



Design Of A Portable Deployable Farm Stand For The Sustainable Student Farm

The SMALL Studio
(Initial Funding Proposal Submitted February 2012)

FINAL REPORT May 2014



APPLICANT INFORMATION

Name of Group

The SMALL Studio, with the Sustainable Student Farm (SSF)

Project Primary Contact Information

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Project Consultant Contact Information

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Name: Zachary Grant, Sustainable Student Farm Manager.

Financial Contact Information

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1. Project Purpose

The purpose was to fund the construction of two Portable Deployable Farm Stand (PDFS) - one to be powered by a tandem bicycle or small vehicle; the other to collapse into the farm's minivan. They were commissioned by the SSF, a student-operated farm that produces significant quantities of fruits and vegetables for use in the University food service operations. The farm uses the PDFS to deliver and display their produce in local marketplaces, including student dormitories and the summer market on the Quad.

2. Project Summary

The initial funding proposal included images of the PDFS designs developed in the Arch 572 graduate studio.





Once the SSC funding was approved, two of the projects were selected for further prototype development: *Folding Farm*, and *SLIDE*, illustrated below.

folding farm



slide
produce · deploy · sell





These were completed by the end of the semester, and utilized at the farm and summer market beginning in June 2012.



3. Problems Encountered

The working prototypes of *Folding Farm* and *SLIDE* were not without their problems. Summer 2012 Research Assistants working on a related farm project were able to adjust things like wheels, details, etc. to allow them to function more precisely, although the original canopy design remained problematic.

4. Project Benefits and Impact

Of the two prototypes, *Folding Farm* had the greatest potential for making a substantial future impact. In October 2012, we had an opportunity to demonstrate the *Folding Farm* to Chancellor Wise. From that presentation came funding in 2013 from the Chancellor's Office to implement a second prototype - *Folding Farm II* - currently in fabrication and operational by June 2014.



Recently *Folding Farm II* received national recognition in a 2014 Award Program sponsored by the American Institute of Architects (AIA). It will be displayed at the AIA National Convention in Chicago in June 2014.



Thus, the seed money provided from the Student Sustainable Committee for this project initiated a design project that is gaining momentum and interest, including several purchase inquiries and the discussion of creating a startup business to fabricate and market the design. Our vision of a sophisticated, forward-looking transformation of a stereotypical market display system is beginning to bring positive national or international publicity to the university, the SSF and the SSC.



5. Resources and Money Saved

The bicycle powered *Folding Farm* reduces greenhouse gas emissions in the transportation of food from farm to market. It eliminates two gas driven round trips between farm and market per week, or 150 gal per year saved, saving the student farm \$600 per year @ \$4.00/gal - an offset of 2,910 lbs of CO₂ otherwise emitted.

Folding Farm is a visible symbol of the commitment to green values. It increases the visibility of the farm, resulting in greater awareness of the availability of healthy produce within the student population. In addition, it increases the visibility of the biking culture on campus, as well as setting examples for the potential of bikes to transport large payloads.

Folding Farm, and now its progeny, *Folding Farm II* contributes to the success of SSF. The SSF saves resources in the following ways:

- Contribute to campus sustainability by reducing carbon emissions associated with the transport of fresh produce from farms thousands of miles from campus.
- Introduce thousands of University of Illinois students to the joy of eating fresh, locally grown foods produced by their classmates and local residents.
- Provide training for students who wish to develop their own fruit and vegetable farming operations.
- Provide abundant, delicious, and locally grown produce for the Campus.
- Incorporate the missions of the University – teaching, research, and outreach, into the daily operation of the farm.

6. Student Engagement

Several graduate students have had the opportunity to work on the Folding Farm project, along with other project on the Sustainable Student Farm. At the project's inception, 16 architecture graduate students and 30 undergraduate graphic design students incorporated various designs for the PDFS into their spring 2012 studio work. Two graduate architecture teams then developed and implemented the two designs described above. In AY 12-13 the designs were refined and additional funding was sought to continue to develop the next iteration: Folding Farm II. Currently, three graduate architecture students are overseeing the completion of this second prototype.

Working on these projects has increased students' understanding of sustainable farm practices and available alternatives to corporate farming practices. The Architecture students involved with the projects for the past two years have learned what the making of lightweight sustainable design entails, and also what users need from their designs.



7. Fund Spreadsheet

		Sheets	Charts	SmartArt/Graphites	WordArt	
A	B	C	D	E	F	
Team: folding farm						
Chuck Huss, Zak Helmick, Meagan Calnon, Jordan Buckner, Fadi Salem						
Item		Price/unit	Quantity		Cost	
RAIN DROP CANOPY						
Shock-corded Fiberglass (Used)		\$1.00/30'	30'		1	
3/8" Diameter Steel Rod		\$6.55/3'	1'		2.18	
Polyester Fabric		\$7.99/sq. yd.	6 sq. yd.		47.94	
Nylon Strap		\$1.80/yd.	2 yd.		3.6	
UV Resistant Paint		\$4.99/each	4		19.96	
Labor						
Artist		\$25.00/hr	4		100	
Seamstress		\$18.00/hr.	2 hr.		36	
Misc.		--	--		50	
				TOTAL:	260.68	
FOLDING FARM TRAILER						
Steel Members [1 1/4" Round Tubes]			140.9 linear feet		1000	
Hardware					100	
Powder Coating					600	
Ball Bearing Collars					119.8	
Axle					39.99	
Wheels / Tires					100.25	
Y-Frame					300	
Bike			potentially free		100	
Labor / Miscellaneous					200	
				TOTAL:	2560.04	
FOLDING FARM DISPLAY (4)						
Polyethylene Sheets		\$21/sheet	16		\$336	
Threaded Rod		\$2.88/rod	4		\$12	
Laser Cut Time		\$5/hour	16		\$80	
Labor		\$35/hour	4		\$140	
				TOTAL:	567.52	
				GRAND TOTAL:	3388.24	
Team: slide /////						
Michael Johnson & Shaefer Kirby						
Item		Price/unit	Quantity		Cost	
1-1/2 X 1-1/2 X 16GA (.065 wall) A513 Steel		\$3.00	96		\$288.00	
1/2 X 1/2 X 16 GA (.065 wall) A513 Steel		\$3.25	48		\$156.00	
3 X 1-1/2 X 14 GA (.083 wall) A513 Steel		\$8.25	8		\$66.00	
Fabrication Labor		n.a.	unknown		\$695.00	
Vinyl Signage (6' x 3')		\$25.00	4		\$100.00	
18" Heavy Duty Drawer Slides		\$5.50	16		\$88.00	
Emergency Stretcher Legs		\$600.00	1		\$600.00	
Additional Hardware (estimated)		unknown	unknown		\$150.00	
Additional Labor (estimated)		\$35.00	8		\$280.00	
				TOTAL:	\$2,423.00	