



STUDENT SUSTAINABILITY COMMITTEE

Funding Application – Step 1

Please submit this completed application and any relevant supporting documentation by the deadline listed on the SSC website to Sustainability-Committee@Illinois.edu. The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the SSC at Sustainability-Committee@Illinois.edu.

General Information

Project Name: “Corncrete”

Total Amount Requested from SSC: \$44,500

Project Topic Area(s): Energy Education Food & Waste
 Land Water Transportation

Contact Information

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Project Team

Name	Department	Email
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Name	Department/Organization	Email Address
Name	Department/Organization	Email Address

Project Information

Please provide a brief background of the project, the goals, and the desired outcomes:

In April 2017 three faculty members received \$14,522 from the University Research Board to conduct preliminary investigations into the use of Crop Residue for use at both Small and Large Scale. The results of those initial investigations have proved very positive and we are now seeking the support of the SSC to facilitate the collection of more “waste” material to build on the progress made to date. The primary aim of the project is to utilize agricultural “waste” material and see if it can be used as a building product. Historically hemp has been used in conjunction with a lime binder (see Hempcrete). However the cultivation of hemp is currently very restricted in the US so the team has been looking to other grass materials with similar properties to hemp. Initial investigations have found that corn stalks could be equally as good as hemp, if not better.

Please provide a brief summary of how students will be involved in the project:

The current method of “harvesting” the “waste material” is labor intensive so a significant part of the budget will be dedicated to paying undergraduate students to hand sort corn stalks from corn leaves, dry the stalks and then grind them in a mill. Once the raw materials have been prepared students will be employed in the construction of a structure (a very small building). If sufficient funds are provided additional students can be employed to provide input into the design of the building, alternatively the design of the structure will happen in a classroom setting or solely by the faculty lead.

Please provide a brief summary of the project timeline:

With existing funding the project is already underway. During the Fall of 2017 the aim is to produce a number of small samples that will be tested for rudimentary thermal performance. If funding is secured from the SSC in the Spring of 2018 work will begin on processing more material. Ideally some additional testing material can be purchased to help evaluate the unique properties of the material that will be created. Dependent on what level of funding is received will determine when the structure will be designed and built. This could take place in the Spring, Summer or Fall of 2018.

Additional comments

Currently corn kernels are seen as having the only value in the production of corn. The bi-product of corn production, the plant itself, is shredded and left or ploughed into the field. In some cases low value corn stover is collected and used for animal bedding. With several thousands of acres of corn grown on the University’s South Farm, the university is uniquely positioned to reap the benefits of developing an insulation product that is not reliant on fossil fuels for its production. In addition, when built into a wall assembly “corncrete” will have the ability to sequester carbon in the wall itself.

Preliminary Budget
(see below)

Undergraduate Hourly Labour @ \$12 / hr	1hr = 0.25 cubic/ft of usable material 400 cubic ft required 1,600 student hours required	\$19,200
Lime Binder \$25 for 4 cubic ft	Lime Binder for 400 cubic ft	\$2,500
Building Design Development	Building Design Development	\$7,000
Base, Roof and Structure for Building	Base, Roof and Structure for Building to be determined based on design development	\$5,000
Testing Equipment	thermal conductivity kit including a transient plane source sensor	\$6,000
Graduate Hourly Labour @ \$15 / hr	120 hours to conduct thermal conductivity tests	\$1,800
Additional application tests	in addition to hand building the small structure the team would also like to test the material in a robot printing application	\$3,000
	Preliminary Budget Total	\$44,500