds the rules and signup dates of USDA programs, including those promoting buffers. Field staffs need to ensure that producers understand how new USDA programs operate and how participating in these programs may benefit their operation. To disseminate this information, field staffs should consider using information technology methods (Web sites, e-mails, listserves) along with more traditional distribution methods (direct mail, flyers posted at local gathering places, presentations at meetings).

Where, from whom, and how producers acquire information about buffers varies. Many field staffs are already aware of the commonly used informational sources in their locale. If field staffs are not aware of their local sources, they can use a sociological method to learn where producers get their information. That method is to ask a small number of leading producers, *who represent different groups*, to identify their most useful source of information. These sources will most likely vary for different producer groups. Then, they can use those sources to inform different groups of producers about the benefits of conservation buffers. Obviously, materials are more effective when the local vernacular is used and materials are written in the primary language of the producer.

Conservation buffer systems may be optimized when a variety of factors are considered in planning including:

- economic and social/cultural factors (cost and benefits, value placed on aesthetics or wildlife),
- legal/policy factors (impact on endangered species, water quality),
- biological elements (trees, shrubs, and/or grasses), and
- production components (buffer design, equipment, crops, and/or livestock).

For more information, see Human Aspects of the Conservation Planning Environment, which is part of the Social Sciences Institute People Partnership and Communities fact sheet series (PPC 023). Access this series at the following web site:
http://www.ssi.nrcs.usda.gov/ssi/B_Stories/A_Introduction.htm#ppcs

Field staffs need to have a clear understanding of who owns, leases, operates, and manages land and who makes agricultural related decisions. Field staffs then need to work closely with decisionmakers to clarify benefits, program eligibility, and maintenance requirements of buffers.

Livestock operations, rather than crop production, is a dominant system for many low-income and minority producers. This factor, plus the fact that economic margins are so tight for low-income producers, may serve as a barrier to program participation. Economics must be addressed directly during the planning process. Establishing contact (especially first time contact) with low income, minority, and American Indians is usually best achieved by using a one-on-one approach (Molnar et al., 2001).

Technology Transfer Model

In this section, a technology transfer model is described that was used in Missouri to assess producers' needs and preferences for establishing and maintaining conservation buffers (Hodge, 2000a; 2000b). The University of Missouri's Center for Agroforestry, in partnership with the NRCS, the Soil and Water Conservation District, the Missouri Department of Conservation-Forestry, and the University of Missouri Outreach and Extension, conducted field research on how to increase adoption of conservation buffers. The project's objectives were to:

- gather social and economic information from groups of agricultural producers and rural residents that would assist in transferring information about conservation buffers,
- learn how much farmers already knew about conservation buffers and other agroforestry practices/systems and what knowledge gaps needed to be filled, and
- discover how farmers prefer receiving information.

Methodology

A team composed of a social forester, rural sociologist, and agricultural economist met with community members and community groups to find an acceptable way of gathering information and to determine what information would be needed. They decided that the team should design a questionnaire that would be administered through face-to-face interviews. These interviews concentrated on the individual's knowledge of conservation buffers, attitudes toward them, and awareness of their benefits. In addition, the questions inquired about farming operations, local economic conditions, community social activities, and environmental concerns. Figure 2 gives the key features of this study.

Figure 2—Key features of the Missouri Extension and Transfer Model.

The Missouri Extension and Transfer Model

KEY FEATURES

- an interdisciplinary team
- field interviews with community interest groups to determine relevant survey questions
- use of pictures and one sentence descriptions of practices
- farmers rating of their knowledge and understanding about buffers
- reporting of study findings to questionnaire respondents via a community social activity (community dinner)

Potential respondents were randomly selected from lists provided by the NRCS and the Farm Service Agency. Data collection lasted 3.5 months and 358 farmers participated in the interviews. The team presented survey results to community residents and those who participated in the survey during a specially planned dinner.

To assess how much knowledge farmers had about conservation buffers, the interviewers showed farmers pictures of different conservation buffers. Along with the pictures, a one-sentence description of the practice was presented. The interviewer assessed a farmer's knowledge of conservation buffers by rating them on a scale from *very low* to *very high*.

To learn about a farmer's attitudes toward trees, farmers were asked to rate the following reasons for planting trees: wind protection, wildlife benefits, scenic beauty, economic benefits, water quality, erosion control, future generations, and flood protection. Farmers selected their response from a scale of *unimportant*, *moderate*, or *very important*.

Finally, farmers were asked to rate their preferred method of receiving information about conservation buffers. Possible selections included farm visits by conservation personnel, e-mails, demonstrations of conservation buffers on public land, tours of private farms, and idea sharing with groups of farmers.

(Federal rules prohibit Federal employees from conducting surveys or focus groups without the questions first approved by USDA; however, non-Federal groups are typically not restricted from conducting surveys or focus groups. For more information on how to conduct surveys and focus groups, visit the Social Sciences Institute website: **http://www.ssi.nrcs.usda.gov/ssi/**. Scroll down to FACT SHEETS and click, scroll down to PPC 014, Designing Surveys for Conservation Activities.)

Findings

The study found that farmers prefer receiving additional information on conservation buffers to supplement their familiarity and knowledge of these practices. The study also found that farmers gave their highest rating to "planting trees for future generations." Also, farmers wanted conservationists to provide information on how income can be generated from managing trees within a short planning horizon. Respondents recognized that harvesting trees for short-term income is an economic gain, while at the same time, growing trees for future generations is a secured investment.

Most respondents were moderately interested in looking at conservation buffers that are demonstrated on public lands or private farms. They were also interested in sharing ideas with other farmers who have similar interests. They were least interested in having someone come to their land to evaluate the feasibility of planting trees. By identifying those farmers and farmer groups who have an existing interest in conservation buffers, the team could distribute and target information to a more receptive audience.

An important finding is that gathering information proactively from the community seems to increase the chance of successful adoption of conservation buffers more than if NRCS field staffs use individual onfarm evaluations to plan for conservation buffers.

Finally, the findings from this project indicate that farmers do not routinely know how they can make money on trees in a short-term planning horizon. It may be necessary to provide specific information about potential income that explains how to produce fast growing, locally desirable trees.

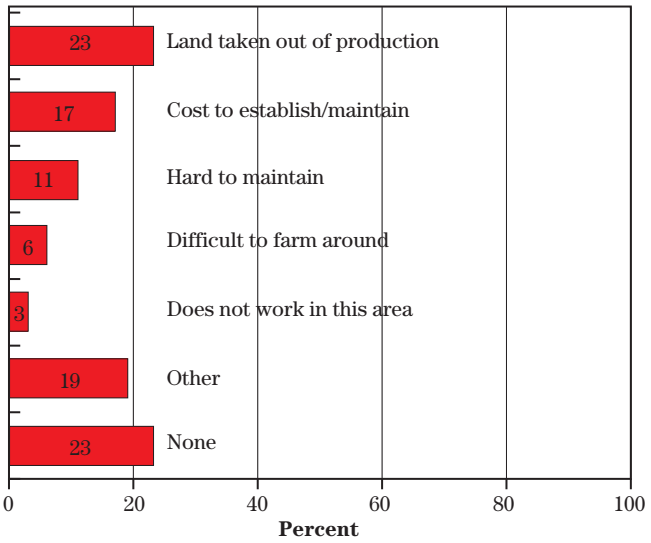
All Producers

This section is the first of four producer sections. This section lists barriers (fig. 3) and strategies related to the adoption of conservation buffers that are common to all producers. These barriers and strategies are the typical adoption issues that producers face when considering whether to adopt conservation buffers.

Barriers

- Some producers lack information on site-specific agronomic, economic, and environmental costs and benefits as well as availability of alternative practices that can be customized to site conditions.
- Information is often presented using highly technical descriptions, often containing jargon.
- The short-term cost of implementing practices does not equal the short-term economic returns because of low incentive or cost-share packages offered to landowners.
- Major changes in farming operations are sometimes needed to implement practices.
- Conservation buffers may not always correspond to a producer's personal goals and values (e.g., open and clean fields) nor be in line with the characteristics of the farm operation (e.g., maximizing crop production).
- Some producers view labor and time costs associated with establishing and maintaining buffers as excessive.
- Some producers feel that land taken out of production will result in an inefficient use of farm machinery.
- Land taken out of production because of program participation is sometimes viewed as idle land, and idleness, if applied to their self-perceptions, can have negative connotations for producers.
- A perception of some producers is that by-products from shrubs and trees are not real agricultural production.
- Formal training of field staff often lacks the integration of social factors with physical factors. In addition, NRCS field staff, district staff, and other outreach and extension personnel are not always similarly trained, which may result in mixed messages being delivered to producers.
- Government programs are sometimes seen as having too much red tape, and producers have negative attitudes toward entering into legal contracts as required by some programs.
- Farmers view some programs as placing too many restrictions on those who will inherit/purchase the operation.
- Some producers are hesitant to enroll in CRP/CRP continuous signup because of
  —loss of base acres for commodity programs,
  —expectation of earning more from renting out land than from an annual program payment,
  —reduction of flexibility to adjust land uses to changing market conditions, and
  —adverse effect on the financial status of the farm.
- Some producers are reluctant to establish buffers because of concerns that equipment operators will not maintain buffers, which potentially conflicts with Agency requirements for managing conservation buffers.
- Some producers perceive that CRP enrollment interferes with landlord-tenant relationships.

Figure 3—Conservation buffer barriers.



Source: Total sample (n=752) From Conservation Technology Information Center 1997 (December). "Conservation Technology Awareness and Use." CTIC, West Lafayette, Indiana.

- Some producers have had adverse experiences with poorly designed layouts and/or the type of buffer species.

- Some producers may not always know the nutrient needs of their crops and perceive that crops and buffers compete for nutrients, water, and sunlight.

- Producers do not feel that their neighbors will use conservation buffers to protect adjacent tracks of land.

- Producers do not always know the distinct organizations that make up the Conservation Partnership nor are they familiar with the various roles and responsibilities of conservation partners.

Strategies

- Provide to NRCS and the Conservation Partnership specialized buffer training that emphasizes the integration of social, legal, economic, and physical resources. This will result in more consistent definitions, technical assistance, and informational messages.

- The Conservation Partnership should standardize the definition for conservation buffers by using illustrations to show an array of conservation buffer practices.

- Use oral, written, and/or illustrative mediums to highlight the benefits of buffers including erosion control, improved soil productivity, protected ground and surface water, fish and wildlife habitat, aesthetics, and protection of land and water resources for future generations. Ensure the producer that the benefits apply to the current resource problem and/or future plans for that operation.

- Provide producers with a customized economic analysis of the costs and benefits of programs. Field staff may want to obtain specific information on buffers from NRCS National Headquarters Web site. National Headquarters' economic web site: **http://www.nrcs.usda.gov/technical/RESS/issues/bufferecon.htm**

- Some states provide a list of practice and cost estimates that outline the cost and benefits of conservation buffer practices/systems versus conventional practices. These estimates should then be provided to producers. Contact the NRCS state economist to determine if there is a list for your state.

- Outline the potential of buffers in trying to ensure that adequate incentives are provided to facilitate the adoption of conservation buffers as part of the "best mix" of conservation practices.

- Change perceptions of some producers who feel that idle land is not productive land. The maintenance and cultivation of buffer products (nuts, berries, wood) is not only productive, but at the same time protects and enhances natural resources.

- Work simultaneously with owner and tenant. If either is absent, provide duplicate information to the other party.

- Consider using volunteers to reduce your time and labor in establishing and maintaining buffers; e.g., AmeriCorps/Vista. *(Friends of the Rappahannock is a locally based community organization that promotes conservation and protection of the natural resource base. Friends of the Rappahannock work cooperatively with farmers and other landowners to plant streamside forest buffers and to install fences to keep livestock out of the streams. AmeriCorps/Vista volunteers are used to assist farmers and landowners to plant the streambank buffers. — Personal communication from Shannon E. Wilson, Volunteer Projects Coordinator, AmeriCorps/VISTA, Friends of the Rappahannock, Fredericksburg, VA. Additional information can be obtained by visiting the Web site* ***http://for.communitypoint.org****.)*

- Market and promote the benefits of buffers by using demonstrations, testimonials, videos, and other mediums specific to the area (fig. 4).

- Develop and distribute a quick reference list of the types and sources of technical assistance, information and education materials, and financial assistance that is available for establishing and implementing buffer practices from local, State, and Federal sources.

- Compile a county-by-county directory of technical experts and agency staffs who have responsibilities in the area of conservation buffers.

- Routinely update mailing lists to ensure most producers have access to and receive information in a timely manner.

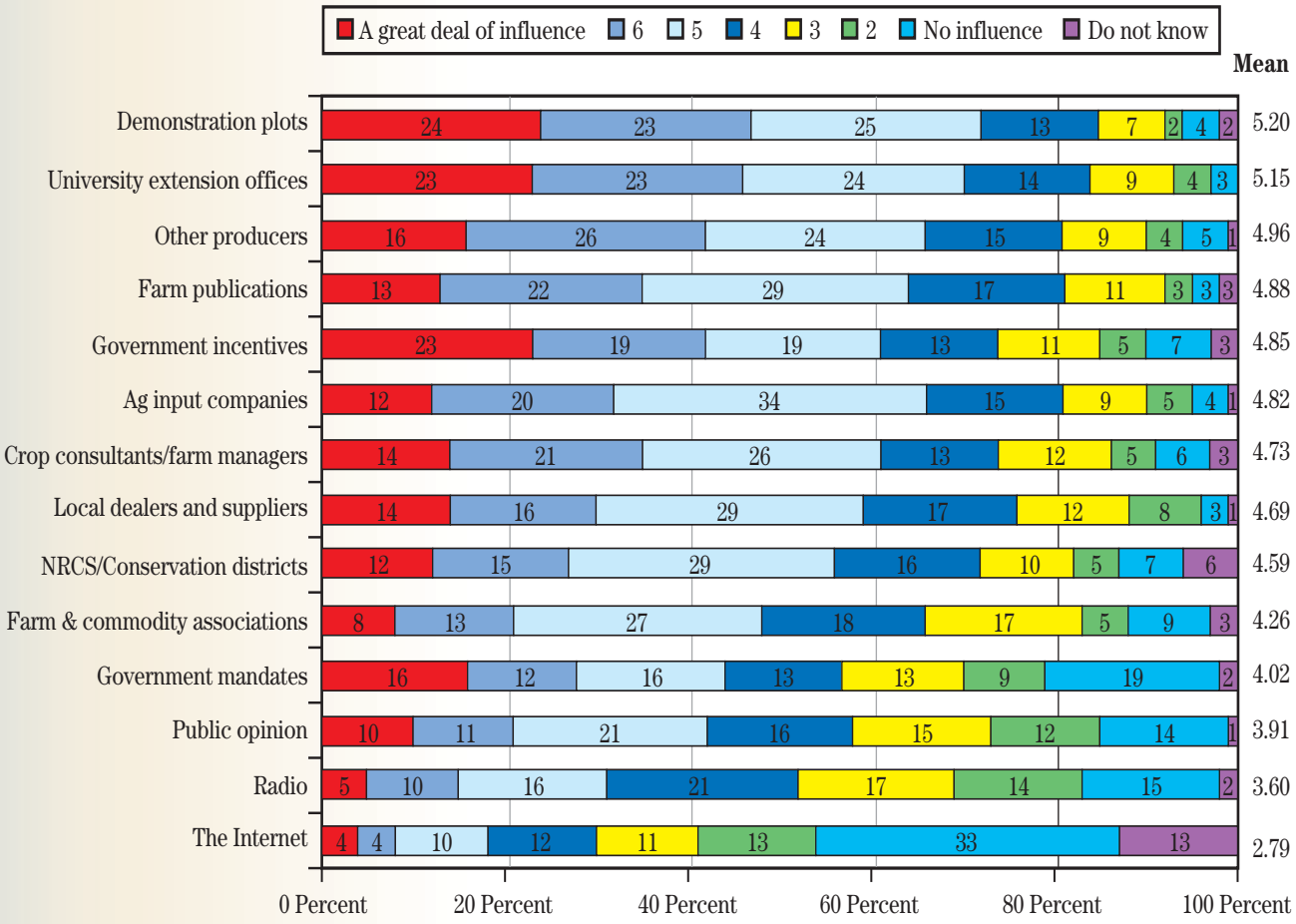
- Distribute lists and information on demonstration projects, university outreach and extension specialists, names and experiences of producers, testimonials and videos, ads for local producer meetings, farm publications, government initiatives, locally led activities, agricultural input companies, crop consultants, professional farm managers, commodity groups, grower and other associations, family and friend networks, radio and TV, newspapers, electronic communication, and farm tours.

- Market conservation buffers by identifying and routinely working with local leaders to design and implement outreach activities that involve the farming/ranching community. Leadership from within the local community has the advantages of local visibility and the perception that "being one of their own, is therefore more trustworthy." This can generate an increase in momentum for adopting alternative practices.

- Promote and recognize individuals and groups of producers who have adopted the use of buffers as "friendly to trees," "stewards of land, trees, and grasses," or other such philosophies. The promotion and recognition of conservation behavior can be facilitated through use of Conservation of the Year programs and local media spots (newsletters, radio, TV, exhibitions at fairs).

- Partner with local community-based and nonprofit organizations (e.g., local chapter of the National Wildlife Federation) to design and implement outreach strategies. These organizations have the advantage of being visible to community members and having leadership come directly from within the community.

Figure 4—Influences on environmental practices.



Source: Approximately half of the total sample (344<n<397) from Conservation Technology Information Center 1997 (December). "Conservation Technology Awareness and Use." CTIC, West Lafayette, Indiana.

- Assist producers in designing buffers by using visuals to show appropriate layouts, growth of vegetative buffers, and how these buffers will look over time. The ability to visualize final results can positively influences a producer's decision. Landscape architect software can be used to produce the visuals showing a land area after conservation programs are established (figs. 5 & 6). Contact the NRCS national landscape architect at **http://www.nrcs.usda.gov/about/directory/sciencetech.html#ced** for information on the use of landscape architect software.

Figure 5—Before buffer protection.

Figure 6—After buffer protection.

- Work with producers to offer the use of native grasses as an alternative to trees. Emphasize that grassy filters can be used as a turnaround.

- Promote acceptance of trees by tying their benefits to a resource problem, including the absorption of nutrients and pesticides, carbon sequestration, release of oxygen, stream temperature reduction and regulation, wind protection of crops and soils, wildlife habitat (cover, nesting area, shelter, food source), improved aesthetics, alternative income sources (harvesting of nuts or hardwoods over time), erosion control, protection of natural resource base for future generations, and finally, flood protection.

- Create a listserve, an interactive Web site, or other such electronic means for producers and members of the conservation partnership. This listserve can be used to obtain information, such as recent publications, research needs, and producer participation (where permission has been granted by the producer). One advantage of an electronic application is that all members of the partnership would routinely have access to the same information. One example of an interactive Web site is on the University of Missouri Center for Agroforestry's site. This Web site has an interactive map feature of Missouri showing a landowner's location. When the location is clicked, a photo appears showing the type of buffers practice in use. The site is: **http://www.centerforagroforestry.org.**

- Create or use a newsletter as a means to inform field staff and producers; e.g., BufferNotes published by the National Association of Conservation Districts. This newsletter is available at **http://www.nacdnet.org/buffers.**

Livestock Producers

Barriers

- The installation and maintenance of fencing are perceived by some as excessive financial and labor costs.
- Producers are reluctant to change management practices even if livestock damage the land along streams.
- Based on historical precedence, producers object to excluding livestock from streams and other traditional water sources.
- Producers fear that woody vegetation in riparian zones will increase beaver activity and flooding.
- Producers perceive that shelterbelts, living snow fences, and windbreaks will decrease acres for grazing and/or feeding of livestock.

Strategies

- Show livestock producers the benefits of windbreaks/shelterbelts including the reduction of animal stress, decreased mortality rates, reduction in feed and water consumption, and the management of snow.
- Associate the benefits of conservation buffers and intensive rotational grazing with current resource problems including fewer animals falling over unstable banks, fewer animals lost because of walking on frozen streams in the winter, cleaner water supplies when alternative water supplies are used, and restoration of denuded riparian areas.
- Encourage producers to evaluate alternate management practices that can reduce injury to livestock (fencing and establishing riparian buffers). These practices can help reduce financial risk by providing cost share and training as these new management skills are adopted.
- Help producers obtain a mix of technical, financial, and educational assistance for the installation of alternative water sources. Constructing water wells is cost prohibitive for many producers who traditionally have used a natural water source for their livestock.
- Promote practices, such as riparian forest buffers, to operators of confined animal feeding operations; pair a producer's concerns with benefits including dampening noise, reducing drift of aversive smells, screening outsiders' views of the operation, and trapping nonpoint source pollutants.

Figure 7—Windbreaks protecting field crops.

Figure 8—Windbreaks protecting livestock.

Figure 9—Alley cropping area has tree products and forage for grazing.

- Ensure that producers understand that grassy buffers do not have to "give way" to unwanted woody vegetation by providing technical assistance on how to maintain grassy buffers through mowing, controlled burning, herbicide treatments, and/or livestock grazing.

Low-Income and Minority Producers

Barriers

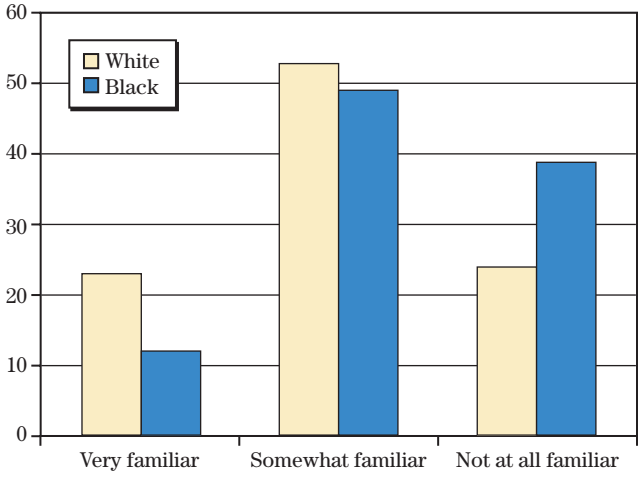
- Because of USDA definitions, isolation from a communities mainstream agricultural activities, and privacy issues, NRCS field staffs have problems identifying low-income and minority farmers.

- Low-income and minority producers and the leaders who represent these groups may not be on mailing lists and may not routinely participate in conservation activities.

- Written material may be written at too high an academic level or may not be printed in the primary language of the low-income and minority producers. Figure 10 shows the familiarity with conservation buffers by race.

- Low income and minority producers may lack income for establishing and maintaining buffer practices.

Figure 10—Familiarity with conservation buffers by race.



Source: Molnar, J., A. Bitto, and G. Brant 2001. Core Conservation Practices: Paths and Barriers Perceived by Small and Limited Resource Farmers.

Strategies

- Names and addresses used to develop contact lists can be derived from field notes, Minority Serving Institutions/Universities, local Extension offices, and/or other local organizations. Distributing information from up-to-date contact lists ensures that producers have access to and receive information in a timely manner. Figure 11 shows the distribution of minority operated farms in 1992.

- Use a one-on-one method to establish initial contact. Allow sufficient time to initially establish a working relationship. Using one-on-one contacts to encourage participation of low income and minority producers as well as the groups' leadership can help represent their needs and interests in district and locally led activities.

- Have local community leaders and producers proofread any printed or visual information to determine its appropriateness for use based on primary language, local customs, values, and vernacular.

- Ensure that a network of family and friends is used in information gathering and dissemination activities; low-income producers tend to rely on family and friends to evaluate the usefulness and practicality of information.

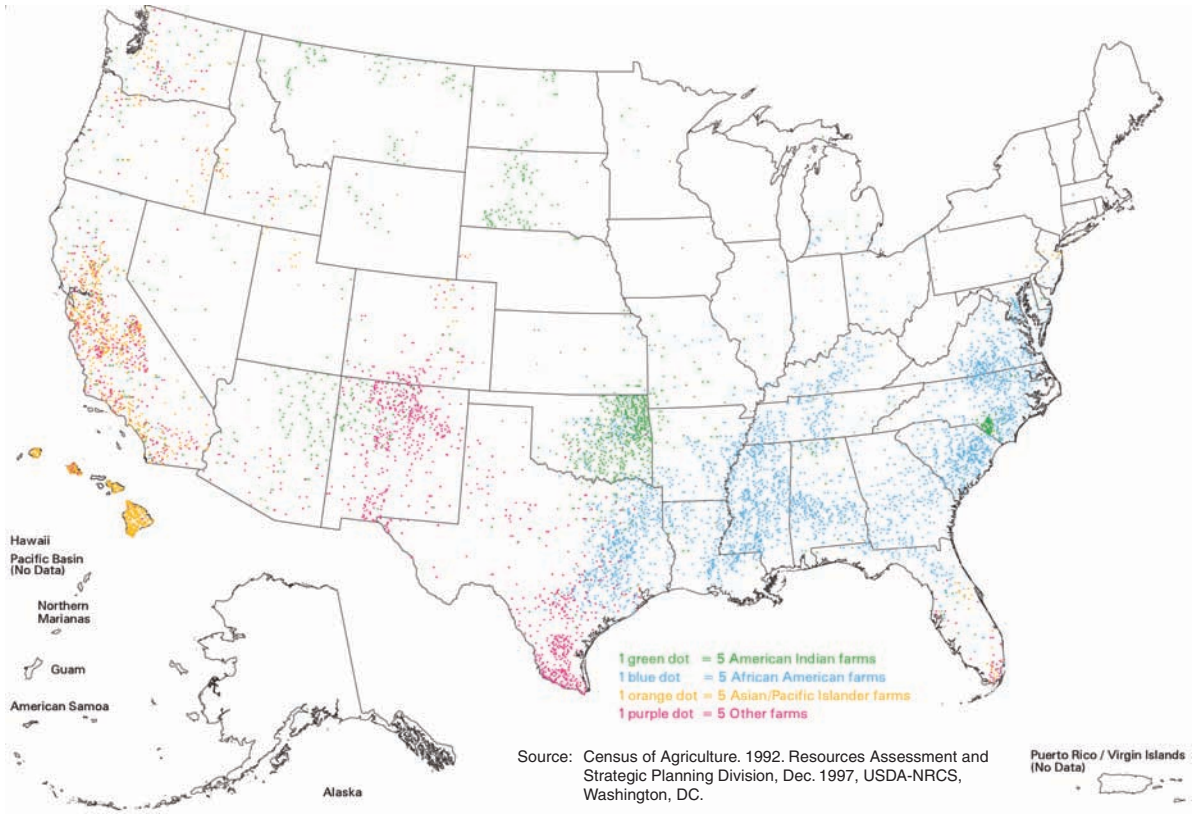
- Work cooperatively with producers and members of the conservation partnership to determine if low cost loans and grants are available.

- Work cooperatively with local foundations and organizations, such as the Heifer Project International, Southern Federation of Cooperatives, and Wildlife Foundation, to pool available resources. Pooling resources can help facilitate activities, such as the purchasing of seedlings, establishing networks for small producers, and conducting demonstrations for low cost technologies. Figure 12 shows the percent of farms that sales of less than $10,000 in 1997.

- Use farm tours, field days, workshops, and demonstration projects within the community as a means to focus on the use and applicability of low cost technologies (e.g., low cost fencing and movable water sources).

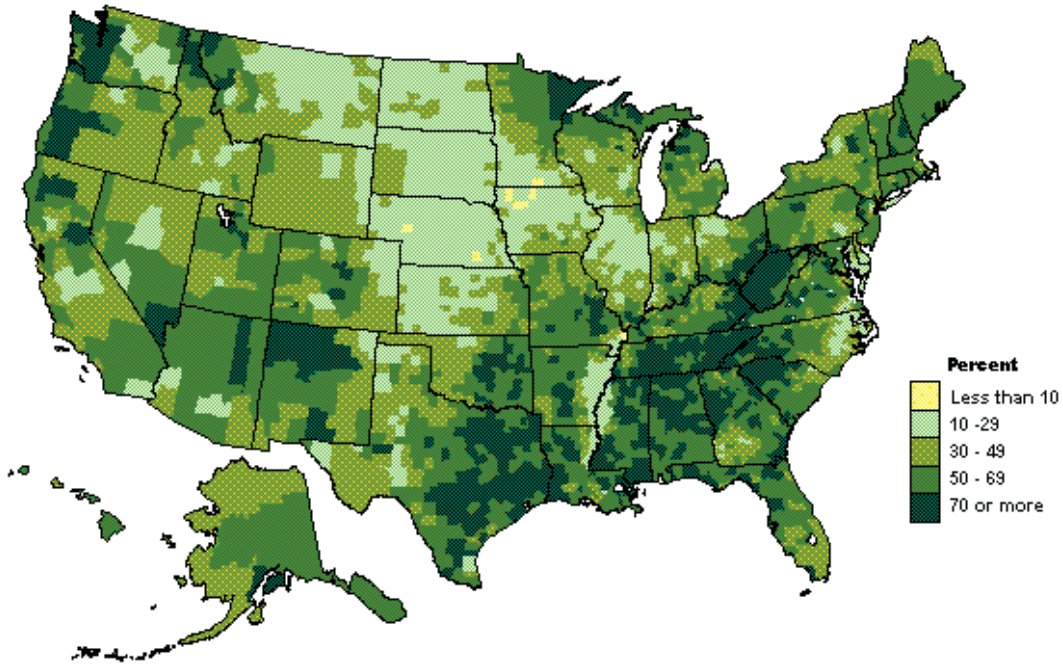
- Partner with local community-based and non-profit organizations to design and implement outreach strategies. The communities' low income and minority producers usually trust these organizations.

Figure 11—Distribution of minority operated farms - 1992.



Source: Census of Agriculture. 1992. Resources Assessment and Strategic Planning Division, Dec. 1997, USDA-NRCS, Washington, DC.

Figure 12—Percent of farms with sales less than $10,000 in 1997.



Source: Census of Agriculture. 1997. USDA National Agricultural Statistics Service. Web site **http://www.nass.usda.gov/census/census97/atlas97/map006.htm**

American Indian Producers

Barriers

- NRCS field staffs are sometimes unfamiliar with American Indian culture and/or the structure and operation of tribal governments.
- NRCS field staff lack information and knowledge of the appropriate protocol when working with American Indians, their formal and informal leadership, organizations, or agencies.
- Historical, cultural, and sacred areas may be located within areas most suitable for the installation of buffers.
- Indian landowners, the tribes, and lessees may not participate in locally led conservation activities.
- Establishing and maintaining buffers on tribal lands often require the assistance of representatives from the Bureau of Indian Affairs (BIA). BIA may lack sufficient staff to help tribes plan and install conservation buffers.
- Agreement on the need for and types of conservation buffers among tribal members as well as with the BIA may be difficult to obtain within a short timeframe.
- Hunting may not be allowed on Indian lands and could serve as a barrier to installing conservation buffers and alternative enterprises on these lands.
- Costs of practices may be prohibitive for Indian landowners, tribes, or for BIA managed lands.
- Conservation may not be a top priority if Indian landowners lease their individual allotted lands.
- Installing conservation buffers can reduce the amount of rental acreage as it takes land out of production. This may result in negative attitudes toward conservation buffers.
- The BIA may not have adequate resources for enforcement of lease agreements should a lessee fail to maintain conservation buffers.
- NRCS and other members of the conservation partnership may lack awareness and understanding of the most effective means of communicating/working with Indian landowners and tribes. This may be especially problematic during initial contacts.

Strategies

- Request assistance/training from the Social Sciences Institute's cultural anthropologist and/or local experts on how to work effectively with tribal governments. Social Sciences Institute course titled 'T04 – Consultation with American Indian Governments' can be requested at the SSI Web site: **http://www.ssi.nrcs.usda.gov/ssi/**. Scroll down to training.
- Promote conservation buffers by appealing to the high value that Indian landowners and tribes place on their land and its natural resources for themselves and future generations.
- Request assistance from the State Historical Preservation Officer to ensure that all historical, cultural, and sacred areas are recorded and taken into consideration in planning for the installation of buffers.
- Offer low cost technologies that are applicable to the site conditions of Tribes and Indian landowners.
- Meet simultaneously, where practical, with landowner and lessee to identify and agree on appropriate buffer practices.
- Consider using visual media as one means of communication. After use, ask if this is an effective method of communication; modify media communication techniques according to responses.

- Consider providing technical assistance initially in the form of one-on-one contacts (fig. 13). Indian landowners can be presented with a brief description and example of how buffers will affect usable land, including compensation for land taken out of production. Indian landowners can be approached with an NRCS field staff and a tribal representative, such as a member from the Tribal Environmental Department. What is to be said and who is to say what during the one-on-one assistance should be decided upon in a pre-meeting between NRCS, field staff, and tribal representatives. What is important here is that NRCS and the tribes are understanding the same meaning of common terms.

Figure 13—NRCS representative and tribal member inspect growth and health of grasses.

Conservation of land and water resources is of great value to Indian landowners and tribes, and will serve as a common focal point between NRCS field staff, Indian landowners, and tribes.

Summary

This publication identified barriers known to impede the adoption of conservation buffers by all producers, livestock producers, low-income and minority producers, and American Indian producers. Whether NRCS field staffs are working one-on-one with producers or cooperatively with members of the conservation partnership, knowledge of these barriers can aid in influencing the decisionmaking process relative to the adoption and diffusion of conservation buffers. The strategies outlined can serve as a basis for this process. The identified barriers and strategies are by no means an exhaustive set. The users of this information may want to customize the material based on local, social, and physical resource characteristics.

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