Resumen: As obvious as it may seem, beans (*Phaseolus vulgaris*) are one of the biggest sources of protein for a large portion of Central America, Latin America and the world. With beans having possible multiple harvests the weather can be unpredictable resulting in a ruined crop. In order to help combat this problem, a relatively inexpensive device was designed and tested to thresh and winnow bean seed. This is a primary step in ensuring seed for the following crop as well as providing sustenance and nutrition to many people worldwide.

Introducción: For many years, farmers in Central American and around the world have been threshing beans in a very rudimentary way. The method of repeatedly striking a large pile of dried bean plants on a large tarp with wooden or metal poles until all the beans are removed from the pods. This process is harsh on the human body due to the intense manual labor in the midday heat and lack of efficiency. Aside from the labor aspect of this process it is relatively slow. Due to the climate change and less predictable weather patterns worldwide, time is of the essence when dealing with dried crops. In order to help solve this problem, a threshing device was designed and constructed by senior mechanical engineering students.

Materiales y métodos: The methods used to gather information for this project started with several visits to organizations within Michigan in the US and through interaction with agriculture professors, specifically Dr. Luis Flores. In order to receive more direct information on the current threshing methods used around the world the team traveled to Guatemala during the month of March to learn hands on. With these experiences the team now had the ability to design a more effective and culturally acceptable design. The materials are mostly simple construction materials that are easily found around the world being plywood, perforated steel and angled iron. A simple bicycle system was used for the power input. A few materials such as the plastic auger and bearings are more difficult to obtain, however could have rudimentary substitute fabricated.

Resultados: First, this design has an auger that pushes the bean pods and beans against the perforated, curved sheet metal that is formed around the bottom of the auger. With this horizontal force and friction, the beans will be threshed. In order to improve this design we put wooden rods encased in PVC tubes between each pitch to hit the pods more. At the end of the auger there is an opening en the curved metal sheet where the plant waste falls. To power this machine there is a system of gears with bicycle pedals to rotate the auger. In addition to rotating the auger, this system rotates a basic fan also to winnow the waste of the plants that fall through the metal sheet. Finally to collect the beans it is similar to the present way, a plastic tarp is needed to cover the ground below the machine.

Conclusión: Increasing the rate at which the beans are threshed will help farmers combat the unpredictability of the weather during the harvesting season. This device will also help ensure the integrity of the bean seed is kept to ensure another crop is possible. More testing with actual conditions faced (full uprooted plant) needs to be done along with the diffusion of this idea to ensure the actual implementation of this device is accepted.