

Managing Iowa's Rights-of-Way: A Survey of County Engineers and Roadside Vegetation Managers

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Executive Summary

Background & Methods

A mixed-mode approach, including both online and mail-back survey data collection methods, was used to collect information from County Engineers and Roadside Managers regarding the current practices they use to manage Iowa's rights-of-way. A list of all County Engineers (N=99) and Roadside Managers (N=37) was provided by the Integrated Roadside Vegetation Management Program Coordinator. Data collection occurred during March and April of 2016. We received 98 completed questionnaires from 34 Roadside Vegetation Managers and 64 County Engineers; a 92% response rate for Roadside Managers and a 65% response rate for County Engineers.

Key Findings

- County Engineers placed more responsibility for roadside vegetation management on private landowners than did Roadside Managers.
- The use of weed-free seed mixes was the most common invasive species prevention measure used by both County Engineers and Roadside Managers.
- County Engineers and Roadside Managers rely on spot-spraying and spot-mowing to manage weeds; County Engineers were more likely than Roadside Managers to use strip-mowing to manage weeds.
- Consideration of safety and soil erosion concerns have the greatest influence on roadside vegetation management decision-making; Roadside Managers consider aesthetics in management decision-making more so than do County Engineers.
- Maintenance cost savings is the most influential factor in implementation of roadside management strategies; Roadside Managers were more influenced by environmental stewardship or vegetative diversity than were County Engineers, while County Engineers reported more influence from public input, surveys, and customer complaints than did Roadside Managers.
- The top challenges in greater use of native species were the length of time they take to establish, interference from adjacent landowners (either spraying or mowing the plantings), and the cost.
- A majority of County Engineers and Roadside Managers agreed or strongly agreed that IRVM provides attractive roadsides, maintains or improves water quality, enhances biodiversity, protects soil resources, promotes partnerships with other organizations, reduces spread of invasive species and optimizes the effectiveness of weed and pest control practices.
- County Engineers who work in counties with Roadside Vegetation Managers were more likely to have used native vegetation as a component in their roadside projects during the last 3 years and agreed more strongly that IRVM provides attractive roadsides than were County Engineers in counties without Roadside Managers.

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Background & Methods

In 1999, 46 of Iowa's 99 counties had full-time Roadside Managers; for the past ten years the number of counties with full-time Roadside Managers has remained generally steady at around 35-40 counties. One of the goals of the Integrated Roadside Vegetation Management (IRVM) program is to encourage counties without IRVM programs to participate in IRVM. This survey was designed to assess respondents' awareness of the IRVM program as well as perceptions of IRVM and native prairie vegetation. All Iowa counties were included in this survey effort to identify similarities and differences in perceptions of the program among those that have strong IRVM programs, with Roadside Managers, and those who do not have a Roadside Manager.

A list of all County Engineers (N=99) and Roadside Managers (N=37) was provided by the Integrated Roadside Vegetation Management Program Coordinator. Eight County Engineers have responsibilities for two counties and were asked to complete one survey for each county. A mixed-mode approach, including both online and mail-back survey data collection methods, was used to collect information from County Engineers and Roadside Managers regarding the current practices they use to manage Iowa's rights-of-way.

Data collection efforts began with email distribution of invitations to participate in the online survey on March 2, 2016, followed by email reminders to non-respondents on March 10, March 17, and March 28. A self-administered mail-back survey was sent to those individuals who had not responded after the initial email invitation and successive reminders. A final email reminder was sent on April 20 to those who received mail surveys, reminding them to complete the mail survey and providing another opportunity to complete the survey online. Data collection was completed on April 30.

Percentages in figures were rounded to the nearest whole number, therefore percentage totals will range from 99% to 101%.

Results

Respondent Characteristics

We received 98 completed questionnaires from 34 Roadside Vegetation Managers and 64 County Engineers (Figure 1), resulting in an overall response rate of 72%; a 92% response rate for Roadside Managers and a 65% response rate for County Engineers. The vast majority of both County Engineers (98%) and Roadside Managers (94%) were male.



Figure 1. Number of responses from Roadside Managers and County Engineers

County Engineers reported working in counties with more acres in secondary road rights-of-way than did Roadside Managers.¹ All Roadside Managers approximated their counties' secondary road rights-of-way to be between 2,500 to 9,999 acres; slightly less than half of Roadside Managers (48%) reported their county to have between 2,500 and 4,999 acres, approximately two in five (39%) reported counties with 5,000 to 7,499 acres of secondary road rights-of-way, and 13% work in counties with 7,500 to 9,999 acres (Figure 2). Approximately four in five (83%) County Engineers reported their counties to have between 2,500 to 9,999 acres, while 4% reported having less than 2,499 acres and 14% reported having more than 10,000 acres of secondary road rights-of-way in their counties. No Roadside Managers reported working in counties with less than 2,499 acres or more than 10,000 acres of secondary road rights-of-way.

¹ $\chi^2(4, N=74) = 13.98, p = .007$

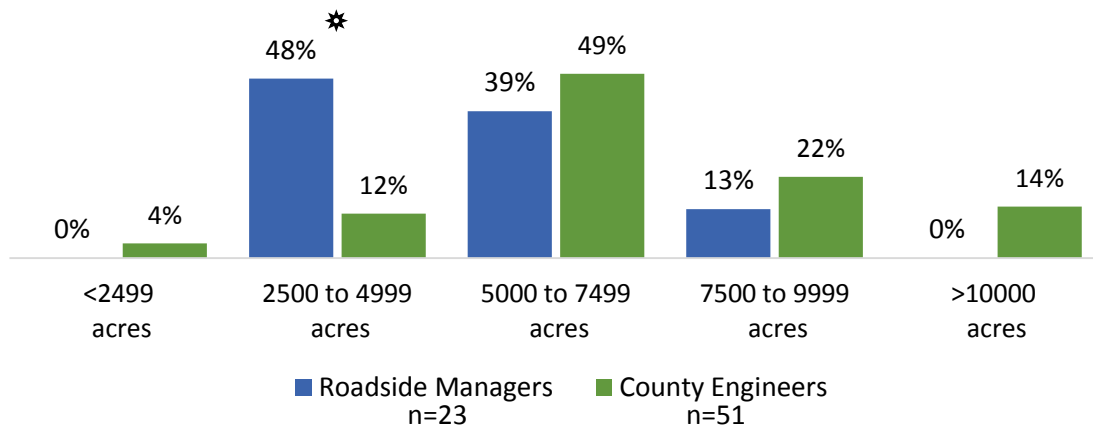


Figure 2. Approximate acreage of county's total secondary road rights-of-way
 *Excluding responses from County Engineers in counties with Roadside Managers.

On average, County Engineers and Roadside Managers reported having worked in their current position for 10 years ($\bar{x} = 10.23$) and 11 years ($\bar{x} = 11.27$), respectively. Roadside Managers were more likely than County Engineers to hold full-time positions in roadside vegetation management.² About nine in ten Roadside Managers (91%) described their current position in roadside vegetation management as full-time, whereas the majority of County Engineers (56%) described their position in roadside vegetation management as part-time (Figure 3). County Engineers who identified their positions as part-time, estimated spending on average less than 5% of their time ($\bar{x} = 3.54\%$) on roadside vegetation management, whereas those Roadside Managers in part-time positions estimated, on average, 18% of their time was devoted to roadside vegetation management ($\bar{x} = 18.33\%$).

² $\chi^2(1, N=75) = 17.17, p < .001$

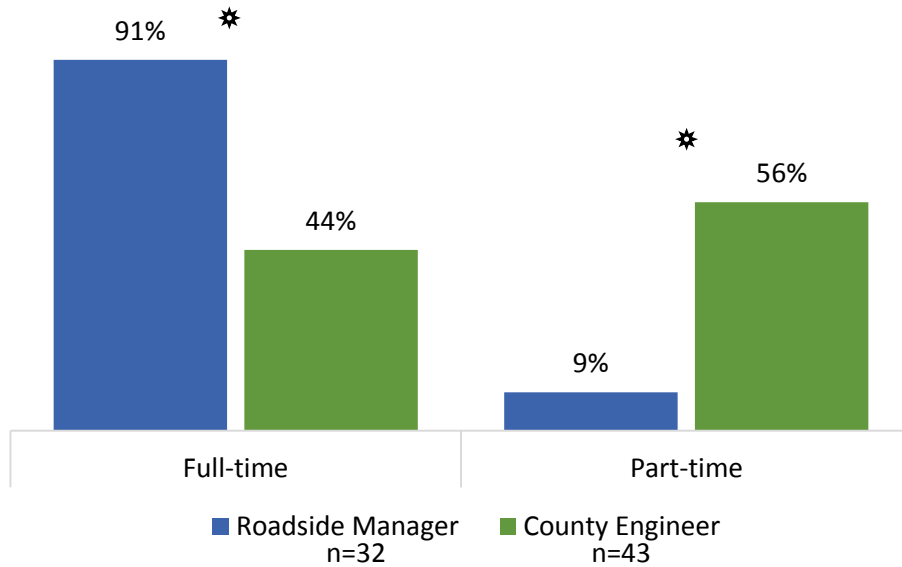


Figure 3. Percentage of full-time and part-time positions in roadside vegetation management

Roadside Vegetation Management

When asked which groups were formally responsible for roadside vegetation management along secondary road in their county, all Roadside Managers and County Engineers affirmed that county staff are formally responsible for managing vegetation along secondary road (Figure 4). A small percentage of Roadside Managers (15%) and County Engineers (17%) reported that private contractors were responsible. A greater percentage of County Engineers (27%) than Roadside Managers (6%) reported that private landowners were responsible for roadside vegetation management along secondary road in their counties,³ and 5% of County Engineers indicated that nonprofit or nongovernmental conservation groups were responsible, while no Roadside Managers indicated that such groups were responsible.

³ $\chi^2(1, N=98) = 6.08, p = .014$

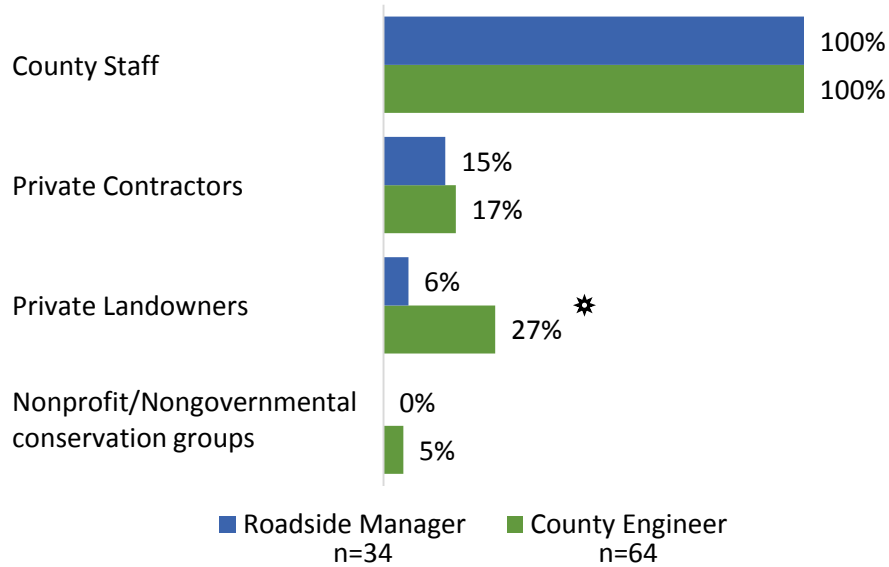


Figure 4. Groups responsible for roadside vegetation management

Approximately two-thirds (65%) of Roadside Managers and seven in ten County Engineers indicated that private landowners can apply for permits to plant or otherwise modify secondary road rights-of-way (Figure 5). One-fifth of Roadside Managers (21%) and slightly over one-quarter (28%) of County Engineers indicated private landowners could not apply for these permits in their counties. A small percent of Roadside Managers (15%) reported being unsure of private landowners' ability to apply for these permits and even fewer of the County Engineers (2%) reported being unsure about this issue.⁴

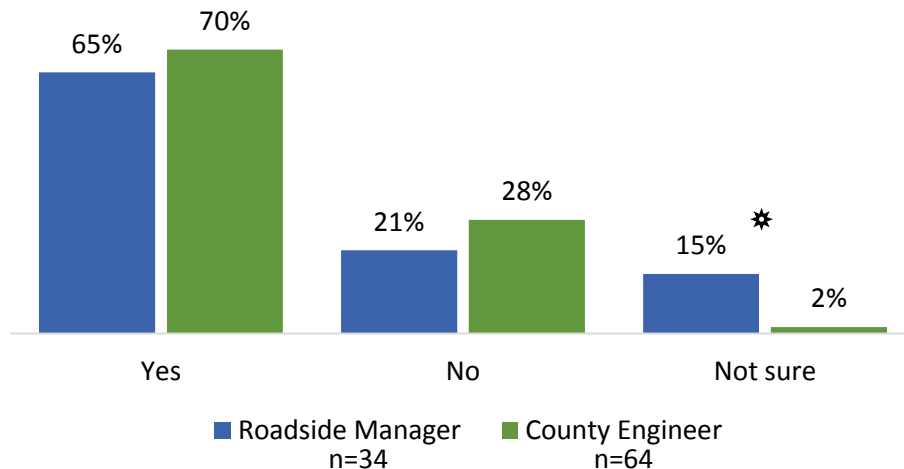


Figure 5. Private landowners' ability to apply for permits to plant or otherwise modify secondary road rights-of-way

⁴ $\chi^2 (2, N=98) = 6.86, p = .032$

Respondents were asked to identify, from a list, the measures they currently undertake in their counties to prevent invasive species. The top prevention measure identified by both Roadside Managers (76%) and County Engineers (59%) was “Weed-free seed mixes” (Figure 6). Roadside Managers more often selected “Mapping/monitoring/tracking location and treatment of key invasive species”,⁵ “design/specification measures for low maintenance/native species”,⁶ and “ongoing research of invasive control and native reestablishment strategies”⁷ than did County Engineers. The most often indicated prevention measures by County Engineers (28%) were the same as those selected by Roadside Managers, with the exception of “ongoing research of invasive control and native reestablishment strategies” (16%). Rather, County Engineers indicated that the “desired best practices built into staff procedures and specifications for contract work” occurred more often in their counties as a prevention measure and approximately one-third (32%) of Roadside Managers indicated the same. About one-tenth (9%) of Roadside Managers and 13% of County Engineers indicated their county does not use any of the listed prevention measures.

⁵ $X^2(1, N=98) = 14.25, p < .001$

⁶ $X^2(1, N=98) = 8.81, p = .003$

⁷ $X^2(1, N=98) = 19.51, p < .001$

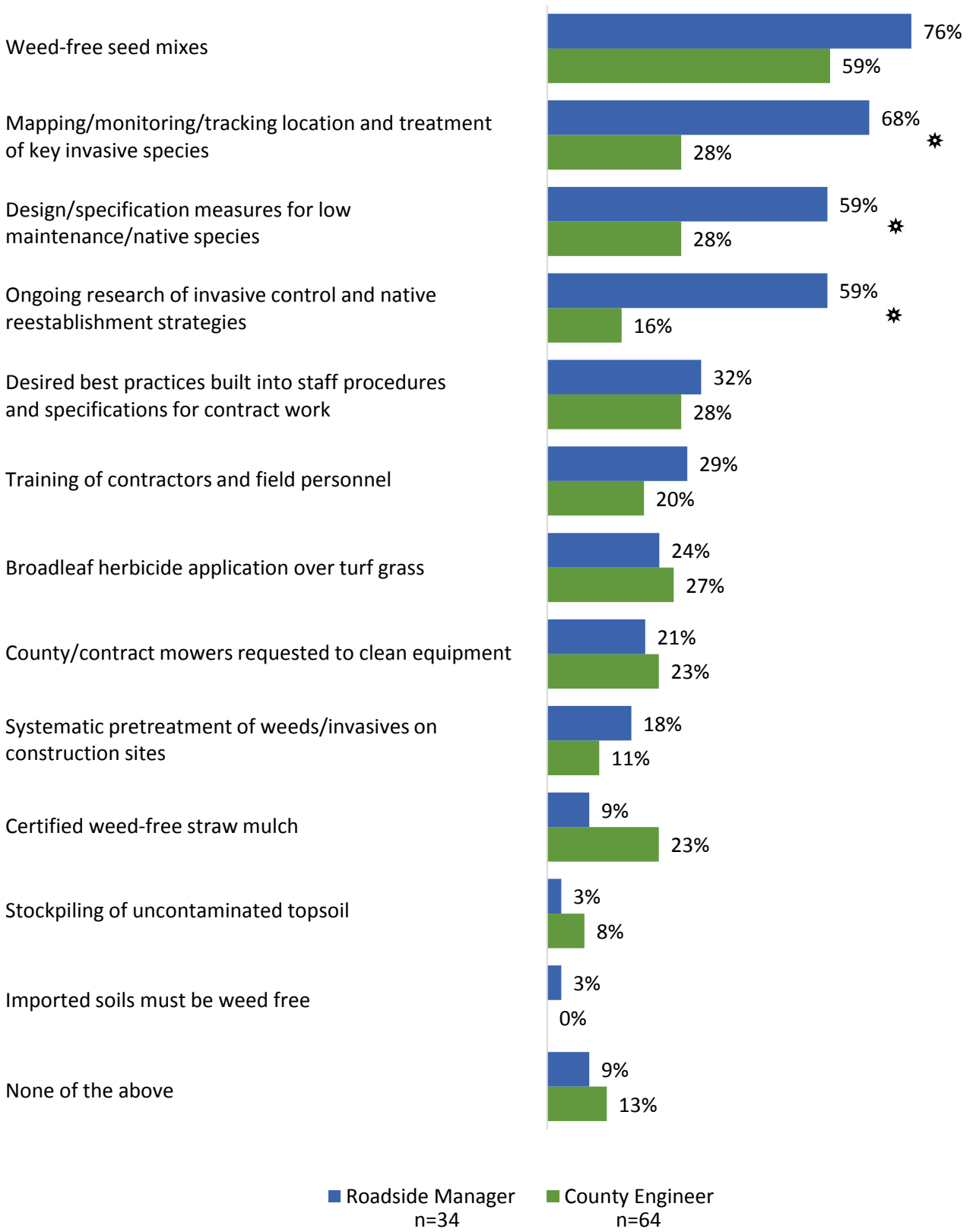


Figure 6. Prevention measures currently used by Roadside Managers and County Engineers to combat invasive species

The two most widely used management practices by both County Engineers and Roadside Managers were “spot-praying of weeds with herbicides” and “spot mowing of weeds” (Figure 7). Nine in ten Roadside Managers (91%) and County Engineers (89%) indicated their counties use spot-spraying to manage weeds, while three-quarters of County Engineers (75%) and Roadside Managers (74%) use spot mowing. County Engineers more often indicated “strip mowing of weeds” as a management practice currently used in their county than did Roadside Managers;⁸ nearly one-half of County Engineers (47%) indicated they use strip mowing, compared to 15% of Roadside Managers. One-quarter of County Engineers and 15% of Roadside Managers reported using “Full width mowing.” “Blanket spraying of weeds with herbicides” was identified least often by both County Engineers (16%) and Roadside Managers (6%) as a management practice they used.

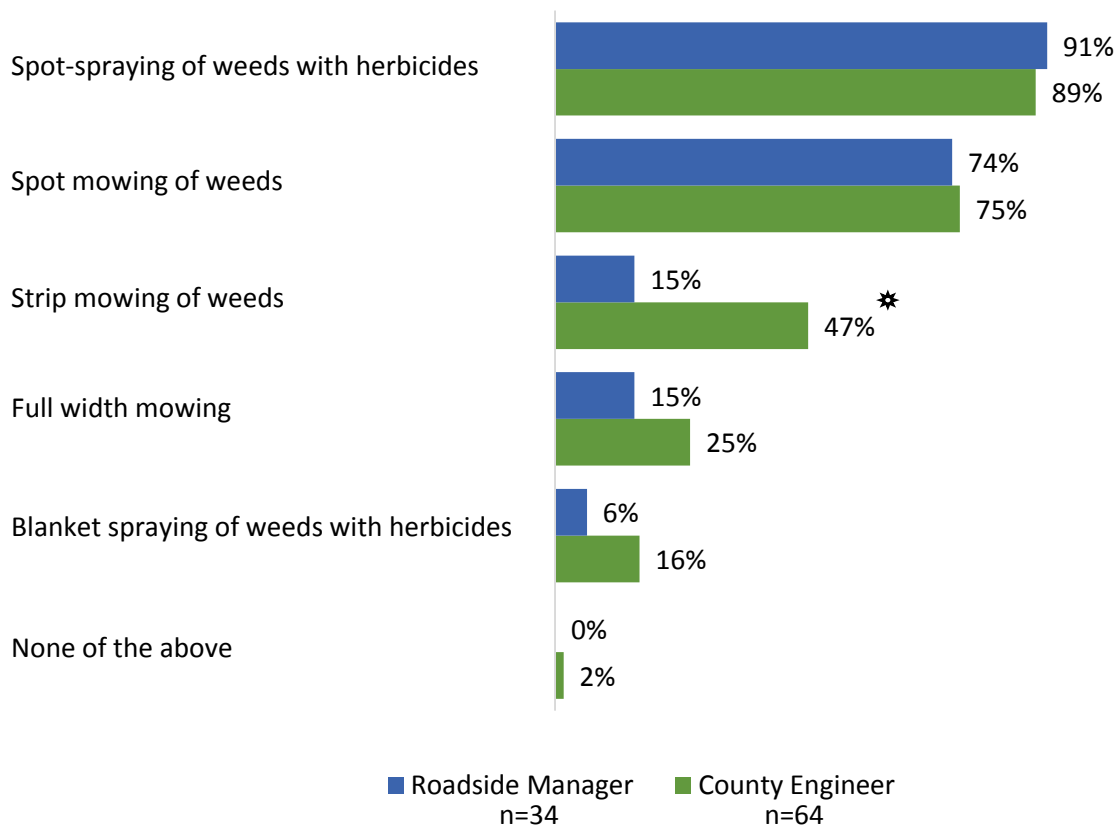


Figure 7. Management practices currently used by Roadside Managers and County Engineers

County Engineers and Roadside Managers were asked to identify the impact that a number of possible influences have upon roadside vegetation management decision-making in their counties. The two influences that were identified most often by both Roadside Managers and County Engineers as having “Quite a bit of impact” were consideration of safety and soil erosion concerns (Figure 8). Eighty-six percent of County Engineers identified “consideration of safety” as having “Quite a bit of impact” in influencing roadside vegetation management decision-making in their county, and three-quarters (75%)

⁸ $\chi^2(1, N=98) = 10.01, p = .002$

said the same for soil erosion concerns; approximately eight in ten (79%) Roadside Managers identified these influences as having quite a bit of impact in their county. Roadside Managers indicated “considerations of aesthetics” as having quite a bit of impact (41%) more often than did County Engineers (14%).⁹ The Endangered Species Act was identified least often as having “quite a bit of impact” by Roadside Managers (18%) and by only twenty-three percent of County Engineers.

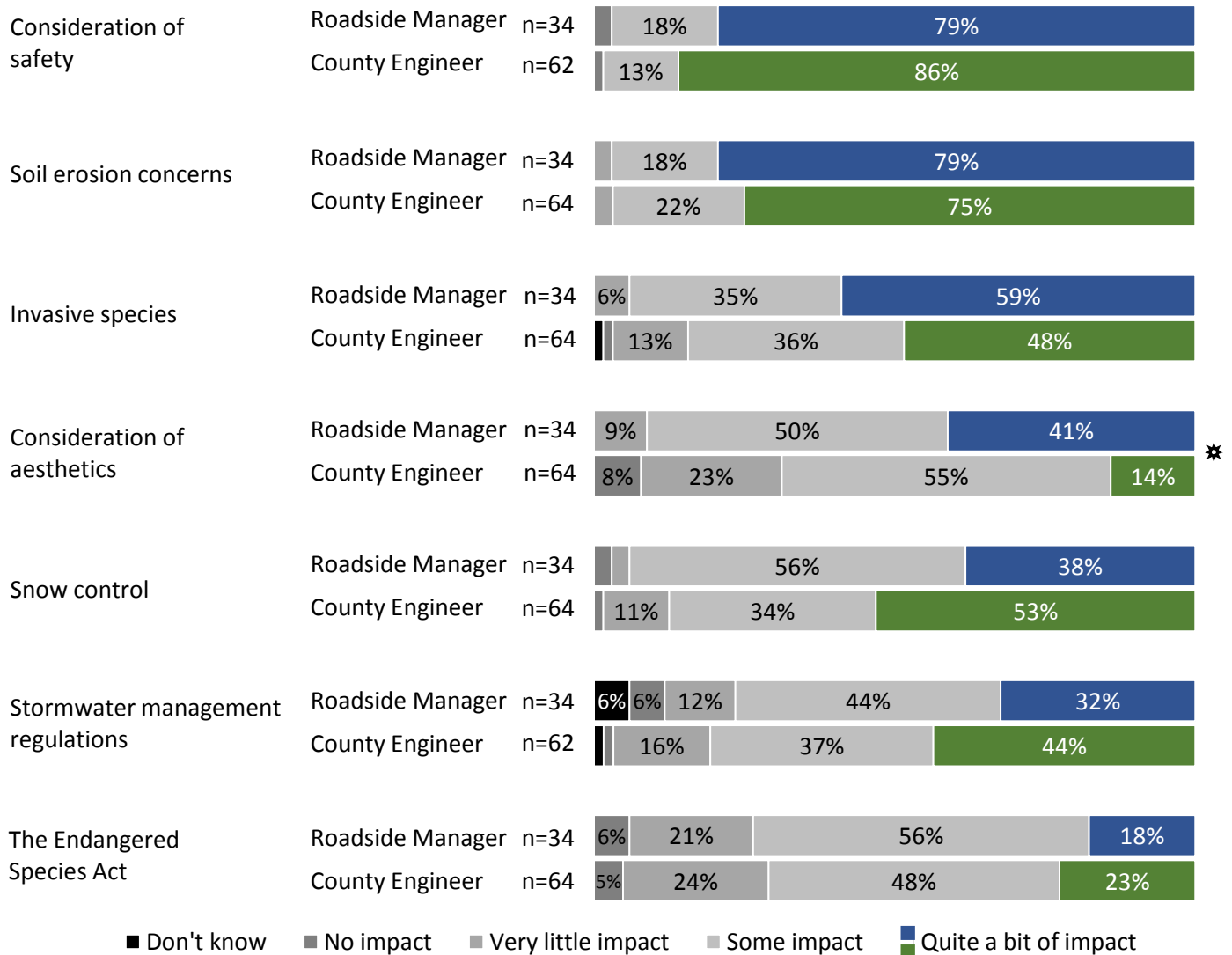


Figure 8. Impact of possible influences on roadside vegetation management decision-making

Respondents were asked to select, from a list, the three most influential factors in implementing their roadside management strategies. “Maintenance and cost savings” was identified most often by Roadside Managers (82%) and County Engineers (77%) as one of the most influential factors in implementing their roadside management strategies (Figure 9). Roadside Managers more often

⁹ $\chi^2(3, N=98) = 12.29, p = .006$

indicated “minimizing health or safety hazards” (82%),¹⁰ and “environmental stewardship/vegetative diversity” (65%),¹¹ as influential factors than did County Engineers, with 58% and 36% indicating each factor, respectively. A greater proportion of County Engineers (52%) than Roadside Managers (21%) identified “public input, surveys, and customer complaints,” as one of the three most important factors in implementation of roadside management strategies.¹²

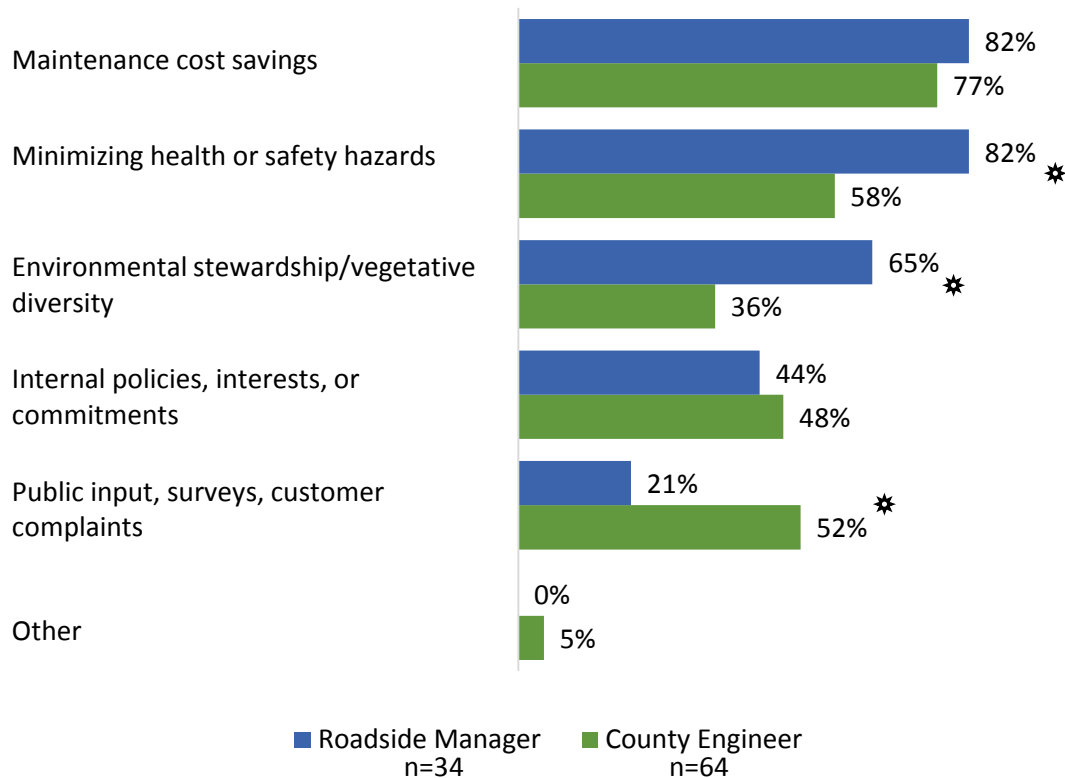


Figure 9. Most influential factors in implementing roadside management strategies

In regards to seeking information on roadside vegetation management, Roadside Managers more often identified their counterparts in other Iowa counties,¹³ chemical or equipment providers or other vendors,¹⁴ and Colleges/Universities,¹⁵ as a source of information than did County Engineers. Nearly all Roadside Managers (97%) and two-thirds of County Engineers (67%) identified their counterparts in other Iowa counties as a source they would typically go to for information (Figure 10). The majority of County Engineers (57%) and half of Roadside Managers (50%) identified the Iowa DOT as a source they turn to for information on roadside vegetation management and slightly more than one-third of both County Engineers (36%) and Roadside Managers (35%) indicated nongovernmental and or conservation groups. The majority of Roadside Managers (53%) identified chemical or equipment providers or other

¹⁰ $X^2(1, N=98) = 5.99, p = .014$

¹¹ $X^2(1, N=98) = 7.40, p = .007$

¹² $X^2(1, N=98) = 8.82, p = .003$

¹³ $X^2(1, N=98) = 13.07, p < .001$

¹⁴ $X^2(1, N=98) = 13.62, p < .001$

¹⁵ $X^2(1, N=98) = 4.47, p = .034$

vendors as a source of information on roadside vegetation management, compared to 18% of County Engineers who said the same. The National Cooperative Highway Research Program (NCHRP), Federal Highway Administration (FHWA), or similar organizations and counterparts in other states were identified least often by County Engineers and Roadside Managers.

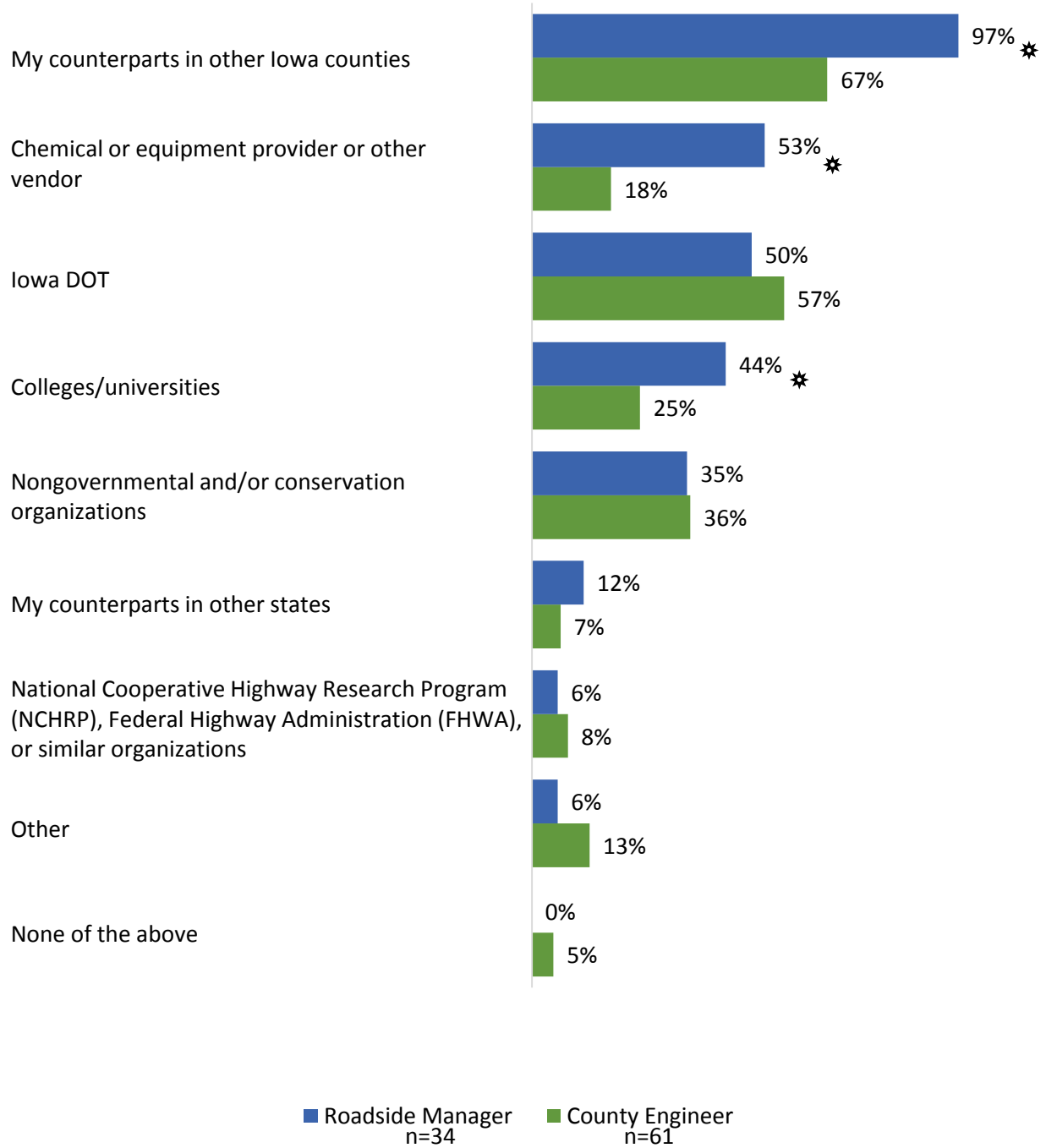


Figure 10. Sources used for information on roadside vegetation management

Protected Native Plant Communities

Awareness of protected native plant community remnants on secondary road rights-of-way (ROW) differed between Roadside Managers and County Engineers.¹⁶ Four in ten Roadside Managers (41%) reported their counties have protected community remnants on secondary road rights-of-way, 38% reported their counties did not, and one-fifth (21%) were not sure if their county’s secondary road rights-of-way contained protected native plant communities (Figure 11). The majority of County Engineers (58%) were not sure if there were any protected native plant communities on secondary road rights-of-way in their county; about one-quarter (24%) indicated there were not and 18% said their county did have protected native plant communities on secondary road ROWs.

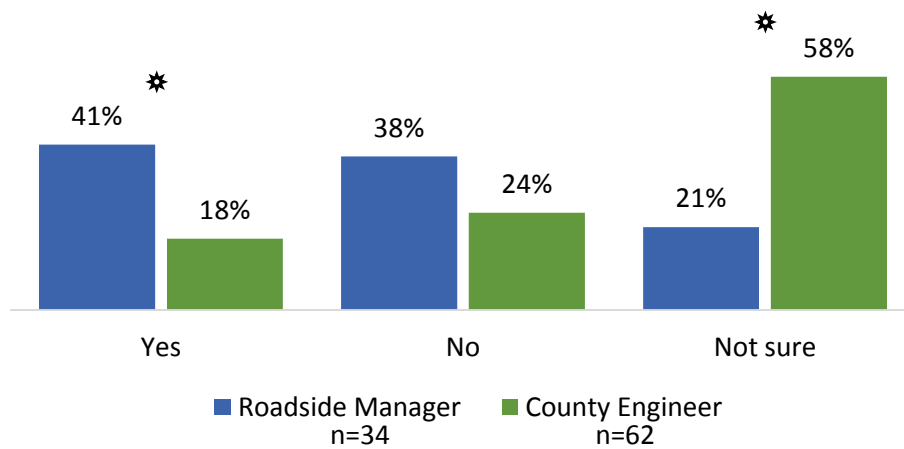


Figure 11. County secondary road rights-of-way contain protected native plant community remnants

When those who indicated having protected native plant communities in their county were asked which actions they use to address protected native plant community remnants on secondary road rights-of-ways, approximately eight in ten Roadside Managers (79%) and nearly three-quarters of County Engineers (73%) identified that roadside staff identify special management areas, which are then managed accordingly by maintenance staff (Figure 12). Additionally, more than four in ten County Engineers identified both that their county has a conservation mowing/spraying program to protect native communities, minimize maintenance costs, and control invasives (46%) and that the Roadside department has mapped and is tracking protected communities on county secondary road ROWs (46%). The same was true for nearly two-thirds (64%) and one-half (50%) of Roadside Managers, respectively.

¹⁶ $\chi^2(2, N=96) = 13.00, p = .002$

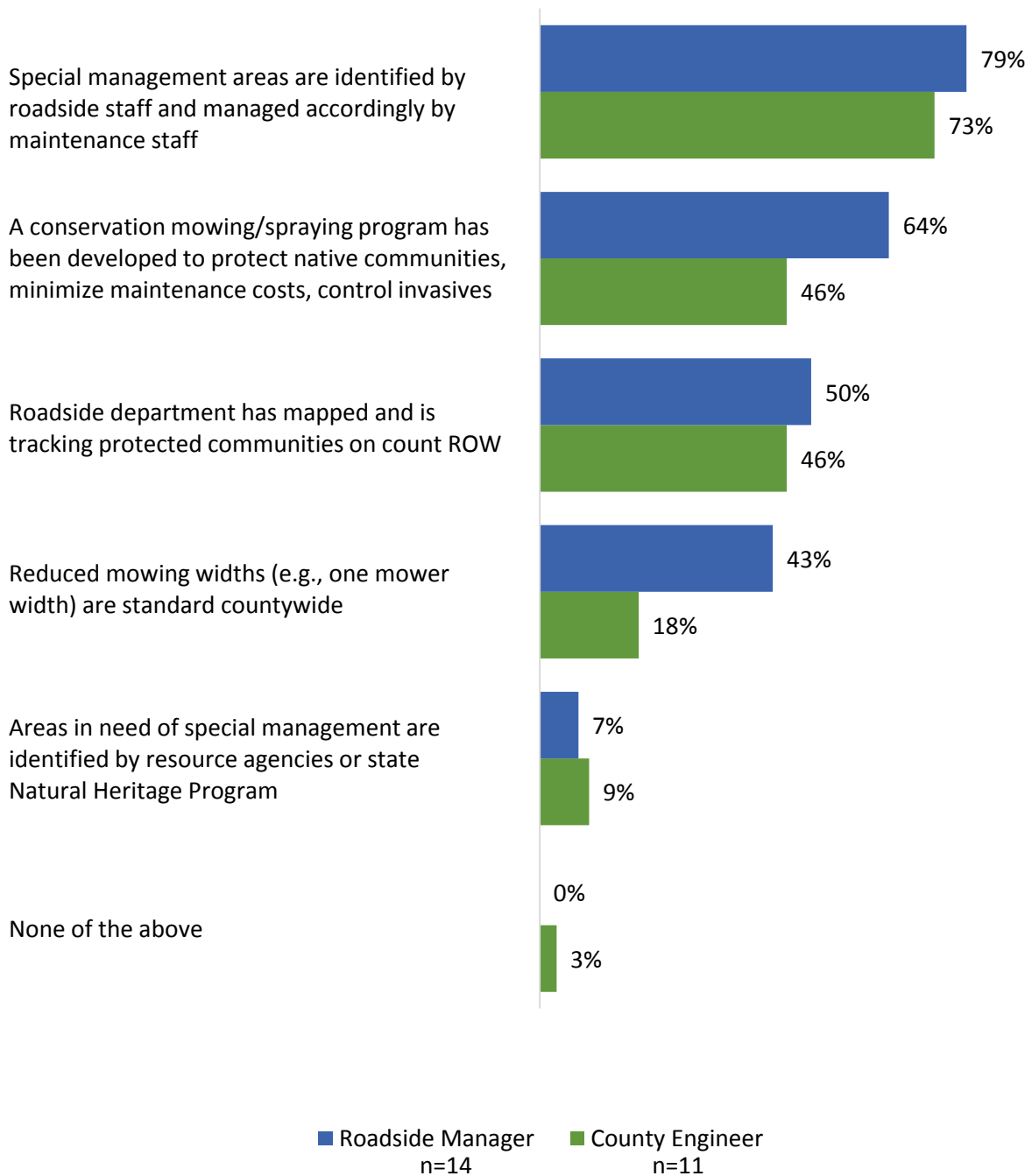


Figure 12. Actions used for protected native plant community remnants on secondary road rights-of-way
**Only asked to respondents who indicated the presence of protected native plant communities in their county.*

Revegetation with Native Plants

Respondents were asked to approximate, over the last three years, the percentage of road engineering projects in their county that included native plants as a component and those that used non-native plants (e.g., fescue or smooth brome). Roadside Managers were more likely to include native vegetation in roadside projects than were County Engineers.¹⁷ One-half of Roadside Managers (50%) indicated that more than 75% of their projects included native vegetation during the last three years and one-fifth (19%) said that 1% to 25% of their projects included native vegetation (Figure 13). One-fifth of County Engineers (22%) indicated they did not use native vegetation in any of their projects during the last three years. Twenty-four percent of County Engineers used native vegetation in more than half of their roadside management projects over the last three years.

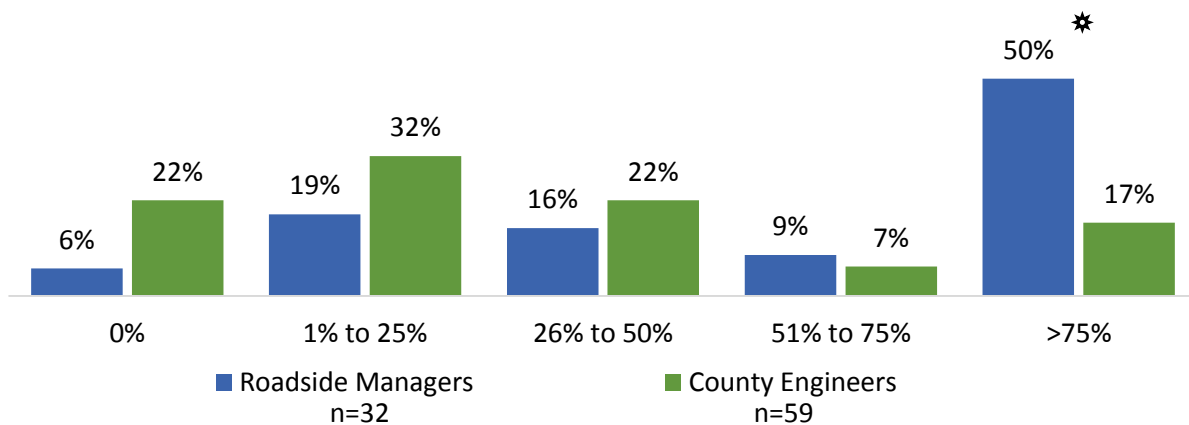


Figure 13. Percentage of road engineering projects, in the last 3 years, that included native vegetation as a component

With regard to non-native plant use in road engineering projects over the last three years, differences were not statistically significant, though a trend opposite to native vegetation use was seen. Forty-six percent of County Engineers indicated they used non-native vegetation in more than three-quarters of their roadside management projects, compared to one-fifth (19%) of Roadside Managers (Figure 14). Sixteen percent of Roadside Managers and nine percent of County Engineers did not use non-native plants in any of their projects over the last three years.

¹⁷ $\chi^2(4, N=91) = 13.05, p = .011$

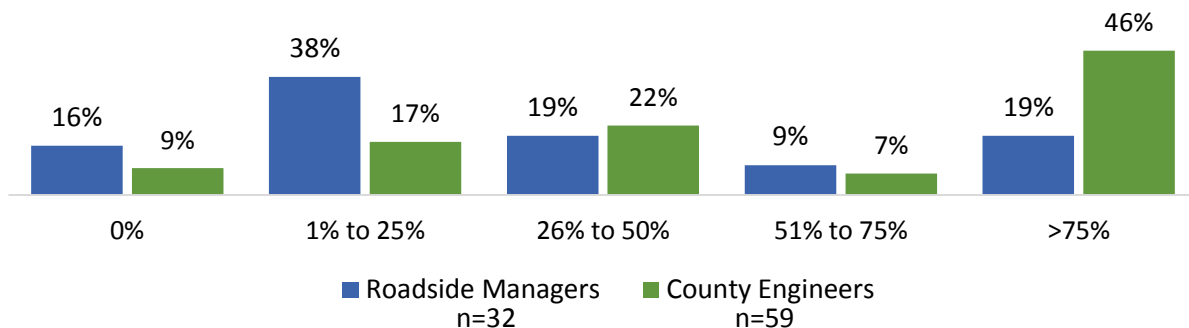


Figure 14. Percentage of road engineering projects, in the last 3 years, that included non-native vegetation (e.g., fescue or smooth brome) as a component

Respondents were asked to consider their typical roadside vegetation management projects over the last three years and to indicate which plant types they used for those projects. Nearly all County Engineers (97%) and all Roadside Managers (100%) used grasses in revegetation projects. Roadside Managers were more likely to have used wildflowers in revegetation projects;¹⁸ nine in ten Roadside Managers (91%) and two-thirds of County Engineers (66%) used wildflowers (Figure 15). Few County Engineers used shrubs (5%) or trees (6%) for roadside vegetation management projects over the last three years, while no Roadside Managers used trees and about one in ten used shrubs (9%).

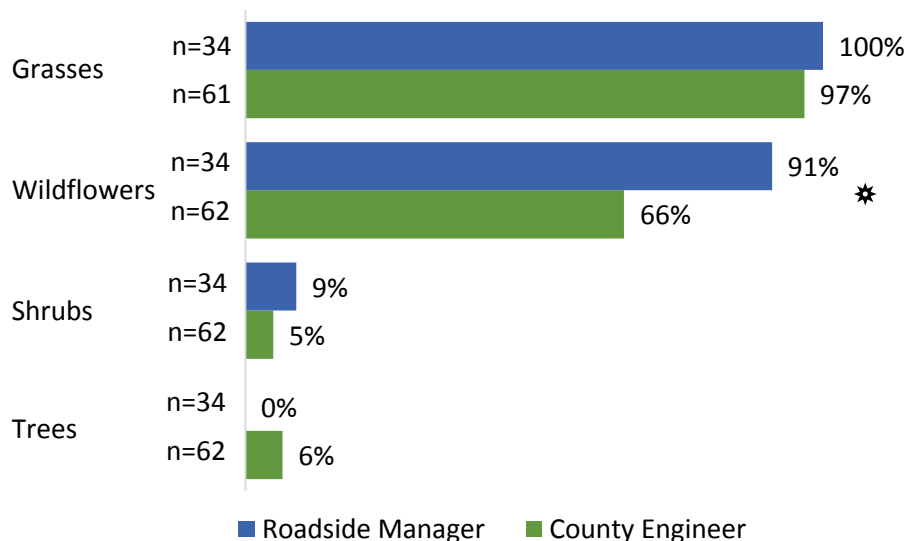


Figure 15. Plant types used during the last three years in roadside vegetation management projects

¹⁸ $\chi^2(1, N=95) = 7.58, p = .006$

Respondents who indicated using wildflowers and grasses were asked in a follow-up question how often they used grasses or wildflowers in their roadside vegetation management projects. Roadside Managers indicated greater use of wildflowers than did County Engineers¹⁹; over two-thirds (68%) of Roadside Managers reported using wildflowers in most or all of their projects, compared to one-fifth (21%) of County Engineers (Figure 16). A majority of Roadside Managers (82%) and County Engineers (62%) reported using grasses in most or all of their projects.

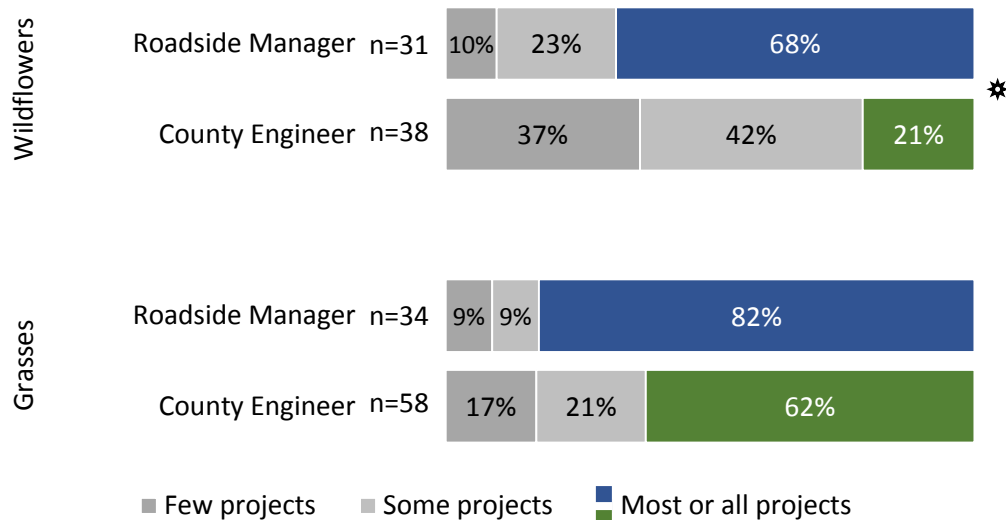


Figure 16. Frequency of use of grasses and wildflowers in roadside vegetation management projects

Roadside Managers indicated that a greater percentage of non-grass plants used for revegetation were native to the state or region than did County Engineers.²⁰ Roadside Managers estimated 70% of the non-grass plants (Figure 17) and 75% of the grasses (Figure 18) used for revegetation were native to the state/region and County Engineers estimated 35% of non-grass plants and 45% of grasses used were native.

¹⁹ $X^2(2, N=69) = 15.92, p < .001$

²⁰ $X^2(4, N=84) = 13.58, p = .009$

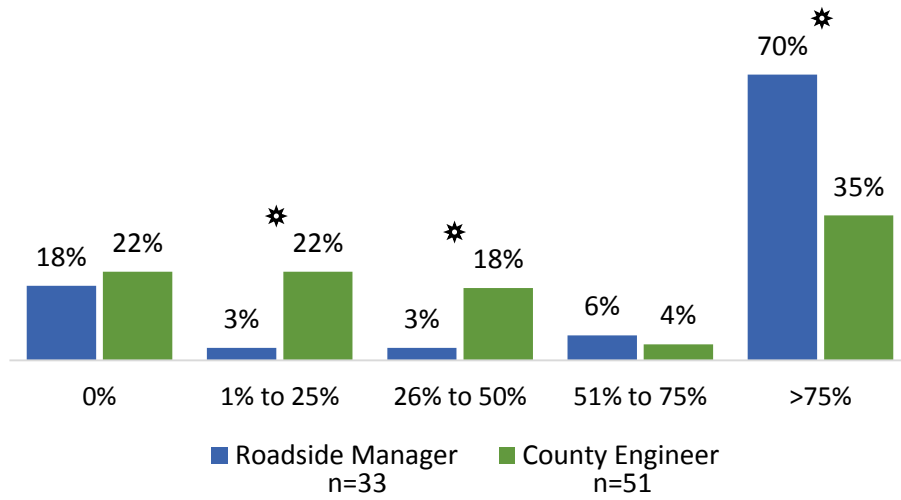


Figure 17. Percentage of non-grass plants used for revegetation that are native to state or region

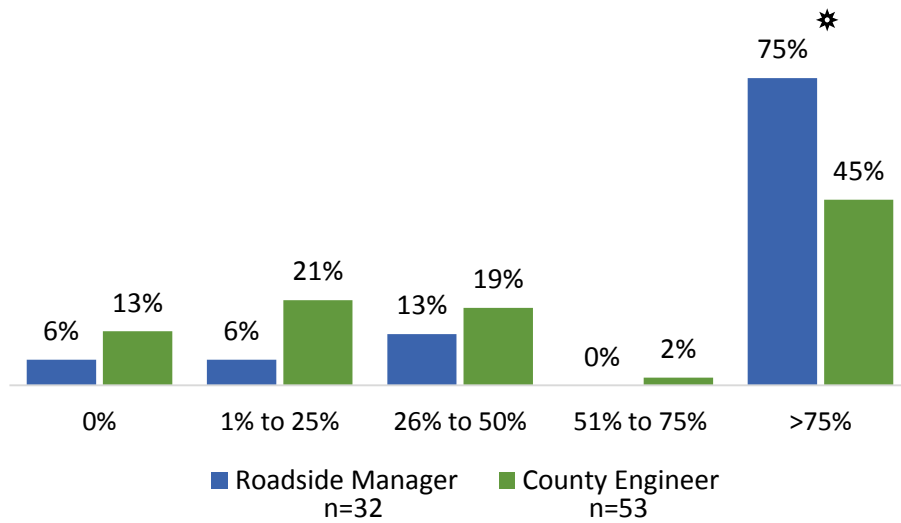


Figure 18. Percentage of grasses used for revegetation that are native to state or region

A majority of both Roadside Managers and County Engineers rely on native grasses (88% and 70%) or wildflowers (85% and 62%) for revegetation and erosion control efforts (Figure 19). Roadside Managers were more likely than County Engineers to rely on native grasses or wildflowers for storm water management,²¹ landscaping,²² and snow control.²³ Sixty-eight percent of Roadside Managers relied on native grasses or wildflowers for storm water management and landscaping and one-half of Roadside Managers indicated the same for snow control, compared to 38%, 32%, and 22% of County Engineers, respectively.

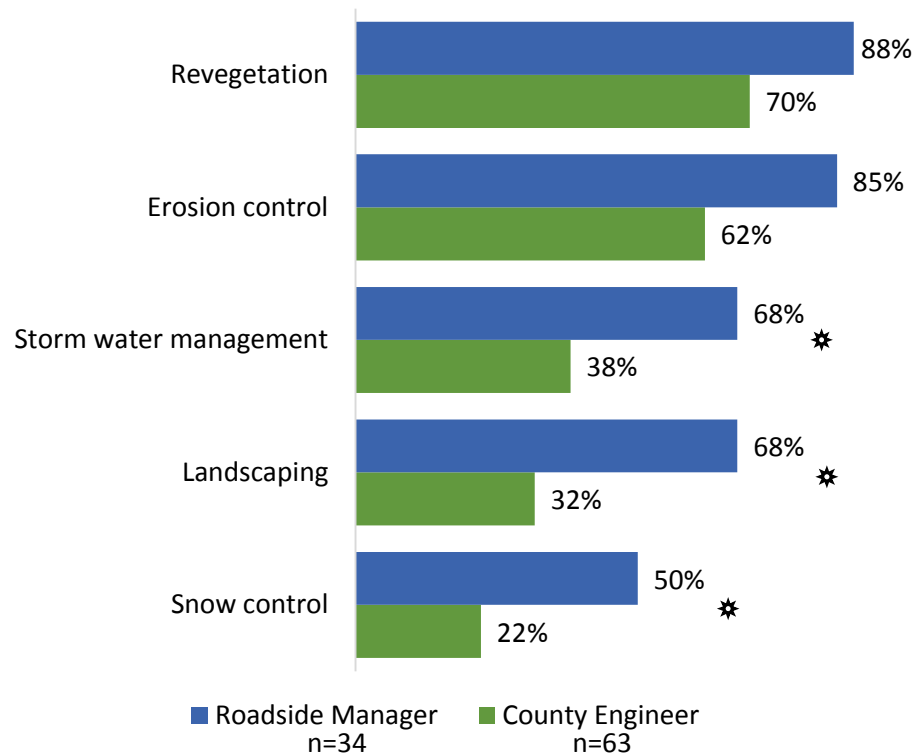


Figure 19. Agency activities that rely on native grasses or wildflowers

Respondents who indicated they did not rely on native grasses or wildflowers for revegetation, erosion control, storm water management, landscaping, or snow control were asked to identify their agency’s primary reason for not using native grasses or wildflowers for those purposes. The cost associated with implementation and management, as well as lack of time and resources, were identified by County Engineers and Roadside Managers as primary reasons for not using native grasses or wildflowers for revegetation as well as for each other management activity; however, reasons more specific to the other management activities were also given.

Cost - i.e. seed, labor and maintenance until established.
-County Engineer

²¹ $X^2(3, N=97) = 8.69, p = .034$

²² $X^2(3, N=97) = 14.26, p = .003$

²³ $X^2(3, N=97) = 15.03, p = .002$

With regard to erosion control, County Engineers and Roadside Managers expressed concern over the length of time required for native grasses or wildflowers to establish.

We use something that establishes faster for our major erosion issues.

-Roadside Manager

Difficulty getting established before erosion begins to occur.

-County Engineer

Many County Engineers and some Roadside Managers who indicated they did not use native grasses or wildflowers for storm water management emphasized that storm water management was not in their purview, other than with regard to how it affects infrastructure.

We are not dealing with site specific storm water management issues, only vegetation of the roadside.

-County Engineer

We don't do much for storm water management

-Roadside Manager

However, concerns over how long it takes native grasses or wildflowers to establish were also expressed by both County Engineers and Roadside Managers.

They take too long to get established.

-County Engineer

Stormwater management is needed during and directly after construction. It takes 2 years to get natives established, so while they are an integral part of the re-vegetation process, natives are not considered a stormwater tool.

-Roadside Manager

When asked why native grasses or wildflowers were not used in landscaping activities, both County Engineers and Roadside Managers drew a distinction between their duties and the term landscaping.

We do not consider our work to be landscaping

-County Engineer

We do not landscape. We re-vegetate any area that gets disturbed during maintenance and construction.

-Roadside Manager

The lack of use of native grasses or wildflowers in snow control efforts was attributed to the width of rights-of-way. County Engineers and Roadside Managers indicated that ROWs were too narrow to plant natives and that they would exacerbate snow management on roadways.

Current presumptions are that the ROW is not wide enough and that the tall native grasses actually cause more snow deposition on the roadway.

-Roadside Manager

Don't like the results, they catch the snow more and then cause it to drift onto the road

-County Engineer

Most right of ways are too narrow to plant living snow fences

-Roadside Manager

Narrow right of way and tall grass would cause problems with snow removal and drifting.

-County Engineer

Management of Native Plantings

Respondents who indicated using native grasses or wildflowers for revegetation, erosion control, storm water management, landscaping, or snow control were asked which steps, of a select list, they used when implementing native plantings. Roadside Managers were more likely than County Engineers to report that they complete vegetation and revegetation according to county vegetation plans;²⁴ nearly nine in ten Roadside Managers (87%) use these plans, compared to four in ten County Engineers (41%) (Figure 20). Two-thirds of County Engineers (67%) and a majority of Roadside Managers (57%) identified following road department policies or agency-wide design specifications when implementing native plantings. Over half of Roadside Managers (53%) and approximately one-third of County Engineers (35%) require seed mixes that have been designed for a variety of ecoregions and slope aspects.

²⁴ $X^2(1, N=76) = 15.47, p < .001$

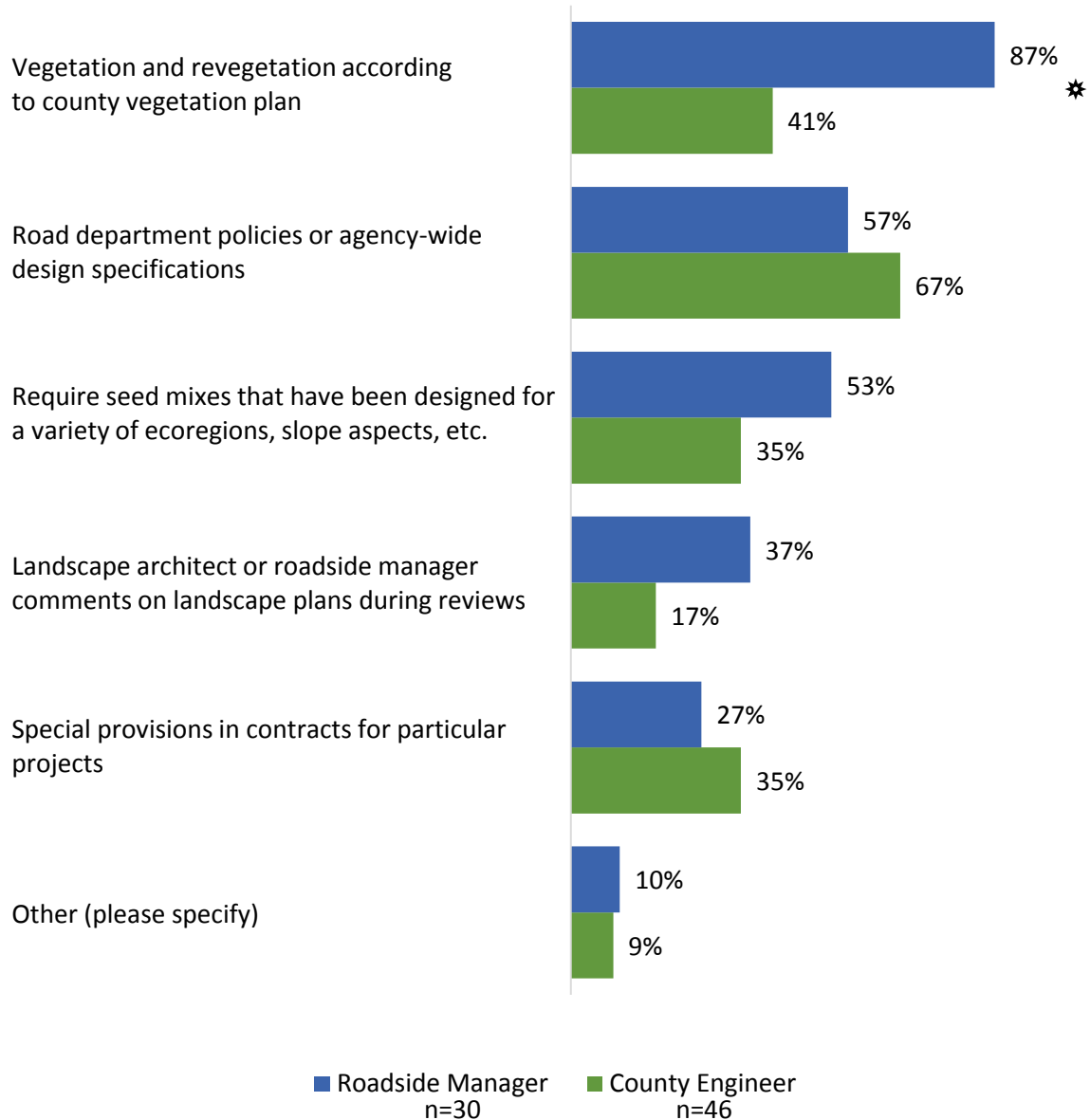


Figure 20. Steps taken when implementing native plantings

Management of native plantings differed between Roadside Managers and County Engineers. The reported frequency with which native plantings are mowed during their first year differed between Roadside Managers and County Engineers.²⁵ A plurality of Roadside Managers (49%) and County Engineers (38%) indicated that native plantings are mowed once within one year of seeding; however, Roadside Managers were more likely to indicate native plantings are mowed 2-3 times within one year of seeding than were County Engineers (Figure 21). Slightly over one-quarter (27%) of both County Engineers and Roadside Managers indicated that native plantings were never mowed within one year of seeding.

²⁵ $\chi^2(3, N=89) = 12.78, p = .005$

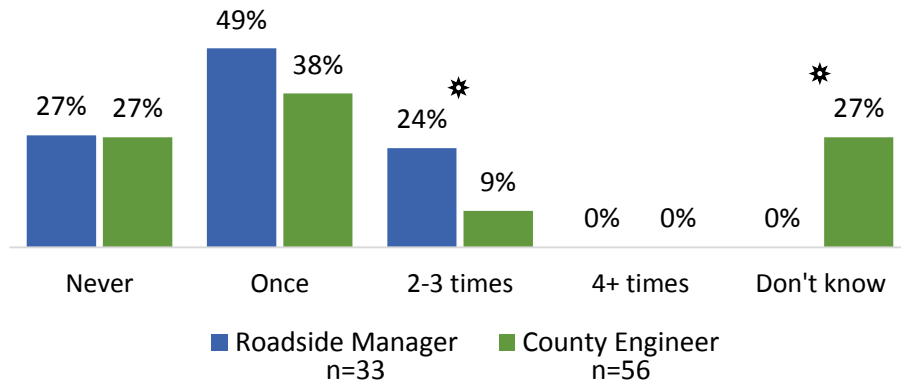


Figure 21. Frequency with which native plantings are mowed within one year of seeding

Management of native plantings changes after the plantings are one-year old, though differences in management by County Engineers and Roadside Managers remain. The frequency of mowing,²⁶ and burning,²⁷ of native plantings, after they are one-year-old, differed among County Engineers and Roadside Managers. Three in five Roadside Managers (61%) indicated native plantings are never mowed after they are one-year-old and 39% indicated they are mowed once per year (Figure 22).

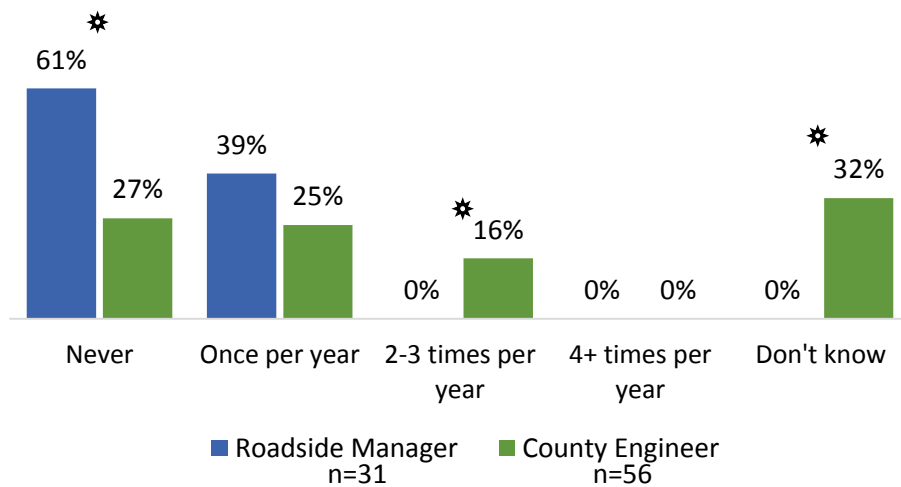


Figure 22. Frequency with which native plantings are mowed after they are one-year-old

²⁶ $X^2(3, N=87) = 22.28, p < .001$

²⁷ $X^2(4, N=87) = 23.96, p < .001$

Nearly half of Roadside Managers (48%) indicated native plantings are burned every 4-5 years (Figure 23) after they are one-year-old; the same percentage of County Engineers (48%) indicated native plantings are never burned. County Engineers were more likely than Roadside Managers to select “Don’t Know” in response to all items about frequency of management actions on native plantings.

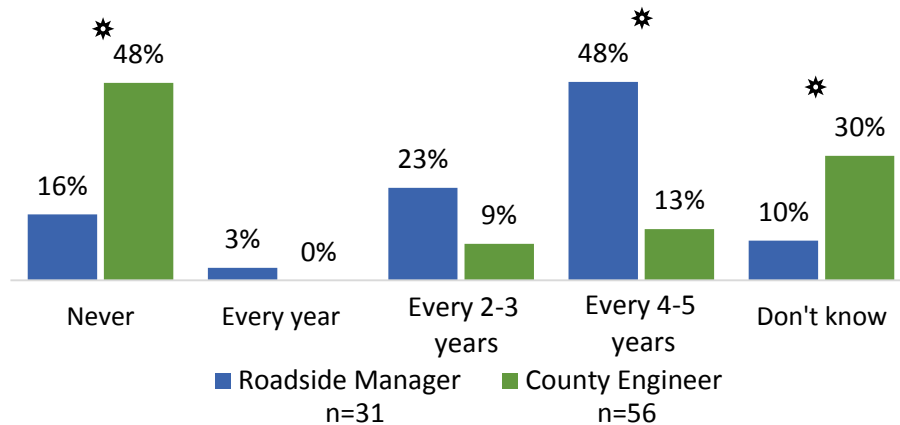


Figure 23. Frequency with which native plantings are burned after they are one-year-old

Respondents were asked to identify, from a list, the indicators used for defining successful revegetation in their county. Roadside Managers selected plant coverage,²⁸ and weed control,²⁹ meeting or exceeding success criteria after one year as indicators of successful revegetation more often than did County Engineers. Three quarters of Roadside Managers (74%) identified plant coverage as an indicator of success and six in ten (59%) identified weed control criteria, compared to 37% and 34% of County Engineers, respectively (Figure 24). Approximately one-third of Roadside Managers (35%) consider the percentage of native plant coverage when evaluating success of revegetation, a greater proportion than that of County Engineers (15%).³⁰ Half of Roadside Managers (50%) and 58% of County Engineers assess soil coverage as an indicator of successful revegetation.

²⁸ $\chi^2(1, N=98) = 11.66, p = .001$

²⁹ $\chi^2(1, N=98) = 5.59, p = .018$

³⁰ $\chi^2(1, N=98) = 5.55, p = .019$

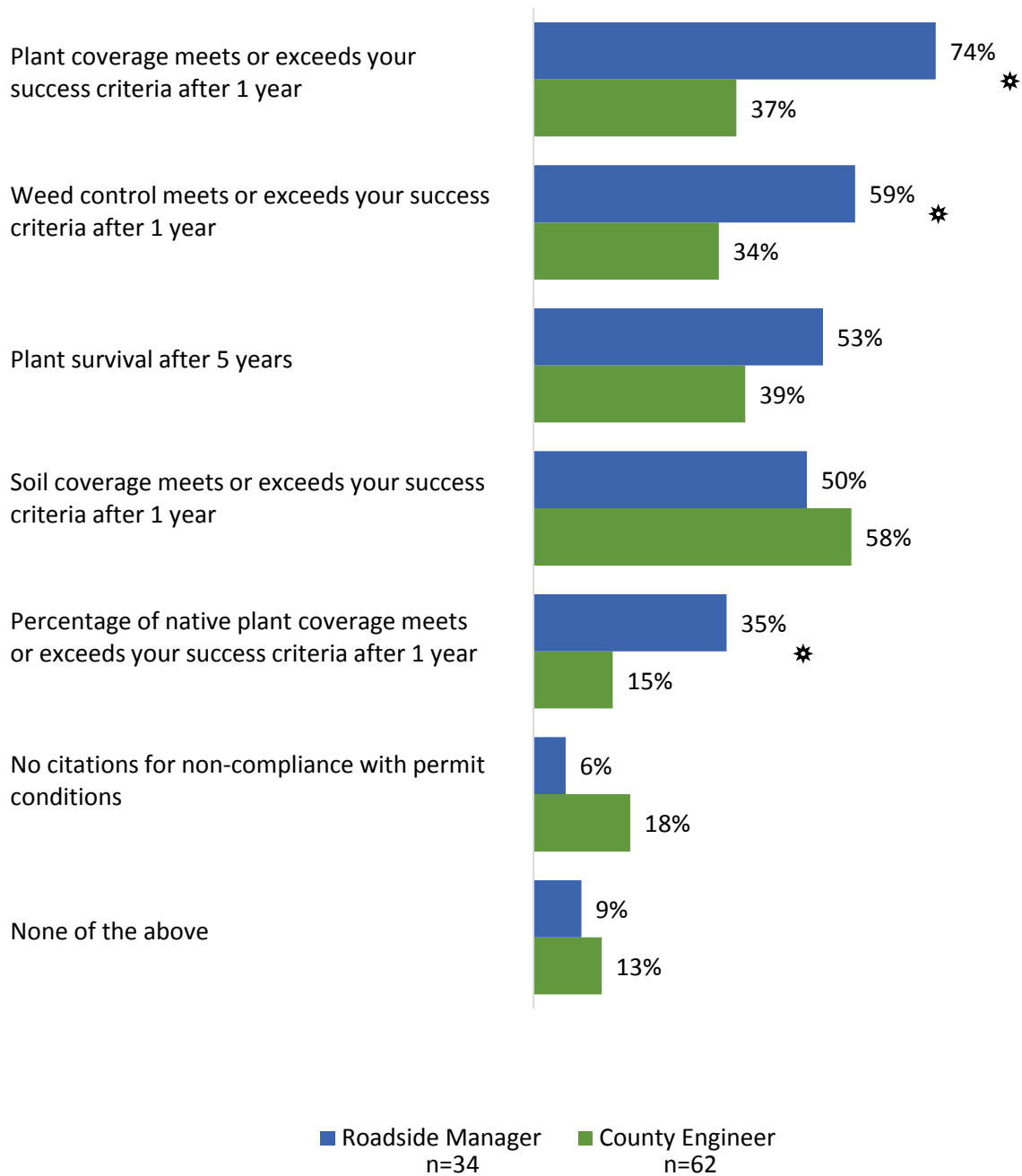


Figure 24. Indicators of successful revegetation

County Engineers were more likely than Roadside Managers to rate their county’s experience using native plantings as moderately challenging, while Roadside Managers were more likely than County Engineers to rate their agency’s experience as not at all challenging.³¹ Seven in ten county engineers (71%) rated their agency’s experience using native plantings as somewhat, moderately, or extremely challenging, whereas four in ten Roadside Managers (41%) rated theirs the same (Figure 25).

³¹ $\chi^2(4, N=84) = 14.66, p = .005$

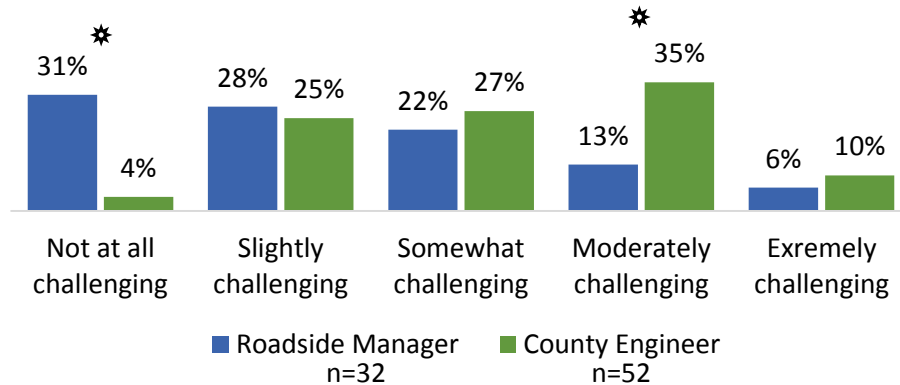


Figure 25. Rating of agency's experience using native plantings

Respondents who indicated that their agency's experience using native plantings has been somewhat to extremely challenging were asked to identify their primary challenges in greater use of native species. There were no significant differences in challenges identified by County Engineers and Roadside Managers. The most common challenge identified by both County Engineers (66%) and Roadside Managers (62%) was the length of time to establish and/or short growing season (Figure 26). Six in ten Roadside Managers (62%) and one-third of County Engineers (34%) identified interference with native plantings by adjacent landowners mowing or spraying herbicides as challenges in their county. When asked to identify how many acres of secondary road rights-of-way had been mowed or sprayed by adjacent landowners in the last three years, County Engineers estimated on average 156 acres were sprayed with herbicides (n=6) and 617 acres were mowed (n=6) and Roadside Managers' average estimates were 75 acres sprayed (n=7) and 184 acres mowed (n=8) by adjacent landowners. In total, County Engineers and Roadside Managers reported that 1,460 acres have been sprayed and 5,168 have been mowed by adjacent landowners during the last three years. Forty-five percent of County Engineers and three in ten Roadside Managers (31%) identified the cost of desired material and/or available agency funding as a challenge. Additionally, nearly one-quarter of Roadside Managers (23%) indicated acceptance or education internally or among contractors as a challenge to greater use of native species. Availability of plant material or desired seed mixes and limited research regarding what works were identified by 8% of County Engineers, but not by any Roadside Managers. The most common sources of native seed identified by both County Engineers and Roadside Managers was seed made available through the IRVM program; however, many names were used to describe this source, such as IRVM, TAP seed, LRTF, the Tallgrass Prairie Center, and UNI. Other sources included private contractors, local Iowa growers, REAP, Allendan, and Ion Exchange.

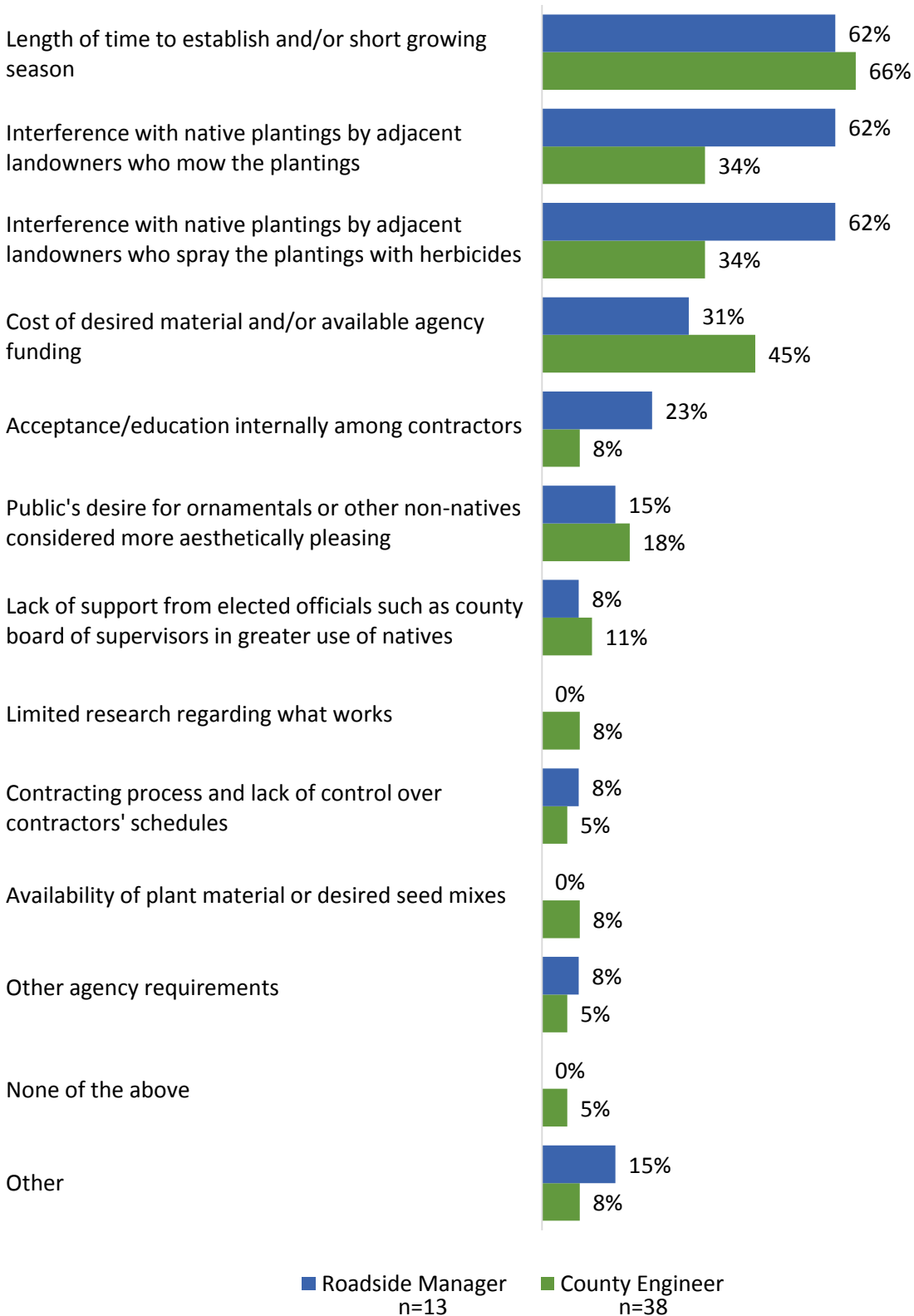


Figure 26. Primary challenges in greater use of native species

**Only asked to respondents who indicated their agency's experience using native plantings has been somewhat, moderately, or extremely challenging.*

IRVM Program

Roadside Managers were more familiar with the IRVM program than were County Engineers.³² Nine in ten Roadside Managers responded that they were very familiar with the IRVM program and over three-quarters of County Engineers (77%) indicated they were somewhat or very familiar with the program (Figure 27).

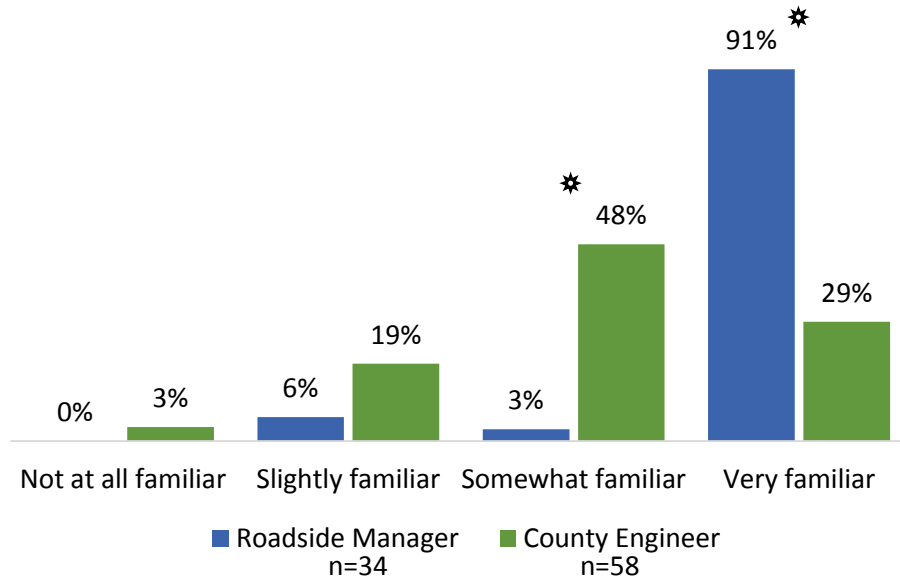


Figure 27. Familiarity with the IRVM Program

All Roadside Managers (100%) and a vast majority of County Engineers (79%) agreed (agree or strongly agree) that Integrated Roadside Vegetation Management (IRVM) provides attractive roadsides in their county (Figure 28). The majority of both County Engineers and Roadside Managers agreed that Integrated Roadside Vegetation Management (IRVM) provides a suite of ecosystem service benefits to counties as well. Three-quarters of County Engineers agreed that IRVM enhances biodiversity (75%), seven in ten agreed that it maintains or improves water quality (71%) and protects soil resources (70%). Over ninety percent of Roadside Managers agreed that IRVM provides each of these ecosystem service benefits. More than half of County Engineers and over 80% of Roadside Managers agreed or strongly agreed that IRVM promotes partnerships with other organizations, reduces spread of invasive species, and optimizes the effectiveness of weed and pest control practices. County Engineers agreed least often that IRVM reduces blowing snow (37%), saves money both long and short term (32%), and makes roadways safer (37%); two-thirds of Roadside Managers agreed or strongly agreed that IRVM makes roadways safer.

Chi-squared tests showed that Roadside Managers agreed more often than did County Engineers that Integrated Roadside Vegetation Management (IRVM) provides ecosystem service benefits to counties by enhancing biodiversity,³³ maintaining or improving water quality,³⁴ protecting soil resources,³⁵ and

³² $X^2(3, N=92) = 33.47, p < .001$

³³ $X^2(4, N=90) = 37.46, p < .001$

³⁴ $X^2(4, N=90) = 21.51, p < .001$

³⁵ $X^2(5, N=90) = 24.17, p < .001$

reducing the spread of invasive species.³⁶ Roadside Managers also agreed more strongly than did County Engineers that IRVM provides attractive roadsides,³⁷ makes roadways safer,³⁸ and reduces blowing snow.³⁹ Similarly, Roadside Managers were more likely than County Engineers to agree that IRVM promotes partnerships with other organizations,⁴⁰ optimizes the effectiveness of weed and pest control practices,⁴¹ and saves money both long and short term.⁴²

³⁶ $X^2(4, N=90) = 14.64, p = .006$

³⁷ $X^2(4, N=90) = 34.26, p < .001$

³⁸ $X^2(5, N=90) = 15.43, p = .009$

³⁹ $X^2(5, N=89) = 28.76, p < .001$

⁴⁰ $X^2(5, N=90) = 25.88, p < .001$

⁴¹ $X^2(5, N=90) = 23.37, p < .001$

⁴² $X^2(5, N=90) = 23.86, p < .001$

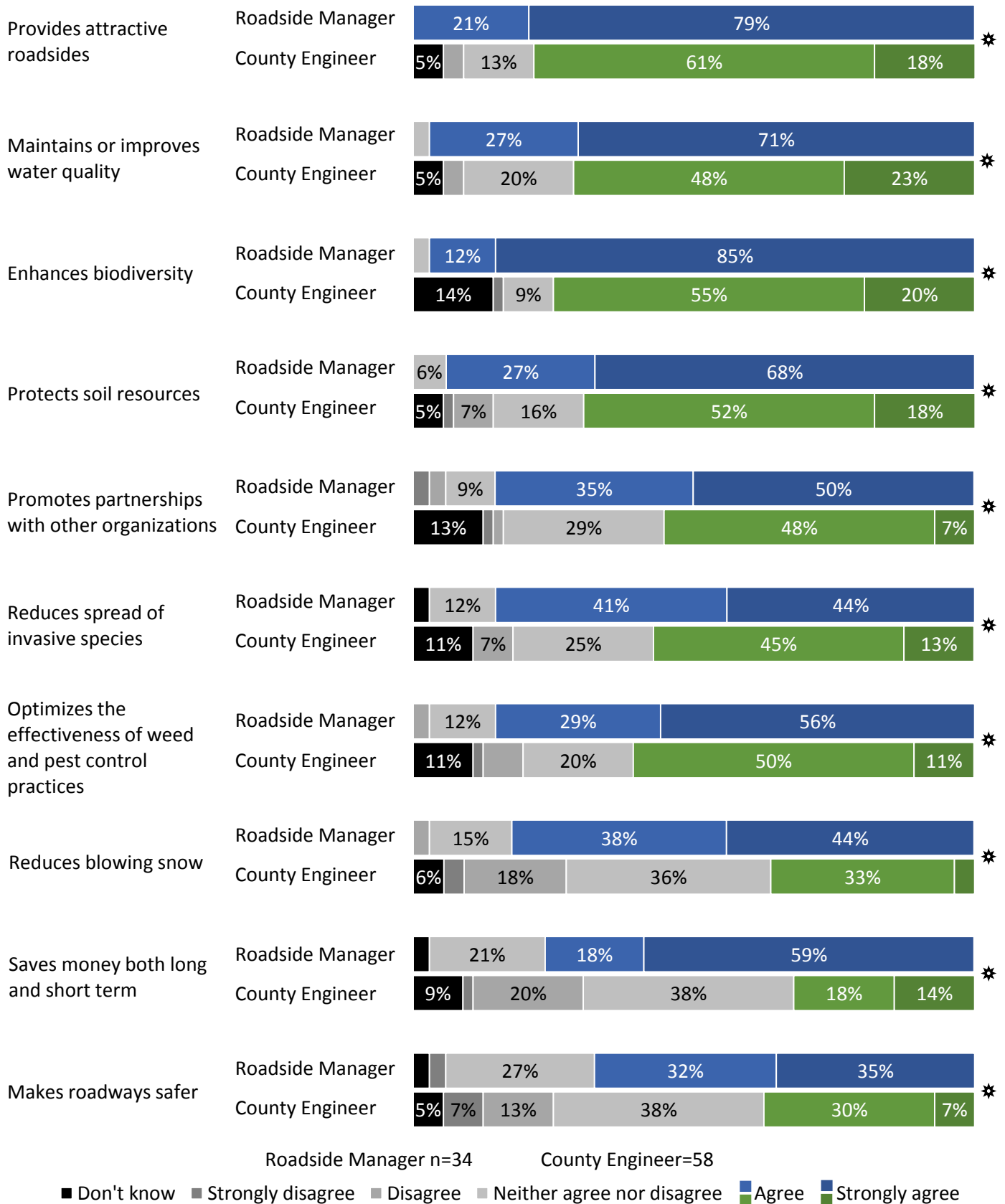


Figure 28. Agreement and disagreement with statements regarding benefits of the IRVM Program

Collaboration and Professional Development

The majority of both County Engineers (70%) and Roadside Managers (79%) said their agency works with similar agencies in other counties in Iowa (Figure 29). Both Roadside Managers and County Engineers identified workshops and conferences as important venues for developing networks and establishing relationships.

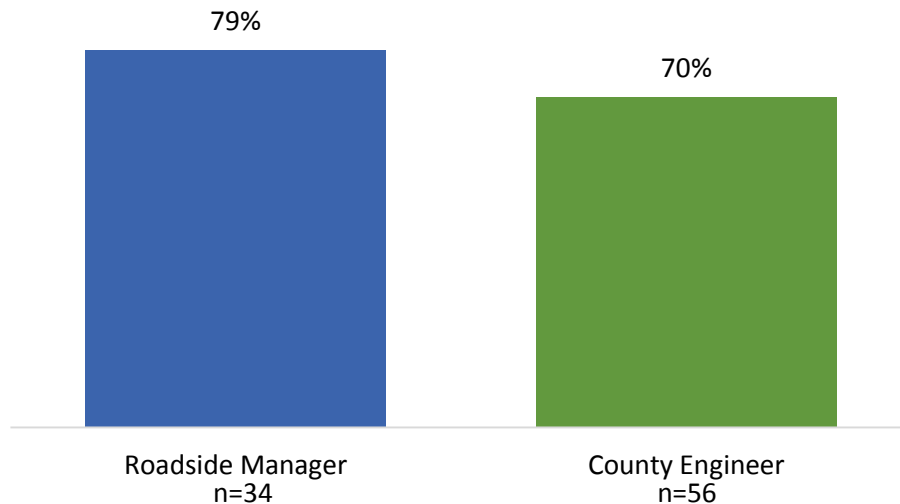


Figure 29. Percentage of agencies that work with similar agencies in other counties in Iowa

The majority of County Engineers (62%) and Roadside Managers (81%) have had professional development opportunities related to prairie or native plants made available to them (Figure 30). County Engineers and Roadside Managers emphasized the role of conferences and meetings as professional development opportunities. The Association for Integrated Roadside Management (AFIRM) conference was mentioned specifically by a number of Roadside Managers. Workshops or trainings put on by IDOT, State Weed Commissioners, Living Roadway Trust Fund, and the Tallgrass Prairie Center were also noted as important opportunities for professional development by Roadside Managers and County Engineers.

IRVM annual meetings and training provided, took a class on wetlands and determination with the corp funded by IRVM
-County Engineer

State and regional weed commissioner conference, AFIRM meeting, Roadside Conference, Prairie Conference, ROW Workshop, meeting with area county roadside managers, meeting with Tallgrass Prairie Center personnel
-Roadside Vegetation Manager

Roadside Managers also mentioned having a variety of training opportunities related to prescribed fire, Geographic Information Systems (GIS) training, Plant ID, Herbicide application, and wetland delineation.

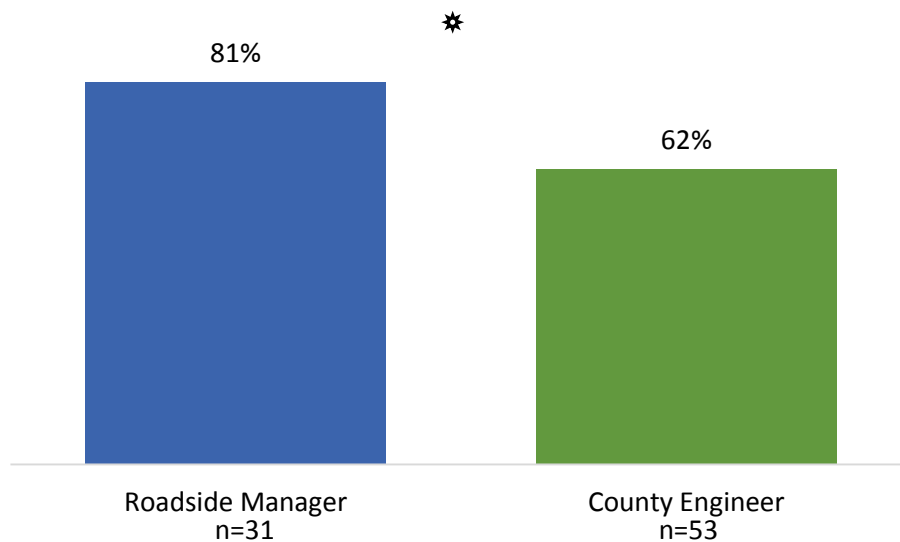


Figure 30. Percentage of respondents who have had access to professional development opportunities related to prairie or native plants.

Of those who have had professional development opportunities available to them, Roadside Managers were more likely than were County Engineers to have taken those opportunities.⁴³ Over ninety percent of Roadside Managers (92%) that had opportunities for professional development related to prairie or native plants available partook of those opportunities, compared to 58% of County Engineers (Figure 31). Roadside Managers and County Engineers emphasized the importance of networking during these conferences and meetings.

Visiting with other program managers
 -County Engineer

Opportunity to network with colleagues, learn from vendors, see equipment in operation
 -Roadside Vegetation Manager

County Engineers noted the importance of these opportunities for learning more about IRVM and Roadside Managers highlighted the importance of these for staying up to date on best management practices (BMPs) and techniques.

Gain a better understanding of the benefits of having and implementing a roadside management plan
 -County Engineer

⁴³ $\chi^2 (1, N=59) = 8.88, p = .003$

Gaining knowledge of BMP's for invasive species control, native plant establishment and electronic data collection which streamlines our program. Wetland delineation and streambank stabilization training have also made the program more valuable to the [road] department.

-Roadside Vegetation Manager

Keeping up with new information and technology regarding IRVM operations. These have included: herbicide trends and development, seeding establishment, plant and animal biology and prescribed fire.

-Roadside Vegetation Manager

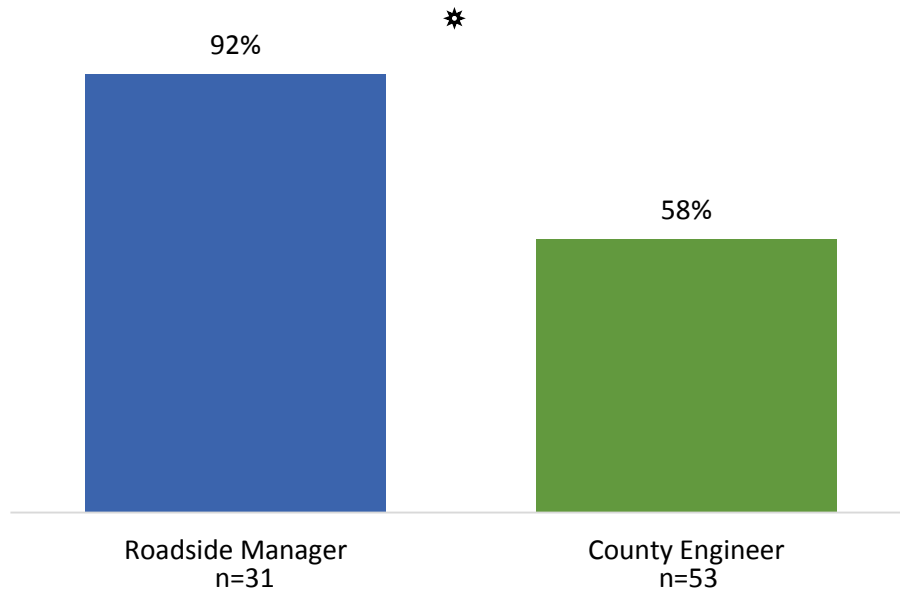


Figure 31. Percentage of respondents who participated in professional development opportunities related to prairie or native plants

**Only asked to respondents who indicated they have had professional development made available to them*

Roadside Vegetation Managers

Roadside Managers were asked to select, from a list, the management activities for which they are responsible. The vast majority of Roadside Managers are responsible for selecting the vegetation used (94%), developing the vegetation/revegetation plan (91%), determining the criteria for success (88%), monitoring the progress of the plantings over time (88%), initiating roadside vegetation or revegetation efforts (85%), and setting goals for roadside vegetation or revegetation (82%) (Figure 32). About six in ten Roadside Managers (59%) noted that they were responsible for allocating funds for roadside vegetation or revegetation efforts.

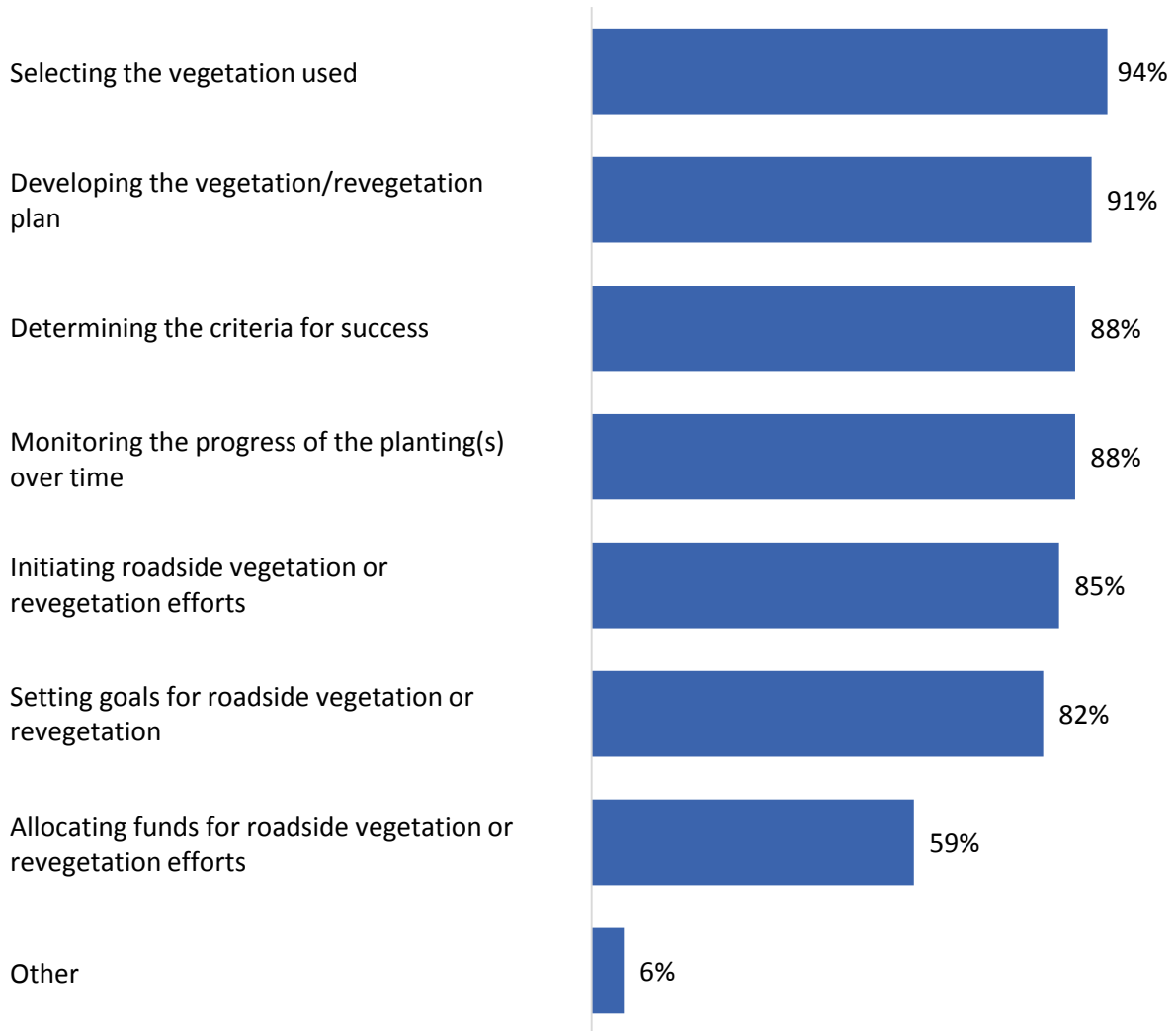


Figure 32. Responsibilities of Roadside Managers (n=34)

When asked which sources their county used to fund their position, a majority of Roadside Managers (56%) identified the rural basic fund. Four in ten Roadside Managers identified the secondary road fund (41%), one-quarter indicated the road clearing appropriation (24%), and 15% said funds came from their county conservation board (Figure 33).

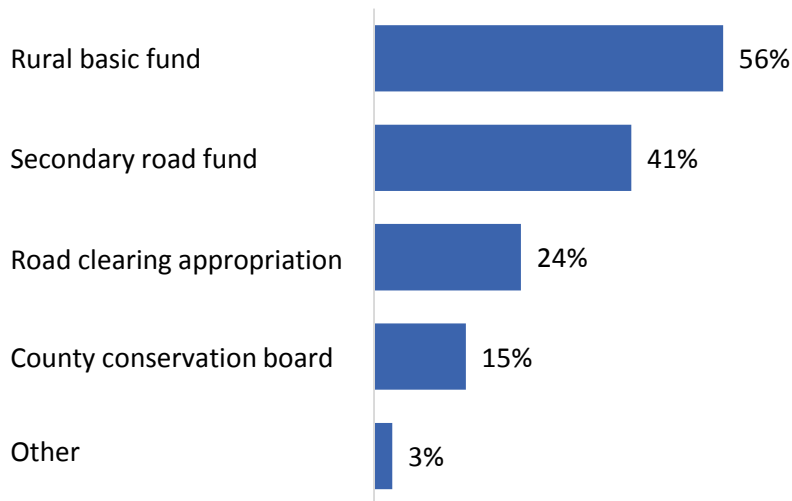


Figure 33. Funding sources for Roadside Vegetation Manager positions (n=34)

Roadside Managers were asked how much of a priority they believed their county’s decision-makers (e.g., elected officials such as county board of supervisors) placed on roadside vegetation management, whether it was *not a priority, low priority, neither high nor low priority, moderate priority, or high priority*. Just under four in ten Roadside Managers (38%) thought their county’s decision-makers placed a moderate or high priority on roadside vegetation management, though another one-fifth indicated roadside vegetation management is of low priority to their county’s decision-makers (Figure 34). Forty-one percent of Roadside Managers believe roadside vegetation management is neither a high nor a low priority for their county’s decision-makers.

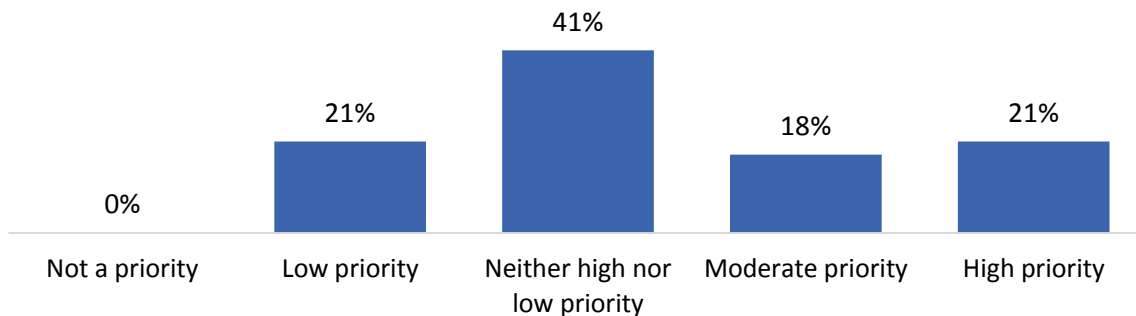


Figure 34. Roadside Managers’ perceptions of priority of roadside vegetation management to county's decision-makers (n=34)

When asked whether they thought IRVM efforts had streamlined other agency processes or saved money or resources any other way, a majority of Roadside Managers agreed that IRVM efforts had (59%); 12% indicated that IRVM efforts had not streamlined agency process or saved money or resources (Figure 35). About three in ten Roadside Managers (29%) were not sure whether IRVM efforts had affected other agency processes, money, or resources. Roadside Managers emphasized equipment- and cost-sharing, additional staffing, decreased chemical usage, and consulting fees when identifying the ways IRVM efforts have streamlined agency process, saved money, or saved resources.

One dedicated department takes care of all of the herbicide treatment and seeding. It eliminated the middle man. Dedicated staff is more efficient and knowledgeable than several people or contractors trying to do the job.

-Roadside Vegetation Manager

Equipment sharing between departments. Additional staff for larger projects within the county. Higher knowledge base amongst staff.

-Roadside Vegetation Manager

Eligible for free seed and equipment. More native seeding = less spraying = less money spent to control weeds. Spray weeds only, not blanket spray = save money. More natives = better long term erosion control = less maintenance and infrastructure problems. Perception of ROW as a resource = less money and concern over managing for aesthetics, etc.

-Roadside Vegetation Manager

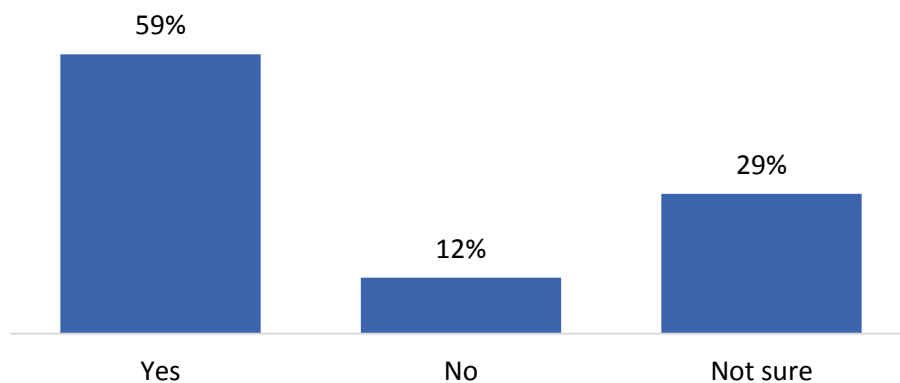


Figure 35. Roadside Managers' perceptions of IRVM efforts having saved money or resources, or having streamlined agency processes (n=34)

Comparison of County Engineers with and without IRVM programs

The following section summarizes statistically significant differences between County Engineers from counties with Roadside Vegetation Managers (N=25) and County Engineers from counties that do not have Roadside Vegetation Managers (N=39). County Engineers who work with Roadside Managers were more likely to hold full-time positions in roadside vegetation management than their counterparts who do not work with Roadside Managers.⁴⁴ Seven in ten County Engineers with Roadside Managers (71%) identified their positions as full-time, compared to 73% of County Engineers without Roadside Managers who indicated their positions in roadside vegetation management were part-time (Figure 36).

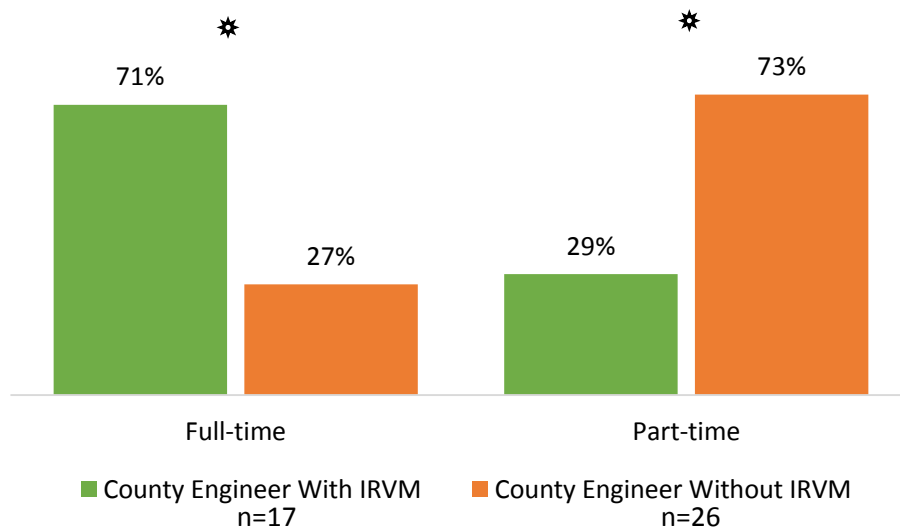


Figure 36. Percentage of County Engineers with full-time and part-time positions in roadside vegetation management

County Engineers from counties with IRVM were more likely than those from counties without IRVM to use design/specification measures for low maintenance/native species,⁴⁵ and mapping/monitoring/tracking location and treatment of key invasive species,⁴⁶ as prevention measures to control invasive species (Figure 37).

⁴⁴ $X^2(1, N=43) = 7.95, p = .005$

⁴⁵ $X^2(1, N=64) = 15.77, p < .001$

⁴⁶ $X^2(1, N=64) = 5.12, p = .024$

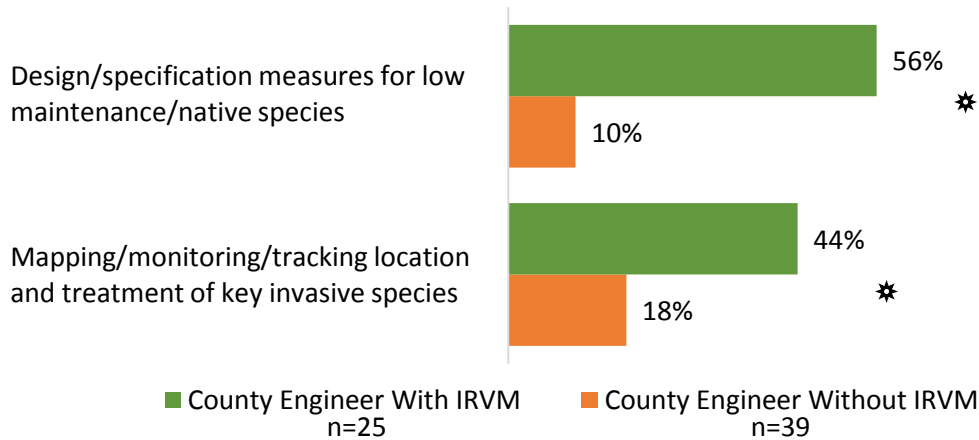


Figure 37. Invasive species prevention measures used by County Engineers with and without IRVM

When asked to identify the three most influential factors in implementing roadside management strategies, County Engineers who work in counties that do not have a Roadside Manager were more likely to select public input, surveys, and customer complaints (64%) as one of the three most influential factors than were County Engineers in counties with Roadside Managers (32%) (Figure 38).⁴⁷

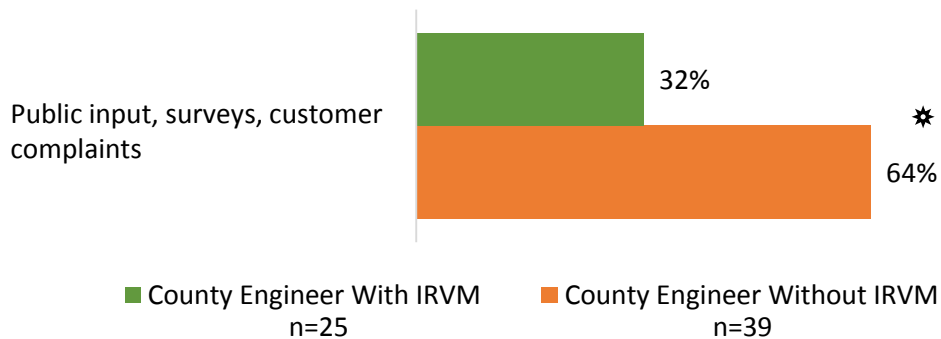


Figure 38. Level of influence of public input, surveys, and customer complaints in implementation of roadside management strategies by County Engineers with and without IRVM.

County Engineers with and without Roadside Managers differed in their reported use of native plants in road engineering projects during the last three years.⁴⁸ Three in ten County Engineers with Roadside Managers (30%) indicated using native plants in over 75% of their road engineering projects during the last three years, compared to less than 10% of County Engineers (8%) without Roadside Managers (Figure 39). Conversely, County Engineers that do not have Roadside Manager colleagues were more likely to have not used native plants in their road engineering projects during the last three years (33%) than County Engineers who have Roadside Managers in their county (4%).

⁴⁷ $X^2(1, N=64) = 6.29, p = .012$

⁴⁸ $X^2(4, N=59) = 12.02, p = .017$

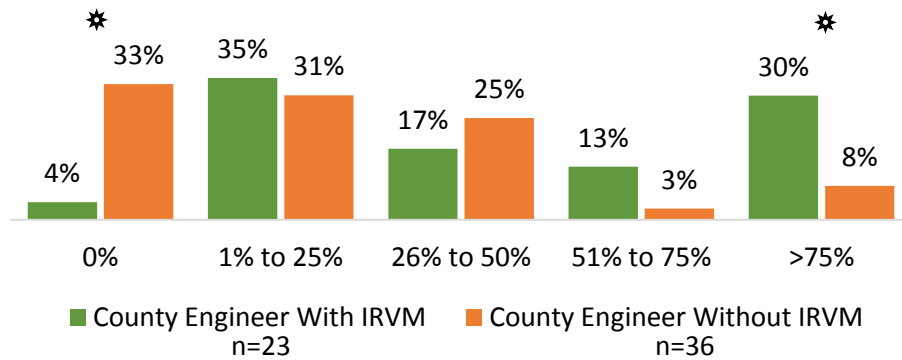


Figure 39. County Engineers' perceptions of the percentage of road engineering projects, in the last three years, that included native vegetation as a component

The reported use of wildflowers in typical roadside vegetation management projects during the last three years differed significantly between County Engineers who work with Roadside Managers and those who do not.⁴⁹ County Engineers with Roadside Manager counterparts were more likely to have used wildflowers in their typical roadside vegetation management projects over the last three years (83%) than were County Engineers in counties without Roadside Managers (54%) (Figure 40).

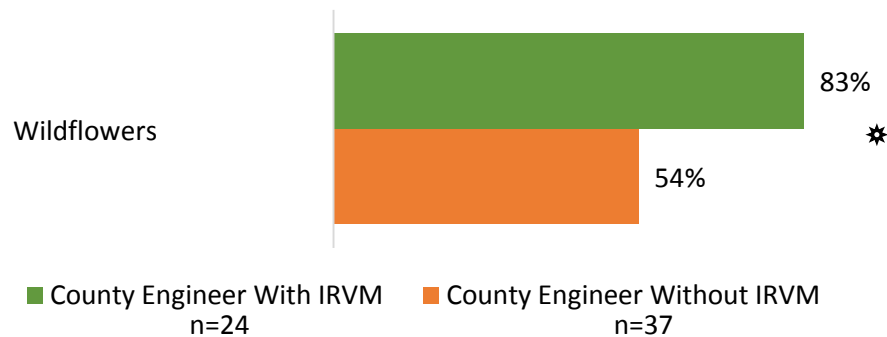


Figure 40. Wildflowers used by County Engineers during the last three years in roadside vegetation management projects

⁴⁹ $X^2(1, N=61) = 5.53, p = .019$

In regards to the steps their agency takes when implementing native plantings, County Engineers in counties with Roadside Managers were more likely than County Engineers in counties that do not have Roadside Managers to have road department policies or agency-wide design specifications,⁵⁰ to conduct vegetation and revegetation according to a county vegetation plan,⁵¹ to require seed mixes that have been designed for a variety of ecoregions and slope aspects,⁵² and to have the landscape architect or Roadside Manager comment on landscape plans during reviews (Figure 41).⁵³ County Engineers that do not have a Roadside Manager in their county were more likely to indicate their county does not do any of the listed steps.⁵⁴

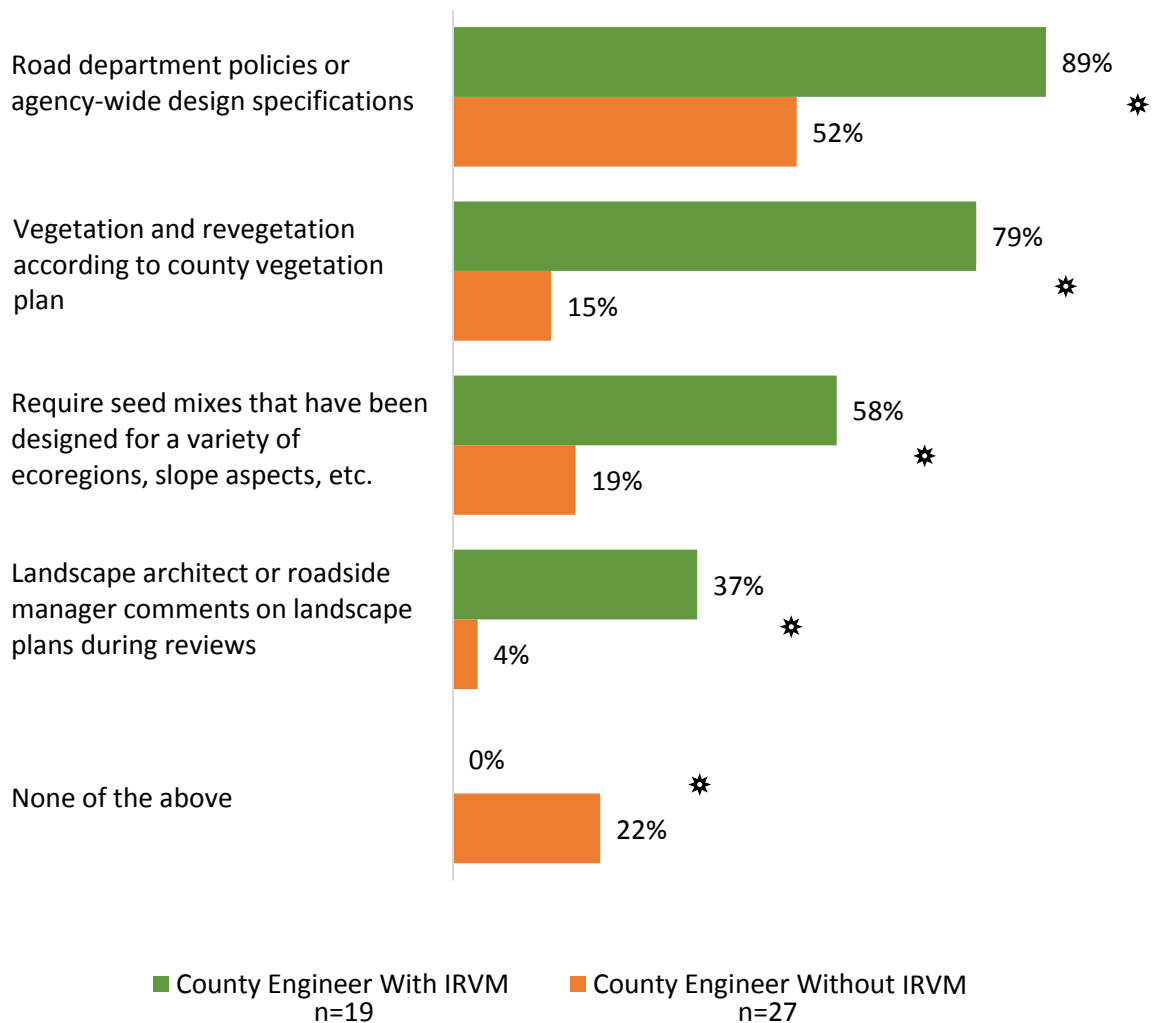


Figure 41. Steps for implementing native plantings in counties with and without Roadside Managers

⁵⁰ $X^2(1, N=46) = 7.18, p = .007$

⁵¹ $X^2(1, N=46) = 18.92, p < .001$

⁵² $X^2(1, N=46) = 7.62, p = .006$

⁵³ $X^2(1, N=46) = 8.52, p = .004$

⁵⁴ $X^2(1, N=46) = 4.86, p = .028$

When identifying the primary challenges their county faces in greater use of native species, County Engineers with Roadside Manager counterparts were more likely than those without Roadside Managers to identify interference with native plantings by adjacent landowners who spray the plantings with herbicides.⁵⁵ Nearly two-thirds of County Engineers who work with Roadside Managers (64%) identified spraying by adjacent landowners as a challenge in their county, compared to 17% of County Engineers who do not work with Roadside Managers (Figure 42).

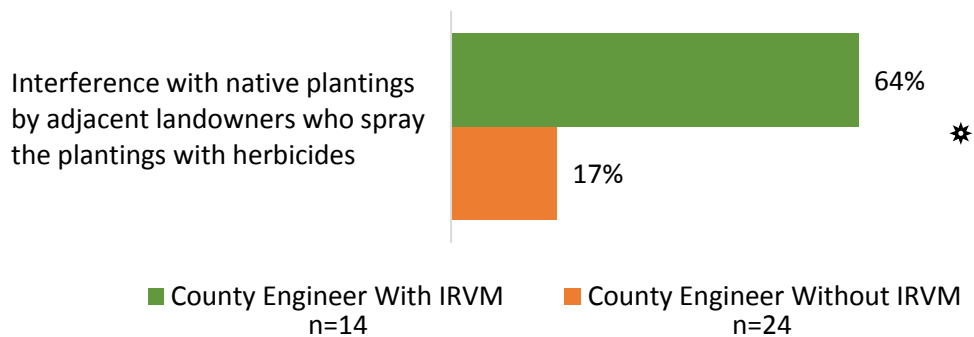


Figure 42. Primary challenges faced by County Engineers in greater use of native species

County Engineers, whether they work with Roadside Managers or not, showed very little difference in their perceptions of the benefits of Integrated Roadside Vegetation Management. However, County Engineers with Roadside Managers were more likely than those without Roadside Managers to agree that IRVM provides attractive roadsides.⁵⁶ Approximately one-third of County Engineers with Roadside Managers strongly agreed that IRVM provides attractive roadsides, compared to less than 10% of County Engineers without Roadside Managers (9%) (Figure 43). One-fifth of County Engineers without Roadside Managers indicated they neither agreed nor disagreed that IRVM provides attractive roadsides.

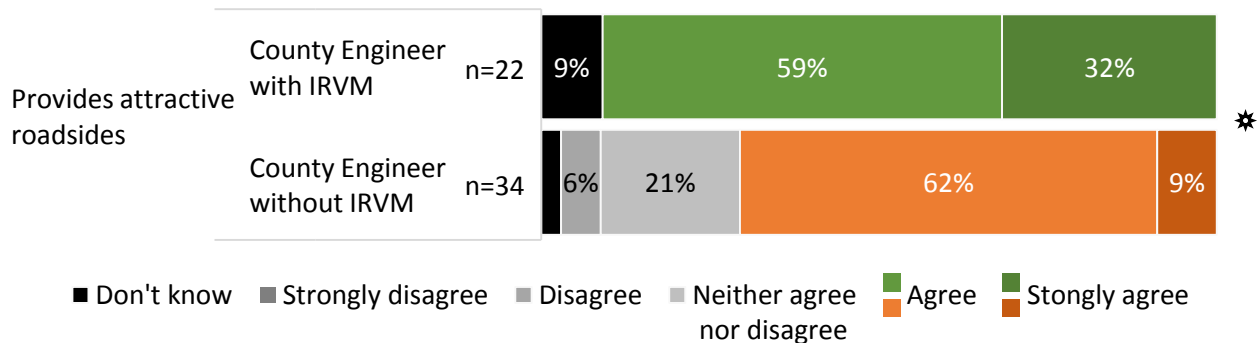


Figure 43. County Engineers' perceived benefits of IRVM

⁵⁵ $X^2(1, N=38) = 8.91, p = .003$

⁵⁶ $X^2(1, N=38) = 8.91, p = .003$

Conclusions

County Engineers and Roadside Managers agreed that primary responsibility for management of county secondary road rights-of-way lies with county staff. However, County Engineers indicated that private landowners play an important part in ROW management of ROWs and in the majority of Iowa counties, private landowners can apply for permits to plant or otherwise modify ROWs. County Engineers and Roadside Managers largely use similar management practices and prevention measures with an emphasis on addressing problem spots with mowing or spraying or preventing problems through the use of weed-free seed mixes.

Roadside Managers reported having fewer challenges than did County Engineers with using native vegetation in roadside management, but both groups highlighted interference with native plantings by adjacent landowners spraying or mowing as one of their primary challenges. The primary influences on roadside management decision-making and implementation are considerations of safety, soil erosion concerns, and maintenance cost savings. Roadside Managers emphasized the importance of environmental stewardship and vegetative diversity and were more apt than County Engineers to consider the impacts of their management actions on the aesthetics of the roadsides. Roadside Managers reported greater use of species native to the state or region than did County Engineers, and were more likely to incorporate wildflowers in their roadside projects.

Impediments to greater use of native species in management activities were largely attributed to the cost and availability of agency funding. Moreover, the length of time required for native species to establish was identified as a deterrent from their use in erosion control and storm water management. Concerns over narrow ROWs and the propensity for native species to exacerbate snow issues by trapping snow on roadways discredited their use as a snow control practice.

In addition to doubting the benefit of IRVM in reducing blowing snow, County Engineers least often agreed that IRVM saves money both long and short term and makes roadways safer. However, the majority of those intimately involved in IRVM, Roadside Managers, believe IRVM efforts have saved money or resources or streamlined agency processes. Other benefits of IRVM were acknowledged though, with the majority of County Engineers and Roadside Managers agreeing that IRVM provides attractive roadsides, maintains or improves water quality, enhances biodiversity, protects soil resources, promotes partnerships with other organizations, reduces spread of invasive species and optimizes the effectiveness of weed and pest control practices.

County Engineers and Roadside Managers are both largely reliant upon their colleagues in other Iowa counties for information sharing and stressed the importance of workshops and conferences for information exchange, networking and learning new techniques or best management practices (BMPs). The differences in responses of County Engineers who work with Roadside Managers and those who do not, suggest that greater experience with and exposure to the use of native vegetation in roadside management could improve perceptions and possibly adoption of IRVM in Iowa.

Appendix: Mail Survey



Dear [TITLE],

The Center for Social and Behavioral Research at the University of Northern Iowa is working with the Living Roadway Trust Fund to gather information from county engineers and roadside managers regarding the current practices they use to manage Iowa's right-of-ways. We are asking all county engineers and roadside managers to complete this survey.

The purpose of this study is to better understand how to successfully implement Integrated Roadside Vegetation Management (IRVM) activities. We ask that you please complete the following questionnaire which includes items regarding IRVM and your county's management of rights-of-way. The questionnaire should take 10-15 minutes to complete and you are free to skip any question you would prefer not to answer by selecting "prefer not to respond."

Participation is voluntary and your responses will be kept confidential. In reporting, no identifying information will be stored with your responses. There are no direct benefits for participating; however, your participation in the study is very important to us as your answers will be combined with others to better understand roadside vegetation management in Iowa. Risks are minimal and similar to those typically encountered in day-to-day life.

If you have questions about the study, please contact Dr. Kristine Nemec, IRVM Program Manager at the Tallgrass Prairie Center, at 319-273-2813 or Kristine.nemec@uni.edu, or Dr. Mary Losch, Director of the Center for Social and Behavioral Research, at 319-273-2105 or csbr@uni.edu. Questions about your rights as a research participant may be directed to the UNI IRB Office at 319-273-6148.

Thank you very much for your participation!



Instructions

Depending on your answers, you may be asked to skip over some questions. If a skip instruction follows the box you mark, please skip to the question number indicated. If a skip instruction does NOT follow the box you mark, then continue with the next question.

1. What is the approximate acreage of your county's total secondary roadside rights-of way (ROW)? _____ Acres

2. Which of the following groups are formally responsible for roadside vegetation management along secondary roads in your county? (**Check all that apply**)
 - County staff
 - Private contractors
 - Nonprofit/Nongovernmental conservation groups
 - Private landowners
 - None of the above
 - Prefer not to respond

3. In your county, can private landowners apply for permits to plant or otherwise modify secondary road rights-of-way?
___ Yes ___ No ___ Not Sure ___ Prefer not to respond

4. Which of the following prevention measures does your agency currently undertake in your county? (**Check all that apply**)
 - Mapping/monitoring/tracking location and treatment of key invasive species
 - Imported soils must be weed free
 - Stockpiling of uncontaminated topsoil
 - Weed-free seed mixes
 - Certified weed-free straw mulch
 - Broadleaf herbicide application over turf grass
 - County/contract mowers required to clean equipment
 - Design/specification measures for low maintenance/native species
 - Desired best practices built into staff procedures and specifications for contract work
 - Systematic pretreatment of weeds/invasives on construction sites
 - Training of contractors and field personnel
 - Ongoing research of invasive control and native reestablishment strategies
 - None of the above
 - Prefer not to respond

5. Which of the following management practices does your agency currently undertake in your county? (**Check all that apply**)

- Blanket-spraying of weeds with herbicides
- Spot-spraying of weeds with herbicides
- Spot mowing of weeds
- Strip mowing of weeds
- Full-width mowing
- None of the above
- Prefer not to respond

6. How much impact does each of the following items have on decisions about roadside vegetation management in your county? (**Circle one number for each item**)

	No impact	Very little impact	Some impact	Quite a bit of impact	Don't Know	Prefer not to respond
The Endangered Species Act	1	2	3	4	5	6
Invasive species	1	2	3	4	5	6
Consideration of aesthetics	1	2	3	4	5	6
Soil erosion concerns	1	2	3	4	5	6
Stormwater management regulations	1	2	3	4	5	6
Snow control	1	2	3	4	5	6
Consideration of safety	1	2	3	4	5	6

7. Of the following, what would you say are the **three most influential** factors in implementing your roadside management strategies? (**Select only 3**)

- Internal policies, interests, or commitments
- Maintenance cost savings
- Minimizing health or safety hazards
- Environmental stewardship/vegetative diversity
- Public input, surveys, customer complaints
- Other (please specify): _____
- Prefer not to respond

8. Are there any protected native plant community remnants on rights-of-way (ROW) in your county?

- ___ Yes ___ No (**skip to 10**) ___ Not Sure (**skip to 10**) ___ Prefer not to respond

9. Which of the following, if any, does your agency utilize for protected native plant community remnants on secondary rights-of-ways? (Check all that apply)

- Areas in need of special management are identified by resource agencies or state Natural Heritage Program
- Special management areas are identified by roadside staff and managed accordingly by maintenance staff
- Reduced mowing widths (e.g., one mower width) are standard countywide
- A conservation mowing/spraying program has been developed to protect native communities, minimize maintenance costs, and control invasives.
- Roadside department has mapped and is tracking protected communities on ROW
- Other (please specify) _____
- None of the above
- Prefer not to respond

10. In the last three years, approximately what percentage of your road engineering projects included roadside revegetation using native plants as a component?

_____ %

11. In the last three years, approximately what percentage of your road engineering projects included roadside revegetation using non-native plants (e.g., fescue or smooth brome) as a component?

_____ %

12. Thinking about your typical roadside vegetation management project, for each of the following plant types, please indicate whether you have used them for projects in the last three years.

12A. Wildflowers ___ Yes ___ No (**skip to 12B**) ___ Does not apply ___ Prefer not to respond

In how many projects have you used wildflowers?

- Few projects
- Some projects
- Most or all projects
- Don't know
- Prefer not to respond

12B. Grasses ___ Yes ___ No (**skip to 12C**) ___ Does not apply ___ Prefer not to respond

In how many projects have you used grasses?

- Few projects
- Some projects
- Most or all projects
- Don't know
- Prefer not to respond

12C. Shrubs ___ Yes ___ No (**skip to 12D**) ___ Does not apply ___ Prefer not to respond

In how many projects have you used shrubs?

- Few projects
- Some projects
- Most or all projects
- Don't know
- Prefer not to respond

12D. Trees ___ Yes ___ No (**skip to 13**) ___ Does not apply ___ Prefer not to respond

In how many projects have you used trees?

- Few projects
- Some projects
- Most or all projects
- Don't know
- Prefer not to respond

13. Approximately what percentage of the non-grass plants used for revegetation is native to the state or region?

_____ % Not sure _____

14. Approximately what percentage of the grasses used for revegetation is native to the state or region?

_____ % Not sure _____

15. Does your agency rely on native grasses or wildflowers in the following?

15A. Erosion control ___ Yes (**skip to 15B**) ___ No ___ Does not apply ___ Prefer not to respond

If "**No**," what is the primary reason your agency does not use native grasses/wildflowers for erosion control?

15B. Landscaping ___ Yes (**skip to 15C**) ___ No ___ Does not apply ___ Prefer not to respond

If "**No**," what is the primary reason your agency does not use native grasses/wildflowers for landscaping?

15C. Revegetation ___ Yes (**skip to 15D**) ___ No ___ Does not apply ___ Prefer not to respond
If “No”, what is the primary reason your agency does not use native grasses/wildflowers for revegetation?

15D. Storm water management ___ Yes (**skip to 15E**) ___ No ___ Does not apply ___ Prefer not to respond
If “No”, what is the primary reason your agency does not use native grasses/wildflowers for storm water management?

15E. Snow control ___ Yes (**skip to 16**) ___ No ___ Does not apply ___ Prefer not to respond
If “No”, what is the primary reason your agency does not use native grasses/wildflowers for snow control?

16. Which of the following steps, if any, does your agency take when implementing native plantings? (**Check all that apply**)

- Vegetation and revegetation according to county vegetation plan
- Require seed mixes that have been designed for a variety of ecoregions, slope aspects, etc.
- Road development policies or agency-wide design specifications
- Special provisions in contracts for particular projects
- Landscape architect or roadside manager comments on landscape plans during reviews
- Other (please specify) _____
- None of the above
- Prefer not to answer

17. How often are native plantings typically mowed within one year of seeding?

- Never
- Once per year
- 2-3 times per year
- 4+ times per year
- Don't know
- Prefer not to answer

18. After they are one year old, how often are native plantings typically mowed?

- Never
- Once per year
- 2-3 times per year
- 4+ times per year
- Don't know
- Prefer not to answer

19. After they are one year old, how often are native plantings typically burned?

- Never
- Once per year
- 2-3 times per year
- 4-5 times per year
- Don't know
- Prefer not to answer

20. Which of the following, if any, are indicators used for defining successful revegetation in your county?

- Plant survival after 5 years
- Soil coverage meet or exceeds your success criteria after 1 year
- Plant coverage meet or exceeds your success criteria after 1 year
- Percentage of native plant coverage meet or exceeds your success criteria after 1 year
- Weed control meets or exceeds your success criteria after 1 year
- No citations for non-compliance with permit conditions
- Other (please specify) _____
- None of the above
- Prefer not to answer

21. Using the scale below, how would you rate your agency's experience using native plantings?

- Not at all challenging (**skip to 26**)
- Slightly challenging (**skip to 26**)
- Somewhat challenging
- Moderately challenging
- Extremely challenging
- Prefer not to respond (**skip to 26**)

22. If you answered somewhat, moderately, or extremely challenging, what would you say have been your primary challenges in greater use of native species? (**Check all that apply**)

- Availability of plant material or desired seed mixes
- Cost of desired material and/or available agency funding
- Public's desire for ornamentals or other non-natives considered more aesthetically pleasing
- Length or time to establish and/or short growing season
- Acceptance/education internally or among contractors
- Contracting process and lack of control over contractors' schedules
- Limited research regarding what works, especially.....
- Lack of support from elected officials such as county board of supervisors in greater use of natives (**please answer 23**)
- Interference with native plantings by adjacent landowners who spray the plantings with herbicides (**please answer 24**)
- Interference with native plantings by adjacent landowners who mow the plantings (**please answer 25**)
- Other agency requirements (please specify) _____
- Other (please specify) _____
- None of the above
- Prefer not to answer

If you did not select lack of support from elected officials or interference with native plantings by adjacent landowners due to spraying or mowing, please skip to question 26.

23. If you indicated there is a lack of support from county government officials. What are the commonly given objections from government officials in the greater use of natives?

24. If you indicated that there is interference with native plantings by adjacent landowners who spray the plantings with herbicides, in the last three years, approximately how many acres were affected by being sprayed with herbicide by adjacent landowners?

_____ acres

25. If you indicated that there is interference with native plantings by adjacent landowners who mow the plantings, in the last three years, approximately how many acres were mowed by adjacent landowners?

_____ acres

26. What is your source(s) for native seed? (**Please list up to 5**)

27. Where do you typically go for information on roadside vegetation management? (**Check all that apply**)

- National Cooperative Highway Research Program (NCHRP), Federal Highway Administration (FHWA), or similar organization
- Nongovernmental and/or conservation organizations
- Colleges/Universities
- Iowa DOT
- My counterparts in other states
- My counterparts in other Iowa counties
- Chemical or equipment provider or other vendor
- Other (please specify) _____
- None of the above
- Prefer not to respond

28. How familiar are you with the Integrated Roadside Vegetation Management (IRVM) program in Iowa?

- Not at all familiar
- Slightly familiar
- Somewhat familiar
- Very familiar
- Prefer not to respond

29. To what extent do you agree or disagree with the following statements regarding benefits of the IRVM for your county.

Integrated Roadside Vegetation Management...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know	Prefer not to respond
Makes roadways safer	1	2	3	4	5	6	7
Enhances biodiversity	1	2	3	4	5	6	7
Saves money both long and short term	1	2	3	4	5	6	7
Optimizes the effectiveness of weed and pest control practices	1	2	3	4	5	6	7
Protects soil resources	1	2	3	4	5	6	7
Maintains or improves water quality	1	2	3	4	5	6	7
Reduces spread of invasive species	1	2	3	4	5	6	7
Provides attractive roadsides	1	2	3	4	5	6	7
Promotes partnerships with other organizations	1	2	3	4	5	6	7
Reduces blowing snow	1	2	3	4	5	6	7

30. Does your agency work with similar agencies in other counties in Iowa?

Yes No (**skip to 32**) Not Sure Prefer not to respond

31. If yes, what strategies can you suggest or share for collaborating with others?

32. How many years have you worked in your current position? _____ years

33. Is your position in roadside vegetation management full-time or part-time?

- Full-time
- Part-time
- Prefer not to respond

34. If your position in roadside vegetation management is part-time, approximately what percentage of your time is devoted to roadside vegetation management?

_____%

35. For which of the following are you responsible? (**Check all that apply**)

- Initiating roadside vegetation or revegetation efforts
- Allocating funds for roadside vegetation or revegetation efforts
- Setting goals for roadside vegetation/revegetation plan
- Developing the vegetation/revegetation plan
- Selecting the vegetation used
- Monitoring the progress of the planting(s) over time
- Determining the criteria for success
- Other (Please specify) _____
- None of the above
- Prefer not to respond

36. What source(s) does the county use to fund your position? (**Check all that apply**)

- Secondary road fund
- Road clearing appropriation
- County conservation board
- Rural basic fund
- Other (please specify) _____
- Don't know
- Prefer not to respond

37. Overall, how much of a priority would you say roadside vegetation management is to decision-makers in your county?

- Not a priority
- Low priority
- Neither high nor low priority
- Moderate priority
- High priority
- Prefer not to respond

38. Would you say that IRVM efforts have streamlined other agency processes or saved money or resources in any other ways?

___ Yes ___ No (**skip to 40**) ___ Not Sure ___ Prefer not to respond

39. If yes, please an example(s) of how IRVM efforts have streamlined other agency processes or saved money/resources.

40. Are you:

- Male
- Female
- Other

41. Have any professional development opportunities related to prairie or native plants been made available to you?

___ Yes ___ No ___ Not Sure ___ Prefer not to respond

If yes, please briefly describe the professional development opportunities that have been made available to you.

If yes, have you taken any of those opportunities?

___ Yes ___ No

If you have taken those opportunities, please briefly describe what has been most valuable about them.

Additional Comments
