1. **Under what conditions can agriculture succeed in lifting people out of extreme poverty? Particularly those households with limited access to productive resources.**

We have found that eliminating food insecurity within the poorest population of urban dwellers is best accomplished by allowing them to take some control over growing a portion of their own food supply through gardening. Planting a traditional garden presents obvious challenges and difficulties for the poorest urban dwellers as considered below.

* The poor own no land or property and are often relocating often without access to permanent access to land where gardens can be planted. The best land is rarely accessible to the poor.
* They own no tools.
* They have little or no capital to invest.
* They have little knowledge of agriculture or growing crops.
* They have little access to water, and irrigating crops would add a significant burden.
* They cannot afford fencing to prevent animals from grazing the garden.

We have a solution to solve each of these major challenges, allowing even the poorest population to become gardeners, and to take charge of a major portion of their own food supply. The solution I offer to these poor urban populations is called the STRAW BALE GARDENS® method. The solution to hunger is rooted in this revolutionary new type of gardening, which has become extremely popular in the USA, Canada and over much of Western Europe and Australia. The method is now finding its way into many parts of Asia, Africa and South America as well. It has been adopted by more than 500,000 back-yard gardeners around the world, in just the last five years and expands by 5x each year, as can be verified in social media testimony with a few simple searches online.

The STRAW BALE GARDENS® method uses a compressed bale of organic material, such as the stalks remaining after the harvest of small grain crops like rice, oats, wheat, barley, rye. Any organic materials can be used effectively, including mixtures of grass, sugar cane stalks, fallen tree leaves, weeds or other discarded plant vegetation from virtually any source. These organic substrates must be tightly compressed into bales. Often bales are created mechanically in western societies with baling machinery, where baling is commonly done. In Asia participants have fashioned simply made baling mechanisms from wood. These hand balers make bales approximately 50 x 50 x 120cm and are mechanically compressed and bound tightly with string or wire.

The bales can be placed anywhere, even on concrete, asphalt, compacted gravel, clay or on a roof top. A vegetable garden needs sun, so finding a full sun exposure is the only requirement for location. Bales are easy to transport and are made for nearly zero cost. Most rice farmers do not currently value their remaining straw after harvest and simply burn it before the next planting season. Other grasses or waste vegetation can be gathered and made into compressed bales and used for this gardening process. Making a bale may take five minutes to accomplish by hand, but the input costs are nearly zero in most cases.

The bales must be prepared for two weeks prior to planting. In traditional western countries simple refined fertilizers are readily available and are applied to the bales over ten days to encourage rapid decomposition. The nitrogen in the fertilizer feeds the bacteria inside the bales, and this rapidly decomposes the organic material breaking it down into virgin “soil” or compost inside the bale. This newly formed compost or “soil” inside the bales provides nutrients to newly planted vegetable crops. Graywater from washing can be used to add moisture to the bales eliminating the need to acquire water especially for a garden. Straw has a great capacity to capture and store moisture inside the bale. A bale can hold from 6-8 liters of water in each bale, which serves as a reservoir for moisture to keep roots healthy.

In many poor communities, there is a lack of available refined fertilizers. Any fertilizers that are available can be cost prohibitive for the participants. A practical solution that is free is to use human urine to condition the bales. Approximately seven liters of urine applied over ten days will adequately feed the bacteria in the bale to begin decomposition. NO FECES should be used for this process, as the potential for disease is of great concern.

The bales are prepared and ready to plant after just 2-3 weeks, and within 30-45 days the bales are already producing harvestable crops. Planting from seed makes the cost low, and saving seed is a simple skill that can be taught easily to even those without much experience in gardening.

* No land is required, the bales can be placed anywhere, and can be moved if necessary even during the growing season.
* No tools are required for this method of gardening.
* The bales can be made by hand using free components and repurposed string, or wire.
* Very little education or skill is required to utilize this method.
* Waste water, or graywater can be used on the bales, and little additional water will be required.
* Bales can be placed in an area to avoid animals grazing, near the home, on a roof, or inside of any existing natural barrier.

1. **What is the role of ensuring more sustainable natural resource management in supporting the eradication of extreme poverty?**

A major concern of many rice producing countries currently is the environmental contamination of rice straw burning. Many governments and non-governmental agencies are currently working on solutions to prevent farmers from burning their straw, however without any incentive, farmers are not often cooperative. Paying for the straw to be collected and made into bales is the easiest way to provide incentive to stop the burning. Collect the straw and make bales for delivery to urban populations at low cost would help solve this problem and provide inexpensive access to newly trained urban gardeners. The straw could be mixed with other green fresh organic material such as grasses to balance the carbon:nitrogen ratio and encourage better performance of the decomposing bales.

The bales, after use, will have become beautiful compost, which can be used again for another crop. Creating or building a container to hold this compost is often beneficial. This could be repurposed containers or using other “bagging” methods with holes cut into bags for planting.

Once completely decomposed the composted straw can be used to build up or improve the soils in any existing farm plot.

Any method introduced that requires a continuous input by outside parties to sustain it, even cash inputs, will result in the poor continuing to be under the thumb of those in power. Any agricultural method that damages the environment or doesn’t result in positive environmental consequences will eventually be stopped by those with environmental concerns. By devising a solution that improves the environment in conjunction with providing great results quickly and with substantial production of vegetable crops, it insures the future of the method is secure and sustainable indefinitely.

1. **Can those without the opportunities to pursue agricultural production and to access resources such as fish, forests and livestock find pathways out of extreme poverty through these sectors?**

One concern for many of the poorest populations is food storage, especially with vegetables which often benefit from refrigeration after harvest. Having the garden close to the home, allowing the harvest and consumption of crops within just moments, thus eliminating concerns about storage and refrigeration, and providing the finest quality vegetables available. Better than the finest restaurants catering to the richest men in the world can provide. In addition, some of the scraps and by-products of the vegetable garden could be used for feeding poultry, which can generate eggs for protein as well as meat for consumption. The production of other livestock such as rabbits is also highly probably with excess production from gardens which eventually overflow with production. Learning to preserve vegetables through canning, freezing, and dehydrating crops can also become a part of a successful food gardening program over time for those who live in climate where production cannot be sustained throughout the year. An important consideration is the ability of the bales to easily and quickly drain moisture from heavy sustained rainfall, that even in climates with monsoon rains during certain times of year, the crops can still grow without the same issues that are impossible to deal with in traditional soil gardens. This exceptional drainage capacity allows production even during the rainy season in tropical climates, when normal gardens are flooded daily and must be covered by greenhouses and built in expensive raised beds. Production of fresh vegetables during this time of year can allow the producer a captive market for selling excess production to the marketplace and make profits that other growers find elusive during these difficult growing periods.

1. **What set of policies are necessary to address issues connecting food security and extreme poverty eradication in rural areas?**

Allowing for urban dwellers to have access to community spaces within close proximity to their dwellings to set up small gardens is key. The soil is not a concern, nor is the slope the surface or other conditions that would traditionally make gardening impossible. Concerns about the theft of crops produced are an issue, and thus keeping bales and gardens close to dwellings is key to preventing these concerns. Convincing local governmental officials to support these new urban gardening efforts is key to their success.

1. **Can you share any examples of experiences that succeeded in reducing (or eradicating) extreme poverty through an agricultural pathway?**

We have many examples of successful gardeners around the world, who have taken control of much of their own food supply by growing their own food in a Straw Bale Garden. Many of these people from the poorest population within the community. Several examples in public housing sectors in the USA, including Detroit and Minneapolis, where some of the toughest neighborhoods in the country exist. We have several other proof-of-concept success stories in Argentina, South Africa, Philippines, Cambodia, Korea, Nepal, Netherlands, and many other countries.

One great example is near Davao in the southern Philippines, where bales were delivered to an urban housing facility with many very poor people. The project was funded via a grant program, however the cost of the gardening project itself (less the administrative costs due to start-up costs) was under $50 for 50 participants, so the cost is very low at approximately $1USD per participant. Once the concept is expanded, the cost could be driven to virtually zero or become profitable, pending the sales of bales to participants at a very low cost with a small profit margin, and/or donations of produce back to the program for sale to local markets, restaurants or schools.

It is really important to understand that producing food is just a part of what is accomplished by these urban gardens. Providing food for the participants and their families, is fundamental to success, but an immeasurable part of the project is the self-esteem and personal development of the participants. When they learn these unique and new special methods for growing their own food and sustaining a supply of food for their families, it gives an amazing sense of pride and accomplishment to these individual participants. It is easy to see the spread of this enthusiasm as the participants are eager to share what they have learned with other neighbors and friends, as they teach what they have learned about how to grow food using the STRAW BALE GARDENS® method.

For more information about the STRAW BALE GARDENS® method, please visit our website StrawBaleGardens.com or Facebook.com/LearnToGrowAStrawBaleGarden or simply google “straw bale gardening” and begin researching there.