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Economic Impact of Conservation Field Borders *on Farm Operations*

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Economic Impact of Conservation Field Borders on Farm Operations

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Abstract

Potential opportunity costs of conservation buffer practices were examined to determine the effects of proximity to field edge and adjacent plant community (APC) type [crop, herb (herbaceous), and wooded] on crop yields, relative to field interiors for corn (*Zea mays*) and soybean *(Glycine max)* systems on 150 fields in Mississippi. Yield data were obtained from combines equipped with yield monitors and global position systems (GPS) from 1999 to 2003 for three counties in central Mississippi. A partial budget format was used to develop net change in profit analyses on corn and soybean crops with and without conservation practice CP33: Habitat Buffers for Upland Birds. Yield reductions averaged across three APC types at swath 1 [defined as one combine header (7.32-meter-wide) pass] were -2,963 and -230 kilograms per hectare compared with mean interior yields of 9,828 and 2,498 kilograms per hectare for corn and soybeans, respectively. Partial budget analyses for corn showed that on average, enrollment of a 7.32-meter (36-foot) CP33 border would increase net returns when next to APC types crop, herb, and wood.

Key Words: buffers, conservation, CP33, economic net change in profit analysis, edge effect, field borders, habitat buffers, partial budgets.

Economic Impact of Conservation Field Borders on Farm Operations

Background

As part of a larger investigation studying wildlife benefits of field border management practices [15], we examined agronomic impacts on crop yields associated with four swathes (passes) of a combine in relation to plant community types and relative to field interiors. Of particular interest were how mean yields changed spatially from crop edge to field interior and what effect three plant community types (crop, herb, or wood) had on mean yields along the edge (swath 1) and on subsequent swathes (2, 3, and 4) further into the field. If crop yields were consistently less along edges due to edge effect, plant community type, or both, a higher economic return along field perimeters might occur with the implementation of a conservation practice such as habitat buffers for upland birds (CP33). This study provides insight into costs and benefits of replacing lower yielding field edges with conservation buffers.

Generally, crop yields are reduced near edges relative to field interiors, and thus field edges are agronomically less valuable [5]. Yields are generally presumed to be lower near edges or "headlands" than in the main body of the field [18]. Headlands have been reported to yield significantly less than the rest of the field in cereals [1, 6, 18] and root crops [7]. Lower crop yields on headlands have been attributed to soil compaction, poor seedbed preparation, greater weed abundance, shading by tall field boundary vegetation, and competition from tree roots [1]. Fully sprayed (herbicide) headlands yield on average 18% less grain per hectare than midfield, although differences varied from a 67% reduction to a 24.9% increase in yield [1]. Differences between yields from headlands and the main body of a field may be greater where soil type is more prone to compaction, and/or where the field is bordered by trees or a competitive hedge [18]. Crop inputs (fertilizer) and protection (fungicide, herbicide, and insecticide) begin and end on field edges, which may result in over- and under-applications (personal observation). Irrigation may begin and end along edges, resulting in over- or under-watering of crops. Thus, headlands or field edges are frequently lower yielding due to stresses that field interiors lack. Additionally, crops adjacent to wood plant communities are frequently lower yielding than field interiors. Semple et. al. [14] found that shading of field plants adversely affected crop growth and yields, and the net effect of shelter and shade resulted in a 50% reduction in yield. Presence of trees at the field edge has been shown to have the greatest effect on adjacent crop yields; areas shaded by trees produced 4.4 tons per hectare of wheat, compared with 8.1 tons in areas not shaded [17].

A salient consideration in replacement of low-yielding field margins with buffer strips or similar practices is whether edge effects (i.e., lesser yields due to aforementioned factors) move to field interiors. In an experiment on yield of sugar beet and winter wheat, Sparkes et al. [17] reported that headland effects did not move to field interiors when field margins were planted in grass (and not used for turning), and there were no significant effects on adjacent crop yield.

U.S. agricultural policies and programs continue to evolve towards greater consideration of wildlife, as well as maintaining historical priorities such as soil erosion and water quality. The 1985 Farm Bill was the first to have a specific title devoted to conservation [4]. The 2002 Farm Security and Rural Investment Act (Farm Bill) continued the emphasis with environmental enhancements taking priority over other benefits, such as productivity and supply control [4]. Stull et al. [19] examined use of GPS yield monitor maps in combination with economic analyses to optimize strategic decisions regarding identifying areas of fields that were best suited for enrollment in Conservation Reserve Program (CRP) grass filter strips. Their analyses revealed that historical GPS yield monitor data could be used to select areas for enrollment "to increase overall net returns with economically superior results to either a more naïve approach of enrolling all eligible land in the CRP or not participating in CRP" [19].

On October 1, 2004, the United States Department of Agriculture (USDA) Farm Service Agency (FSA) introduced a new conservation practice under the Continuous Conservation Reserve Program (CCRP) intended to create 250,000 acres of habitat for northern bobwhite in 35 states [2]. This new practice, CP33: Habitat Buffers for Upland Birds, is applied around field edges of eligible cropland. Eligible cropland must be suitably located and adaptable to establishment of northern bobwhite. The cropland does not need to be classified as highly erodible, but it must have been cropped at least 4 out of 6 years (1996-2001) [2]. Other conservation practices (e.g., CP22: Grass Filter Strips or CP22: Riparian Buffers) required eligible land to be classified as highly erodible (HEL) or adjacent to streams or waterways, respectively. Although many acres of farmland are HEL or adjacent to waterways, many more thousands are not and as such, until creation of CP33, were not eligible for enrollment in buffer conservation practices. This study supports the Stull et. al [19] findings on use of historical yield monitor maps to economically optimize enrollment of field edges in conservation practices.

Study Area

The study area consisted of 150 row crop fields (2,742.2 hectares of total area with a mean field size of 17.5 hectares) on privately owned farms in Clay, Lowndes, and Noxubee counties in Mississippi (Figure 1) with a mean elevation of 62.4 meters. Mean cornfield size was 19 hectares (n = 104, range = 0.3 – 211.4 hectares), and total area in cornfields was 1,993.5 hectares. Mean soybean field size was 16.2 hectares (n = 46, range = 1.4 – 82.9 hectares), and total area in soybean fields was 748.7 hectares.

Of the fields, 20% (n = 30) had crop, 41% (n = 62) herb, and 39% (n = 58) wood APC type present. Of the 104 cornfields, 22% (n = 23) had crop, 40% (n = 41) herb, and 38% (n = 40) wood APC present. Of the 46 soybean fields, 13% (n = 6) had crop, 45% (n = 21) herb, and 42% (n = 19) wood APC present. Of the 104 cornfields, 16% of the field perimeter was crop APC type, 37% herb, and 47% wood. Of the 46 soybean fields, 9% of edge was crop APC type, 40% herb, and 51% wood.

For all corn and soybean fields in the study area, field border segments that had a crop APC type present always had the same crop type as the field itself [e.g., if a corn field had all three APC types present (crop, herb, and wood), the crop type adjacent to the field was always corn].

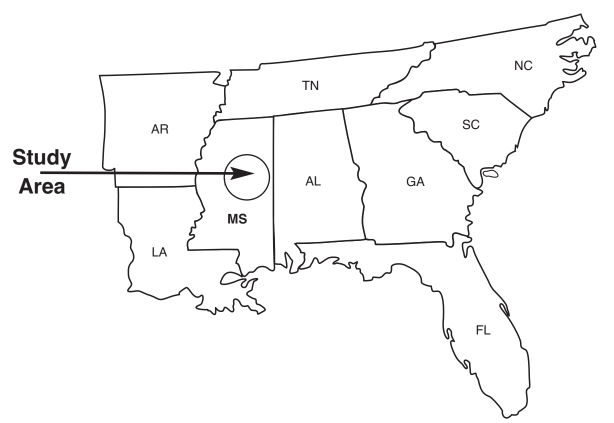

Figure 1. Study area in Mississippi, Southern United States.

Yield Data Collection

Table 3. Partial budget for calculating net change in profit analysis equation. Proposed change: enroll field margins in CP33 Habitat buffers for upland birds.

Advantages	Disadvantages
Increased Revenue	Decreased Revenue
CRP[1]	GR[3]
	GOV[4]
Decreased Costs	Increased Costs
VC[2]	EST[5]
	MNT[6]
	COC[7]
Totals	Totals
CRP + VC	GR + GOV + EST+MNT+COC
[8]NPC = [CRP+VC] – [GR + GOV + EST+MNT+COC]	

[1]CRP is CP33 average payments received from enrolling field margins in the CRP.
[2]VC is sum of variable costs of grain production removed from operation.
[3]GR is sum of gross revenues of grain production removed from operation.
[4]GOV is sum of government payments received by the producer for crop grown.
[5]EST is establishment costs for CP33 spread out over life of the buffer.
[6]MNT is maintenance costs of the buffer per year.
[7]COC is cost of capital invested in the buffer per year using average investment times interest rate of 6%.
[8]NPC is net change in profit gross revenue.

GPS yield monitor crop data were obtained from combine operators in Clay, Lowndes, and Noxubee counties in Mississippi from 2000 to 2003. Confidentiality of all data was maintained and protected through anonymity. Data for 150 fields were downloaded from memory cards (John Deere Green Star™ and Ag Leader™) onto a personal computer and converted to shape files. Yield data were imported into Microsoft® Excel® with John Deere JD Office™ and Ag Leader™ desktop computer software. Yield data were cleaned in ArcMAP 8.3 through a two-step filtering process that used query builder to eliminate erroneous points originating from various sources of errors common to GPS-equipped combine yield monitors (e.g., rapid speed changes, full header width not cut, header position was up versus down, lost signal, erroneous position information, and improperly calibrated sensor, [3]).

This observational study was an incomplete block design with two factors. Factor one was APC type with three levels (crop, herb, wood), and factor two was combine swath number with four levels (1st, 2nd, 3rd, and 4th). Thus, 12 treatment combinations as a 3x4 factorial experiment were possible. All fields did not have all three community types present but always had at least two. Swath and adjacent community type were considered fixed main effects, while field was a random block effect. Yield (kilograms per hectare) was the response variable. Normality of residuals was tested with Shapiro-Wilk test, and residuals were typically non-normally distributed. The distribution of residuals was examined visually. Non-normality was attributed to a leptokurtic probability curve [16]. Since the distribution of residuals was symmetrical and ANOVA tests of fixed effects are relatively robust to deviations from normality, the mixed model ANOVA on untransformed values was used. Homoscedasticity was checked by covariance modeled with a group effect in SAS with TYPE=CS (covariance structure), and TYPE=VC (variance components). The PROC MEANS procedure [12] was used to obtain mean yields for each swath and associated APC type and field interior, the ratio of mean yield for each swath to mean yield interior, and the difference between mean yield for each swath and mean yield interior. The PROC MIXED procedure [12] was used to test for main effects of swath and adjacent plant community type and swath x community type interactions for the response variable yield. The LSMEANS SLICE option was used to test simple effects of APC type (crop, herb, wood) within swath and effect of swathes 1-4 within adjacent community type on mean yield estimates. The LSMEANS PDIFF option was used for multiple comparisons of least square mean estimates and standard error for yield (kilograms per hectare) by pairwise comparisons of swath by APC type [9].

A partial budget format [8] was used to develop net change in profit analyses on corn/soybean row crop rotations with and without conservation practice CP33: Habitat Buffers for Upland Birds. Justification for use of a partial budget (versus an enterprise budget) originates from the need to analyze a partial change being made to the overall farming operation. Partial budgets provide formal and consistent methods for calculating expected changes in profit from a proposed change in the operation; therefore, it compares profitability of status quo with a new alternative [8]. Additional and reduced revenue and cost components of the partial budget are identified in Table 1. A break-even equation may be specified from the table components that require that the advantages of the proposed changes be set equal to the disadvantages as follows:

$$\sum CRP_{cij} + \sum VC_{cij} = \sum GR_{cij} + \sum GOV_{cij} + \sum EST_{ciji} + \sum MNT_{ciji} + \sum COC_{ciji}, \forall_{c}, \{1\}$$

where CRP equals CP-33 payments, VC equals variable costs of crop production associated with implementing CP-33 independent of yield, GR equals gross revenue from crop, GOV equals government payments associated with leaving land in agricultural production, EST equals prorated establishment cost of CP33, MNT equals maintenance costs of CP-33, COC equals cost of capital invested in CP33.

In order to determine which swath and APC type combination or which swath regardless of the APC type in which CP33 is either an economic advantage or disadvantage, net change in profit (NCP) gross revenue was obtained by solving equation {1} for NPC as follows:

$$\sum NPC_{cij} = \sum CRP_{cij} + \sum VC_{cij} - [\sum GR_{cij} + \sum GOV_{cij} + \sum EST_{cij} + \sum MNT_{cij} + \sum COC_{cij}], \forall_c \quad \{2\}$$

The net change in profit was used to identify which swathes and APC type combinations had sufficient net returns to economically outperform the alternative of implementing CP33. Typically, CRP payments are made to the landowner, who may or may not be the producer. For this study, we assumed that the operator owned the land in production and received the CRP payments similar to Stull et al. (2004). Ten-year (1995–2004) average prices for corn and soybeans were used to calculate revenues [10].

Variable production costs for corn and soybeans were obtained from the Mississippi State University, Department of Agricultural Economics, Blackbelt and Coastal Plain 2005 planning budgets. Specified expenses were $694.07 per hectare for corn and $290.57 per hectare for soybeans. CP33 incentive payments included a signing incentive payment (SIP) of up to $247.10 per hectare. This value amortized over 10 years (length of contract) at 6% interest provided an annual SIP payment of $45.02 per hectare. Also included was an annual rental payment of $80.91 per hectare for the length of the contract (10 years). The annual rental payment ($80.91 per hectare) was a weighted average of county-specific CRP rental rates for comparable land paid annually. Annual rental rates per hectare for CRP ranged from $46.95 to $108.73 on 8,049.88 hectares in Clay County, $56.83 to $108.73 on 8,442.83 hectares in Lowndes County, and $46.95 to $116.14 on 13,988.74 hectares in Noxubee County (Farm Service Agency, personal communication). The nonweighted average specific rental rate per hectare was $77.84 for Clay County, $82.78 for Lowndes County, and $81.54 for Noxubee County. An annual maintenance fee (mowing and disking as required by CP33 guidelines) of $12.36 per hectare was included. Additional CP33 incentive payments were cost-share assistance of up to 50% of the eligible reimbursable practice costs and a practice incentive payment (PIP) of up to 40% of the eligible establishment cost [2]. For the CP33 in this study, a native grass and legume mix (without lime) was used, which allowed up to a $395.20-per-hectare establishment cost [11]. A request through the Freedom of Information Act to the national office of the Farm Service Agency (FSA) in Kansas City, Kansas, was required to obtain county-specific information on government payments made to Clay, Lowndes, and Noxubee counties. The calendar year final payments tables and final direct counter-cyclical payment tables provided by FSA for participating corn and soybean farms were used to calculate a 4-year (2000–2003) average government payment paid per commodity per county per hectare per farm.

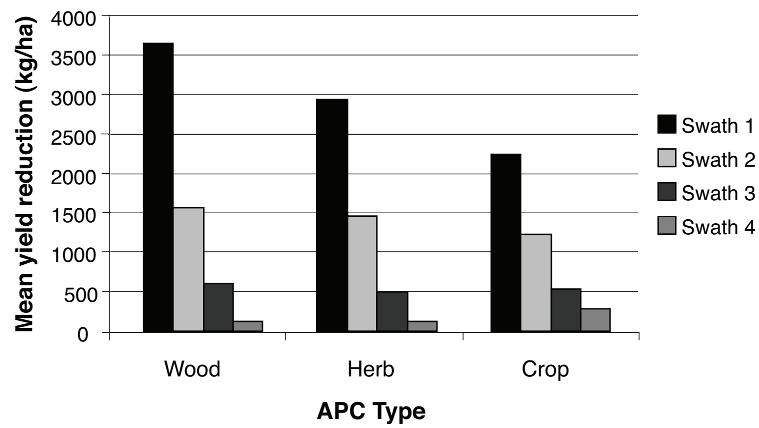

Figure 2. Mean corn yield reduction (kg/ha) for adjacent plant community types (wood, crop, and herb).

For 104 cornfields, mean actual yield of first combine swath for three APC types (crop, herb, and wood) was 30% less than mean actual yield (9,827.9 kilograms per hectare) of field interior (Table 2). Mean yield estimates differed significantly between swath and adjacent community type, and mean yield estimates had a significant swath x adjacent community interaction. The test-of-slice effect of adjacent community type (crop, herb, wood) within swath on mean yield estimates was significant for swath 1 but not for swath 2, swath 3, or swath 4. The test-of-slice effect of swathes 1-4 within adjacent community type on mean yield estimates was significant for crop, herb, and wood. Least square means estimates and standard error (SE) on yield reduction relative to field interior by swath and adjacent community type had greatest yield reductions at swath 1, followed by swath 2, swath 3, and swath 4 (Figure 2).

The partial budget analyses for corn showed that by enrolling the field margin in CP33 at least as wide as the first swath of a combine header (7.32 meters) would increase net revenue compared with not using CP33 (Tables 3, 4, 5). The difference in economic advantage (+ $/ha) at swath 1 adjacent to crop compared with swath 1 adjacent to herb was nearly two times greater in magnitude. The same comparison from swath 1 herb to swath 1 wood was 1.5 times greater. Again, the same comparison from swath 1 crop to swath 1 wood was nearly three times greater in magnitude. Clearly, traditional corn production at swath 1 next to these three APC types was an economic loss with the largest loss next to wood. A slight economic advantage was also found at swath 2 next to herb and wood APC type and for whole field (regardless of APC). A related study examined identifying lower yielding field edge segments through precision agriculture from 1997 to 1999 in corn, soybeans, and wheat. That study found precision agriculture strips resulted in a net positive effect of $373.25 per hectare [19]. A trend of decreasing economic returns occurred from swath 1 out to swath 4 and whole field. A trend of increasing economic returns occurred from APC type crop, herb, and wood, respectively. Regardless of adjacent community type, CP33 was economically advantageous at swath 1 (Figure 3).

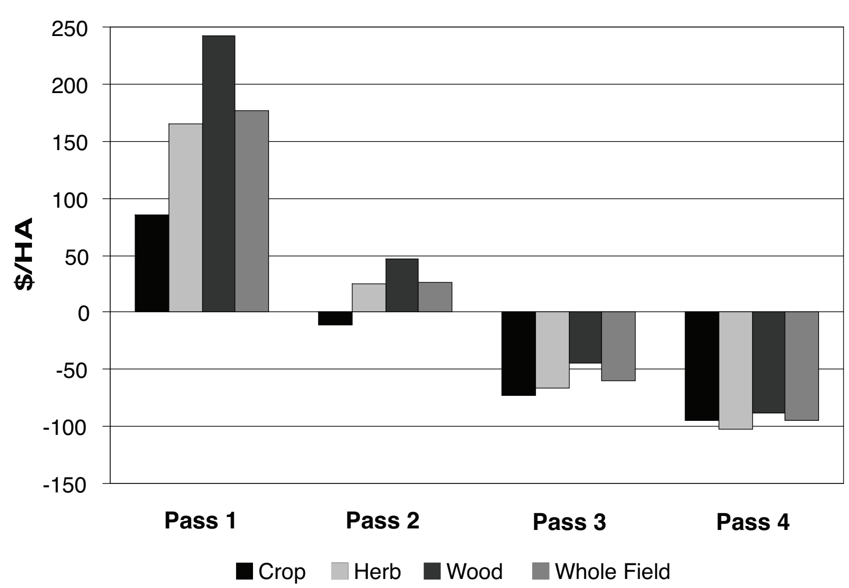

Figure 3. Advantage (+) or Disadvantage (-) ($/ha) of CP33 and corn by swath and adjacent plant community and whole field (irrespective of APC) from 104 fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000-2003.

Table 2. Mean corn yield (kg/ha) and standard error by swath (1-4, n = segments[1]) and adjacent plant community type (crop, herb, wood), and percent yield reduction for 104 corn fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000-2003.

Swath	Crop				Herb				Wood			
	n	ME	SE	%	n	ME	SE	%	n	ME	SE	%
1	52	7683	362.42	23.0	94	6842	198.53	30.0	90	6014	222.51	38.0
2	51	8704	357.58	13.0	94	8319	228.15	15.0	90	8086	246.85	17.0
3	51	9353	338.04	05.0	94	9291	223.54	05.0	90	9057	245.56	07.0
4	50	9587	349.04	03.0	94	9663	220.46	01.0	89	9521	249.44	01.6

[1]The 104 cornfields had n segments of adjacent plant community type per swath.

Table 3. Partial budget results for APC crop per hectare from 104 cornfields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$832.36	$747.20	$85.14
2	$832.36	$843.74	-$11.34
3	$832.36	$905.02	-$72.66
4	$832.36	$927.17	-$94.77

Table 4. Partial budget results for APC herb per hectare from 104 cornfields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$832.36	$667.76	$164.60
2	$832.36	$807.32	$25.04
3	$832.36	$899.16	-$66.80
4	$832.36	$934.31	-$101.95

Table 5. Partial budget results for APC wood per hectare from 104 cornfields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$832.36	$589.52	$242.84
2	$832.36	$785.30	$47.07
3	$832.36	$877.05	-$44.69
4	$832.36	$920.89	-$88.53

For 46 soybeans fields, mean yield of first combine swath for three adjacent community types (crop, herb, and wood) was 10% less than mean yield (2,497 kilograms per hectare) of field interior (Table 6). Mean yield estimates differed significantly by swath but not by adjacent community. Swath x adjacent community interaction was not found to be significant. The test-of-slice effect of adjacent community type (crop, herb, wood) within swath on mean yield estimates and within adjacent community type on mean yield estimates was not significant for crop, herb, and wood.

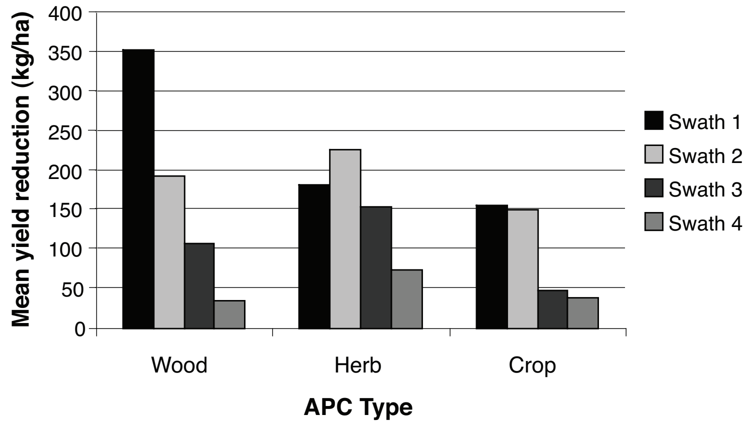

Figure 4. Mean soybean yield reduction (kg/ha) for adjacent plant community types (crop, herb, and wood).

Least square means estimates (ME) and standard error (SE) on yield reduction relative to field interior by swath and adjacent community type resulted in adjacent community crop, swath 1 with the greatest yield reduction, followed by swath 2, swath 3, and swath 4. Within adjacent community herb, swath 2 had greatest yield reduction, followed by swath 1, swath 3, and swath 4. Within adjacent community wood, swath 1 had greatest yield reduction, followed by swath 2, swath 3, and swath 4 (Figure 4).

The partial budget analyses for soybeans showed that for any APC type and swath combination and for the whole field consideration (regardless of APC type), enrolling in CP33 would not be economically advantageous (Tables 7, 8, 9). Similar to corn, a trend of decreasing economic returns occurred from swath 1 out to swath 4 and the whole field. Also, a trend of increasing economic returns occurred from APC type crop, then herb, and then wood and the whole field overall (Figure 5).

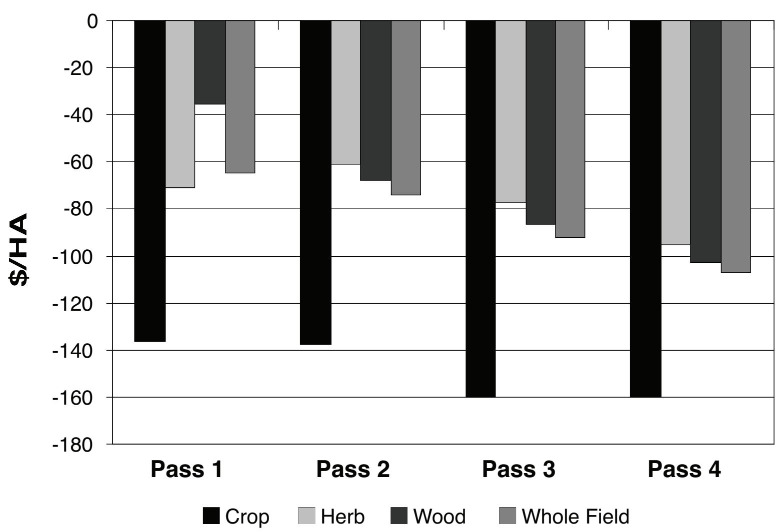

Figure 5. Disadvantage (-) ($/ha) of CP33 and soybeans by swath and adjacent plant community and whole field (irrespective of APC) from 46 fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000-2003.

Table 6. Mean soybean yield (kg/ha) and standard error by swath (1-4, n = segments[1]) and adjacent plant community type (crop, herb, wood), and percent yield reduction for 46 soybean fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000-2003.

Swath	Crop				Herb				Wood			
	n	ME	SE	%	n	ME	SE	%	n	ME	SE	%
1	12	2496	212.07	08.0	42	2203	112.66	07.0	39	2041	115.15	14.0
2	12	2501	184.05	08.0	42	2156	107.89	09.0	37	2188	112.99	06.0
3	12	2604	172.25	04.0	42	2229	107.46	06.0	38	2273	119.80	04.0
4	12	2612	194.84	03.0	42	2310	108.03	03.0	38	2346	124.12	01.0

[1]The 46 soybean fields had n segments of adjacent plant community type per swath.

Table 7. Partial budget results for APC crop per hectare from 46 soybean fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$428.86	$565.18	-$136.32
2	$428.86	$566.29	-$137.43
3	$428.86	$589.15	-$160.29
4	$428.86	$590.82	-$162.06

Table 8. Partial budget for APC herb per hectare from 46 soybean fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$428.86	$500.17	-$71.31
2	$428.86	$489.74	-$60.88
3	$428.86	$505.94	-$77.08
4	$428.86	$523.91	-$95.05

Table 9. Partial budget for APC wood per hectare from 46 soybean fields in Clay, Lowndes, and Noxubee counties, Mississippi, 2000–2003.

Swath	Total Advantage	Total Disadvantage	NPC
1	$428.86	$464.22	-$35.36
2	$428.86	$496.84	-$67.98
3	$428.86	$515.70	-$86.84
4	$428.86	$531.90	-$103.04

Conclusions

Mean corn yields at combine swath 1 next to wood APC were significantly less than the mean yields of the field interior. Although a significant yield reduction relative to the field interior was always present within any field segment regardless of APC type at swath 1 (field edge), it was greatest adjacent to wood, followed by herb, then crop. Swaths 2-4 also had associated yield reductions but were less affected and were not significantly different from the interior yield.

Mean soybeans yields at swath 1 were significantly less than mean interior yield but not for swaths 2-4. Nor were they of the same magnitude as for corn yield (9.6% mean yield reduction for soybeans and 30.3% for corn). The difference in yield reductions between corn and soybeans may be partially explained by soybeans being more drought-tolerant than corn from a physiological standpoint. Soybeans typically are grown on clays, which in some years can be advantageous from an available soil moisture standpoint. Like corn, soybean yields were significantly less next to a wood community. Both corn and soybean crops could have had reduced yields at the field edge due to depredation by herbivores [e.g., eastern cottontail rabbit (*Sylvilagus floridanus*), eastern whitetail deer (*Odocoileus virginianus*), and raccoon (*Procyon lotor*)]. A wood community adjacent to the crop would potentially harbor more species of herbivores and individuals of those species than either a crop or herb adjacent community.

For corn, implementation of CP33 was economically advantageous at swath 1 for crop (+$85.14 per hectare), herb (+$164.60 per hectare), wood (+$242.84 per hectare), and whole field (+$176.98 per hectare). It was also advantageous at swath 2 for herb (+$25.04 per hectare), wood (+$47.07 per hectare), and whole field (+$25.52 per hectare). For any other swath and APC combination, CP33 was not economically advantageous. For soybeans, implementation of CP33 was not economically advantageous for any swath or APC combination. Less yield reduction at field edges, as well as low relative crop production costs, contributed to the economic disadvantages of CP33 for soybeans.

Results and conclusions are based on "averages." Individual fields might have different results. Additionally, fields were monoculturally farmed, thus fields enrolled in a crop rotation might have different outcomes. Also, the added value of upland birds and other wildlife species might provide incentives economic or otherwise not considered in this analysis.

Table 10. Total advantage (+) or disadvantage (-) ($/ha) of CP33 and corn by swath, adjacent plant community type, and whole field.[1]

Swath	Adjacent Plant Community			Whole Field
	Crop	Herb	Wood	
1	$85.14	$164.60	$242.84	$176.98
2	-$11.34	$25.04	$47.07	$25.52
3	-$72.66	-$66.80	-$44.69	-$59.62
4	-$94.77	-$101.95	-$88.53	-$95.24

[1]Whole field is all swaths regardless of plant community type.

Table 11. Total disadvantage (-) ($/ha) of CP33 and soybeans by swath, adjacent plant community type, and whole field.[1]

Swath	Adjacent Plant Community			Whole Field
	Crop	Herb	Wood	
1	-$136.32	-$71.31	-$35.36	-$64.65
2	-$137.43	-$60.88	-$67.98	-$73.97
3	-$160.29	-$77.08	-$86.84	-$91.94
4	-$160.06	-$95.05	-$103.04	-$107.03

[1]Whole field is all swaths regardless of plant community type.

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