



U.S. Department of Energy

Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: Donald Danforth Plant Science Center - A Reference Phenotyping System for Energy Sorghum

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Tucson and Maricopa, AZ; Urbana-Champaign, IL; Saint Louis, MO

Proposed Action Description:

Funding will support the project team's small-scale research and development activities to conduct multiple activities that further refine the dataset generated by the reference field phenotyping system for energy sorghum in support of ARPA-E's TERRA Program. Specifically, the project team will (1) create algorithms for processing hyperspectral data and providing reflectance values; (2) conduct soil sampling to account for plant performance variation that may be explained by nutrient variability across the field; (3) compare data with commercial satellite data to develop scaling algorithms and calibrate both datasets; and (4) improve the dataset availability through an enhanced web portal. If successful, the project will provide the most complete and highest resolution phenotyping datasets for energy sorghum, permitting a benchmark "reference standard" for new instrument hardware and software.

Project activities will be conducted at existing facilities at Donald Danforth Plant Science Center (Saint Louis, MO); University of Arizona (Tucson and Maricopa, AZ); University of Illinois (Urbana-Champaign, IL); and Saint Louis University (Saint Louis, MO) designed for the applicable activities. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements. No modifications will be made to the existing facilities to accommodate the proposed work.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

☒ The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

☒ There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

☒ The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

(This form will be locked for editing upon signature)

Date Determined: 4/4/18



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Submit by E-mail

Proposed Action Title: Donald Danforth Plant Science Center - A Reference Phenotyping System for Energy Sorghum

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): St. Louis, MO; Huntsville, AL; Manhattan, KS; College Station, TX; Tucson, AZ; Urbana, IL

Proposed Action Description:

Funding will support small-scale, research and development activities that will develop an integrated phenotyping system for energy sorghum that leverages genetics and breeding, automation, remote plant sensing, genomics, and computational analytics. In particular, the project team will install and operate the reference field phenotyping system (GFE gantry system) provided by ARPA-E, conduct field- and controlled-environment phenotyping of energy sorghum using GFE gantry system and small unmanned aerial vehicles (UAVs), and perform associated analytics. The proposed activities will be designed to characterize phenotype-to-genotype associations that will enable knowledge-driven breeding and the improvement of energy sorghum development.

The proposed action consists of the use by the Project Team (Kansas State University, in particular) of small unmanned aerial vehicles (UAVs), which are regulated by the Federal Aviation Administration (FAA). Kansas State University will maintain compliance with all applicable FAA regulations governing the operation of UAVs and adapt operations to conform to any changes in the applicable regulatory requirements.

Project tasks will be conducted in accordance with applicable Federal, State, and local safety and environmental requirements.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

☒ The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

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Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer

Date Determined: 08/11/2015