**KEY:**

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| **From:** | barker.169@osu.edu |
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| **CC:** | barker.169@osu.edu |
| **Subject:** | Agronomy Journal - Decision on Manuscript ID AJ-2016-01-0041-R |
| **Body:** | 23-Mar-2016 Dear Dr. Raun: Manuscript ID AJ-2016-01-0041-R entitled "Algorithms for in-season Nutrient Management in Cereals" which you submitted to the Agronomy Journal, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter. The reviewer(s) have recommended some major revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. We require that your revision be completed within 28 days. To revise your manuscript, log into https://mc.manuscriptcentral.com/agron and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using the track changes mode in MS Word or by using bold or colored text. Once the revised manuscript is prepared, you can upload it and submit it through your Author Center. When submitting your revised manuscript, in the space provided, you must respond to each and every comment made by the reviewer(s). You do not have to agree with each comment, but if you do not agree with a specific comment then you are to state your disagreement and then you must provide sufficient reason, including supporting references, to defend your argument for not making the suggested changes. If you do agree with a comment then you are to state your agreement and then indicate the page number and paragraph or figure or table of the new manuscript where the change(s) can be seen. Please realize that most response letters from authors are numerous pages in length. The manuscript will be returned to you if you fail to provide a complete response to each and every point raised during the review. IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission. Again please remember that we are trying to facilitate timely publication of manuscripts submitted to the Agronomy Journal, your revised manuscript should be uploaded within 28 days. If it is not possible for you to submit your revision within 28 days, we may have to consider your paper as a new submission. Once again, thank you for submitting your manuscript to the Agronomy Journal and I look forward to receiving your revision. Sincerely, Prof. David Barker Associate Editor, Agronomy Journal barker.169@osu.edu Reviewer(s)' Comments to Author: Reviewer: 1 Comments to the Author This review discusses the algorithms (primarily NDVI-based) that can be used to guide in-season nitrogen management decisions for corn and wheat. The authors did a good job defining terms that are often confusing in this type of research (i.e., reference, target, sufficiency index, etc). There were a few typos and inconsistencies in font style/size in the manuscript which I pointed out in the attachment. Overall, this is a very concise, but useful review article. Edits have been included in the revision. Reviewer: 2 Comments to the Author Overall this is a well-written manuscript that does an adequate job of reviewing the current literature regarding sensor-based algorithms for nitrogen rate decisions. My only concern moving forward is that all the algorithms are accurately characterized by within the manuscript (especially when mentioning commercialized technology). Page 8, line 1-4 – This is one of the biggest issues associated with the use of canopy sensors. Scientific evidence exists that suggests nitrogen “stressed” cannot recover the yield that has been lost. Yield responses can be observed, but irrecoverable yield losses have been incurred that cannot be overcome. This is obviously more of a statement than an addressable concern by the author. This is a good point. Reference to an additional Scharf et al. (2002) paper was added as was the following text.Nonetheless, severe early-N-stress has been shown to decrease final grain yields even when mid-season N was applied (Scharf et al., 2002).Page 9, line 7-9 - Is the required width of the reference area an algorithm consideration or an engineering one? If it is engineering, I would not even mention this. This sentence has been deleted as per your comment.Reviewer: 3 Comments to the Author This is a well-written paper that could be of use to the relevant segment of the industry. However I'm left wondering about the purpose of the manuscript? Descriptions of all these algorithms/approaches have been published by the programs cited. So unless this is revised to include a comparison of the effectiveness among them (perhaps not advisable since they are from different ares) or a much more direct "compare and contrast" approach is taken to describe what is the same and what's different between the various approaches, I don't see that one gains much additional knowledge from the manuscript in current form. This is a useful point as it has assisted us in clarifying the need for this paper. At present, several groups have entered into ‘for profit’ venues and sales of algorithms that were developed using government and state funding. All algorithms reported in this paper are available for free. Communicating this in one document and that elucidates differences was considered prudent. Associate Editor: 1 Comments to the Author: This paper was evaluated by 3 reviewers, all excellent in their area, with an extreme of recommendations - with a majority in favor of publication. One comment from a reviewer (in the AE only section) was "I am torn as to what to recommend with regard to this manuscript. I can find no scientific reason to recommend rejection, but I would prefer that an accurate representation of the other “competing” algorithms has been provided. If those researchers are co-authors, this is a mute argument, and the manuscript should move forward. If not… My predilection is to publish over reject, but hopefully some effort will be made to allow the “algorithm authors” an opportunity to vet the manuscript". This seems a reasonable issue raised by the Reviewer.. where authors might prefer one method over another.. however "due process" should ensure all algorithms are fairly represented. No reviewers identified any obvious issues in this regard, however editorial process does not have a good process for this mechanism. I ask the authors to exercise due diligence in this respect, and ensure all algorithms are fairly and accurately represented (outside my expertise). This is again, a really good point. We modified the concluding remark in the Abstract to better reflect the differences of what is reported here, and groups that are selling “models” and algorithms (embedded within fee-based consulting). Without having to banter with those groups that are “selling” their algorithms, if there is a “**fee**” it differs from the four approaches that we have reported on. We do not intend to be coy or indirect, but rather report the facts that there are options our taxpayers have already paid for.“now in the Abstract”The development and promotion of fee-based modeling approaches for nutrient management continues. Nonetheless, , several algorithms using active sensors for in-season N management are available from state and government sources at no cost and that have been extensively field tested and can be modified by producers.“now in the Discussion/Summary”It is important to note that several of the current commercial N management programs fail to address sensor-based and/or remote-sensing based in-season N management, likely needed to address worldwide cereal N use efficiencies that hover near 33% (Raun and Johnson, 1999). Another Reviewer (the most negative) noted that these algorithms are all published elsewhere, and has requested that justification for this Review paper is made clearer. This is another good point. As noted, these algorithms are independently published elsewhere. That all four would appear in the same document, is a composite endorsement of sorts, for each of these respective algorithms. This is precisely what makes this paper useful and valuable in the present and future market for precision agriculture and where we are cognizant of keeping those costs as low as possible. Endorsing those algorithms that have no added fee is for us justified. Instead of battling with for-profit groups, direct dissemination of free alternatives is needed.Note: If this decision letter mentions attachments that did not get delivered, they are likely in your author center in Manuscript Central at https://mc.manuscriptcentral.com/agron. Once in your Author Center, click ‘Manuscripts With Decisions’ and click ‘View Decision Letter’. At the bottom of the letter will be any missing attachment. |