**Preproposal Guidelines for WSARE**

1. **Project Basic Information  
   This section prompts for general information about the project including:** 
   * ***Main* subject matter**
     1. Development of late blight forecasting model for Washington State.
   * **Proposed starting and ending dates**
     1. Start date: April 1, 2021
     2. End date: October 1, 2021
   * **State(s) where the work of the project will be conducted** 
     1. Washington State
   * **Cooperating institutions** 
     1. Washington State University
     2. AgriNorthwest
     3. Schneider farms
     4. Warden Hutterian Brethren
   * **Commodities and practices that will be involved in the project** 
     1. The potato industry will be involved in this project.
     2. Practices involved in the project include agricultural production of potatoes, pesticide applications, and disease forecasting.
   * **Budget amount to be requested** 
     1. $200000
   * **Whether this submission is a long-term project.**
     1. No
   * **Whether this submission is a re-submission.** 
     1. No
   * **How did you learn about WSARE.** 
     1. Flyers

***Please choose a start date that corresponds with the first-of-the-month. Start dates must be no earlier than April 1, 2021 and no later than October 1, 2021.***

1. **Project Team (10% of review criteria)  
   The project team *must* be a minimum of five (5) people and must include: A principal investigator (PI), an Extension/outreach representative, and at least three (3) producers. You may also identify Co-Principal Investigator(s) (Co-PIs), if applicable. (See “Other members” below). *At the time of full proposal submission, you should include signed letters of each producer cooperator*.**

**Principal Investigator (PI): This person serves as the principal researcher. The PI (applicant) is responsible for coordinating the project and carrying out its contractual provisions.**

* David Linnard Wheeler, Assistant Professor, Washington State University

**Extension/outreach representative, educator, or equivalent: The outreach representative may be an Extension agent, specialist, educator, or equivalent. This person is responsible for all education and outreach activities, and might serve as Co-PI.**

* Mark Pavek, Professor, Washington State University

**Producers: Producer involvement means that each producer is meaningfully involved in some aspect of the research or education activities of the project. One of the producers will be designated as the Advisor Representative. The Advisor Representative must be involved in all aspects of the project from idea inception through project completion. Each producer must be associated to independent operations. Nonprofit farm operations may participate in the project as an optional team member, but do not count as one of the three required producers. A person qualifies as a producer (farmer/rancher) if they have a *for-profit operation and*:**

* + **Their primary occupation is farming or ranching and have a farm/ranch taxpayer identification number (TIN); *or***
  + **They are a part-time producer with at least $1,000 documented annual income from farming or ranching activities.**
  + Marvin Wollman (Advisor representative), Warden Hutterian Brethren
  + Grant Morris, Schneider farms
  + Mike Madsen, AgriNorthwest
  + Jack Jensen, Simplot
  + Brett Reynolds,
  + Heath Gimmestad, Friehe Farms

**Other members**: Besides the aforementioned project team of five people, the team may include additional producers, researchers, educators, Co-PIs, and others with appropriate expertise for the project scope.

* Joe Zagrodnik, Postdoctoral Research Associate, AgWeatherNet, WSU

**C. Project Summary** (Limited to 300 words)  
The summary must include a brief description of the problem or need and the creative approach to solve it. Identify the research question(s). Describe the research methods and outreach activities and explain how your project will address the identified problems. Explain the potential significance of the project and its expected outcomes. A clear and concise description of your pre- proposal is important for the review process.

Late blight of potato has caused socioeconomic damages worldwide since the 1840s. Management of the pathogen that causes late blight, *Phytophthora infestans*, is dependent on fungicides. Unfortunately, these fungicides are costly, toxic to off-target organisms, and can select for pathogens that are resistant to fungicides. In the Columbia Basin of Washington state, the cost of fungicides used to treat late blight was estimated to be around $47 million in 2019. Alternative management strategies are therefore needed to mitigate crop losses and reduce excessive fungicide applications. The primary goal of this research proposal is to expand, validate, and deploy late blight forecasting models in Washington. More specifically, we propose to develop site-specific late blight forecasts and outreach for Washington state with late blight incidence data from producers, severity data from remote sensing satellites, and weather data from AgWeatherNet. Site-specific late blight forecasts and digital outreach will help minimize fungicide applications without compromising yields by providing weekly management recommendations for each region. Thus, this project will directly contribute to the sustainability of potato production in Washington. Expected outcomes include (i) site specific late blight forecasts that integrate late blight incidence data from producers, severity data from satellites, and weather data from AgWeatherNet, and (ii) weekly management recommendations produced during the growing season. Additionally,

Ultimately, accurate late blight forecasting systems will enable producers to apply less fungicides without increasing the risk of crop failure.

**D. Narrative  
*Relevance to Sustainable Agriculture:*** (20% of review criteria, limited to 500 words)  
Explain why this project is needed, and how it addresses sustainable agriculture in the Western region. Describe the potential benefits and impacts for producers and agriculture in general. Clearly articulatehowtheprojectanditsmeasurableoutcomesarerelevanttothegoals ofWesternSARE (see page 2). Projects should address how they:

* Sustain and improve the environmental quality and natural resource base on which agriculture depends;
* Improve the profitability of farmers/ranchers and associated agricultural businesses; ***and***
* Enhance the quality of life for farmers/ranchers, communities, and society as a whole.

***Stakeholder Involvement and Support:*** (10% of review criteria, limited to 250 words)  
Western SARE is committed to addressing the needs of agricultural stakeholders. Pre-proposals must include evidence that stakeholders’ identified needs are being addressed, as well as support for the project beyond the project team. Describing and documenting stakeholders’ needs and support demonstrates (a) that the proposed project is relevant and timely and (b) that the applicants are engaged with agricultural stakeholders. Evidence of stakeholder identified needs and support may include, but are not limited to:

* Recommendations from stakeholder groups such as grower organizations or commodity commissions. Please identify stakeholder group(s) or organization(s).
* References and citations to previous studies/reports.
* Community support letters from neighboring farmers or local co-op.
* Needs assessments.

***Producer Involvement and Collaboration:*** (10% of review criteria, limited to 250 words) WSARE requires the involvement of producers throughout the project by actively collaborating in the project. Identify the level of involvement of each producer at all stages – from inception to completion of the project. Signed and dated producer collaboration letters stating their role in the project ***are expected*** for each producer. However, if letters are not available at the pre-proposal submission time, producers’ e-mail confirmation of collaboration is acceptable. Attach the producer collaboration letters or e-mail in the Supporting Documents section.

***Objectives:*** (10% of review criteria, limited to 250 words)  
Provide a list of the project objectives. Each objective should be a statement describing an intended

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achievement. Objectives must be specific, measurable, achievable, and time bound. For more details see *Successful Objectives* .

***Materials and Methods:*** (30% of review criteria, limited to 1000 words)  
For each objective -including research and education objectives- describe the experimental design (including a survey study if applicable), site (experimental station research plots, private farm/ranch, demonstration farms, greenhouse, etc.) data collection and analysis methods, and materials. Include sufficient information so that reviewers can determine if the approaches are suitable to achieve your objectives. Avoid the use of jargon that may be unfamiliar outside your specialty area and define all acronyms.

***Innovations and Benefits to Sustainable Agriculture:*** (10% of review criteria, limited to 250 words) Explain how this project is novel and creative. Describe the potential benefits and impacts of your project and its findings to other producers (local, state, and regional) or agriculture in general. For example, provide an economic analysis or address how the outcomes of the project would affect: overall farm/ranch productivity levels, operational profits, soil or water quality or quantity, rural communities, society as a whole. Where possible, use specific estimates of benefits – for example, dollars saved per acre, tons of soil protected from erosion, pounds of chemical reduced, number of acres or people affected, markets expanded, jobs created, etc.

**E. Supporting Documents**All supporting documents should be attached in the online grant application. PDF documents are preferred, but images in jpg and png formats are accepted.

***Current Vita:*** Attach a current 2-page vita for the Principal Investigator and each project team member, ***except producers***.

***Letters of Producer Cooperation***: ***Each producer who is part of the project team must submit a signed letter of cooperation***. The letter verifies the producer’s willingness to participate in the project and outlines their commitment to (resources and/or time) and role in it. If letters are not available at the pre-proposal submission time, producer e-mail confirmation of collaboration is acceptable.

***Letters of Stakeholder Support (Optional)***: Attach letter(s) of support from stakeholder individuals and/or organizations that support the proposed research and education activities.

***Citations***: Attach a list of cited sources.