General comments  
  
This study uses a decision analysis approach to explore factors influencing the feasibility and cost-effectiveness of cover cropping in Midwestern maize–soybean systems. The authors also identify knowledge gaps that should be addressed to improve decision support. I commend the authors for their application of an underutilized approach to this crucial topic. Their analysis has produced valid preliminary conclusions and would represent a useful starting place for further work. Overall, the article is interesting, makes a novel and worthwhile contribution to the literature, and is relevant to the goals of Frontiers in Sustainable Food Systems. However, I believe that revisions would improve the following aspects of the paper:  
  
1. The Introduction does a good job describing the rationale underlying this work. However, it would benefit from a more detailed review of previous studies analyzing risks associated with cover cropping.  
2. Some aspects of the Methods were difficult for me to understand, including the GDD threshold for cover crop establishment and when cover crop termination and cash crop planting were allowed to occur in the spring (see specific comments below). It would be helpful to revise so that the general approach can be understood from the main text, without needing to consult supplementary material.  
3. A major limitation of this work is the fact that many effects of cover crops were not quantified. The analyses focused on direct costs of cover crop and cash crop production, the potential for yield losses especially in maize, and the contribution of the cover crop to weed control in soybean. Other consequences of cover cropping, such as changes to soil health or insect communities, were not included in the analysis. If possible, it would be useful to consider ways to include them. At minimum, this limitation of the work should be noted at least twice: once in the Methods or at the beginning of the Results and Discussion, and again in the Conclusions.  
4. The Results and Discussion should focus more on explaining the results and putting them into the context of existing literature. For example, the Abstract, Results/Discussion, and Conclusions all note that maize yield is reduced when maize is planted shortly after cover crop termination, but reasons for this phenomenon are not discussed.  
5. Although the writing is generally clear, some sentences are unnecessarily complex or contain minor errors.  
  
Specific comments  
  
[46–47] Why reduced crop insurance losses? Please give examples of the “numerous other context-specific benefits.”  
  
[63–64] Please state the conflict(s) explicitly. Delayed cash crop planting due to the need for cover crop termination?  
  
[65–68] This sentence seems to overstate the novelty of the paper. Numerous studies, including the two cited, provide useful analyses of the risks, costs, and benefits of cover cropping. I think the Introduction needs to spend more time going over this previous work and explaining why more work is needed (assessments like “well-quantified” and even “explicitly included” are sometimes a matter of perspective, and don’t provide much information to the reader). This paper makes a valuable contribution as one of a small number of papers to apply decision analysis to questions about cover cropping, but this isn’t the only valid approach to thinking about cover crops and risk.  
  
[77–86] A more complete literature review may be needed here. In particular, please cite this previous study, which applied decision analysis to cover crop selection.  
  
Ramírez-García, J., Carrillo, J. M., Ruiz, M., Alonso-Ayuso, M., & Quemada, M. (2015). Multicriteria decision analysis applied to cover crop species and cultivars selection. Field Crops Research, 175, 106-115.  
  
[93–95] How much cover crop adoption? Differences between central Iowa and the rest of the state could reflect differences in cropping systems, landscape factors, etc.—if these differences are important, is it possible to explain what’s underlying them? If they’re not important, it may be better just to emphasize that central Iowa is a good study location due to large areas of maize–soybean production that are broadly representative of the Midwest.  
  
[103–110] Should cover cropping after soybean be viewed as an alternative to cover cropping after maize? In any given year, the grower only has three of these six options available, so it seems more like there are two scenarios and three decision alternatives within each scenario.  
  
[159] How was this estimate reached?  
  
[194–196] Could you say a bit more about why this approach was chosen? It seems inconsistent to assume that termination would require extra days but would not require extra fuel/input costs.  
  
[216—220] I’m not understanding here. Does the method assume that cover crop termination requires two sequential WFDs, and then cash crop planting requires two more WFDs, for a total of four? Do they have to be literally sequential, or just close together in time? [From lines 387–390, I think the answers to these questions are “yes” and “just close together in time”, respectively]  
  
[250–259] Perhaps add the information that a more modest rate of yield loss was assumed when soybean was planted late (according to Table 2) and provide references for the assumption that soybean yield is insensitive to the gap between cover crop termination and cash crop planting.  
  
[258] “…10% decrease in maize yield if…” or “…10% reduction in maize yield if….”  
  
[258–259] Is cash crop planting assumed to happen on the first suitable occasion after cover crop termination, regardless of when the cover crop is terminated and whether there’s a yield penalty associated with planting maize right after cover crop termination? Since 10% yield loss is a significant amount, an intentional delay before cash crop planting might increase the cost-effectiveness of cover cropping according to this analysis.  
  
More generally, I’m having trouble understanding whether the availability of WFDs and likelihood of a 10-day gap between cover crop termination and cash crop planting were incorporated into the main analysis on overall cost effectiveness (e.g., Figures 3–5). If so, how? If not, should WFD availability be understood as more of a secondary response variable (as in, “in addition to the cost/risk issue associated with cover crops, which is the focus of Figures 3–5, there’s also a scheduling issue, we’ll look at this in table 3…”)?  
  
[259] 10 days rather than 14 days elsewhere, e.g., lines 24, 298, 342, Table 2.  
  
[299–301] A bit more detail would be useful here, e.g., the range of values tested in these sensitivity analyses.  
  
[304] Why a $12 incentive? It might be easiest to put the range of current incentive levels ($12–74 ha–1) earlier in the main text.  
  
[304–313] It might be helpful to reiterate that most benefits of cover crops, with the exception of weed control in soybean, are not represented in this analysis. This is ok—it’s very difficult to quantify benefits of cover crops, especially benefits occurring at larger spatial/temporal scales—but it’s best not to give the impression that this analysis accounts for all effects of cover crops. As I understand it, the analysis mostly deals with costs of cover crops (direct costs plus risks to crop yield) and how they compare to potential incentives for cover crop planting. In some general sense, these incentives might represent/reflect the value of ecosystem services, but they aren’t reliable indicators of how much the services are actually worth.  
  
[314–315] Please note why the difference in termination time has a bigger effect on maize  
  
[323–331] I might not frame this result in terms of the potential for fraud (same comment on lines 414–416). Instead, perhaps just note that, according to the analysis, failed cover crop establishment will lead to a better financial result than successful establishment. This finding underscores the importance of considering potential yield losses in the subsequent crop when deciding whether to establish cover crops.  
  
[345–347] Although it’s great to acknowledge uncertainties, please briefly outline some possible mechanisms (e.g., allelopathy or interference from a rye stand that’s not fully killed?).  
  
[357–361] This finding raises questions about the 200 GDD threshold for me (a corollary would be that less than 23% of rye stands planted after maize harvest actually establish—this doesn’t seem right). In the Methods, please provide information about how this threshold was identified.  
  
[394–395] I’m having trouble understanding this statement. I think the study only considered a single form of risk (potential yield losses in the subsequent spring-sown cash crop), which can only occur in the spring. Or am I misunderstanding what “risk” means here?  
  
[407–409] Was this additional financial risk ever quantified (in $)? If so, I did not understand this aspect of the paper—I just understood from Table 3 that a grower is more likely to have enough WFDs to complete their spring fieldwork if they only need two (cash crop planting only) rather than four (cover crop termination plus cash crop planting).  
  
Table 2. Please include reference(s) for these data. Also, are the “<10 day gap” and “>10 day gap” columns reversed? From the text, I understood that maize yield was reduced when the cover crop was planted less than 10 days before crop planting.  
  
Figure 1. This figure is confusing for me, largely because I’m having trouble understanding what the advantages and disadvantages represent. Some seem to be (dis)advantages relative to no cover cropping, while others seem to be (dis)advantages relative to cover cropping at a different stage in the rotation cycle or with different termination timing. It might be helpful to revise so that items are more parallel/comparable to each other, or else to remove the figure and rely on the explanatory text in Methods 2.1.  
  
Figure 3. Is the effect of cover cropping on spring field operation scheduling (i.e., whether enough WFDs are available and whether cash crop planting will be too soon after cover crop termination) considered here? If not, does the maize part assume that the maize is always planted within 10 days of cover crop termination, therefore maize is always reduced by 10% when cover crops establish?