

0105 - Carbon Sequestration

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Exhibitor



Second Sun Systems

Web site : <https://climatelaunchpad.org/finalists/second-sun-systems/>

Team

Sukhbir Singh Sokhi

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Dr. Amit Sehgal

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Location



Ludhiana, India

Summary

South East Asian farmers are burning crops residue in absence of adequate technology. 13915 Gigagrams is burnt in India only. They need technology which is more quick and easy to use than burning and of multipurpose use. Prior art related to converting crops residue in to boiler fuel and bio-waste decomposer manual spray or tractor mounted sprayers are inefficient, too costly and not easy to use. Our aim is to empower farmers with such a simple In-Situ solution that they find burning cumbersome and adopt REGENERATIVE AGRICULTURE for enriching organic carbon in soil and CARBON SEQUESTRATION to combat climate change, boost microbial biodiversity in Rhizosphere to improve crop yield and multipurpose whole year use of farmers. 1 hectare of land produces average 8.5MT of stubble which contains 48.7% organic carbon, 1.05% Nitrogen, 0.14% Sulphur, P, Potassium and various other minerals. Our technology would replenish all minerals in to soil to increase fertility of soil. The soil physical properties viz. soil moisture, temperature, aggregate formation are affected by residue management practices. Surface retention is also act as mulch and mulching play important role in suppression of weeds. Water conservation up to 60%, elimination of smog/pollution of post harvest and ground water pollution are among our major objects.

Presentation

Images

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Dear All,

I want to draw your kind attention towards the burning of paddy straw that is a big environmental problem of South East Asia. 13915 Gigagrams of paddy straw are burnt annually in India causing chest and lungs related sickness in millions of people mainly in North India. It also deteriorates soil wealth. NASA has captured images of fires from space.

The solution for paddy stubble must be IN-SITU as collecting and transport of stubble is illogical commercially making EX-SITU solutions nonviable and impractical.

We (Second Sun Systems and IIT Ropar through Pushpinderap Singh; Ph. D. Project Director, DST TIH - AWaDH (Agriculture & Water Technology Development Hub) Founder / Director, IIT Ropar - Technology & Innovation Foundation) have joined hands to present a novel solution to a problem that has not been effectively addressed up to now.

Our Vision: Mother Nature has provided us CROPS RESIDUE for regenerating SOIL WEALTH; it must not be burnt; neither in FIELDS nor in BOILERS.

Our aim is to empower farmers with "Stubble decomposing and irrigation spray system" to adopt REGENERATIVE AGRICULTURE for enriching organic carbon in soil and CARBON SEQUESTRATION to improve climate and boost microbial Biodiversity in the Rhizosphere to raise yield. As well as save 60% irrigation water, save air pollution by eliminating Stubble burning, Save water pollution by lowering water seepage in groundwater in fields. In fact, if the whole of stubble is replenished in the soil then Urea consumption could be cut by 40-50% gradually.

The system is Multi-functional whole year use for farmers with ROI of 2-3 years making it a commercially viable venture.

Our startup is an effort to limit Global Warming to 1.5°C as per Paris Agreement and IPCC guidelines by 9.74 Million MT of CARBON SEQUESTRATION in the soil in The state of Punjab which is our beachhead market. To draw down 35.064 Million MT of CO₂ from the atmosphere by REGENERATIVE AGRICULTURE which would improve the nutritional profile and resilience of crops, Improves microbial biodiversity in the rhizosphere and enhance the fertility of SOIL WEALTH in the State of Punjab that is our beachhead market. Punjab also faces acute depletion of the water table. This technology would save up to 60% irrigation water to save fertile land of Punjab from converting into desert.

Our technology can be easily replicated to INDIA and SOUTHEAST ASIA for Carbon Sequestration and CO₂ drawdown of much larger quantities to improve the climate.

South Pole; an international organization has approved in-principle to provide Carbon Credits to our farmers. It would be a game-changer for our farmers who are struggling to survive as it would open up another revenue stream for them.

All developed nations are emphasizing REGENERATIVE AGRICULTURE for CARBON SEQUESTRATION to raise organic carbon in the soil which is base for soil fertility.

In fact BILLIONS of DOLLARS are being spent in the US for this. Please review: <https://impactalpha.com/agriculture-funds-are-investing-billions-to-regenerate-soil-and-communities>

But in India much emphasis is being laid on converting crop residue into boiler fuel which shut chances of Regenerative agriculture and bring farmers out of clutches of Chemical Agriculture.

Our Solution: Stubble decomposing and irrigation spray system:

Our solution mainly uses bio-waste decomposer developed by Indian Agriculture Research Institute, New Delhi (IARI-PUSA) to decompose agriculture biomass (Rice stubble) into organic carbon. Bio-waste decomposer involves various types of enzymes & a consortium of very effective microbial strains. This is a lyophilized, water-soluble consortium of very high concentration bacteria & fungus, containing a minimum of 1 trillion (1x10¹² per gm of the powder) of effective decomposing microbes. Therefore act very fast to decompose hard & soft parts of rice & wheat straw.

The spray system includes spray nozzles fitted at strategic locations in the field. A tank with continuous stirring apparatus along with a pressure pump is stationed at the central position. Spraying of water or water-soluble Biowaste decomposer or urea or pesticides can be done in 45 minutes in 2 hectares. The smart system can be operated through mobile phone.

Though bio-waste decomposer is available now manufactured PUSA Institute, New Delhi and earlier by Centre for organic farming Gaziabad and some private manufactures like Shri Amrut-Pune, but it has limited reach due to the inability of farmers to spray it in fields as quickly as required. It is also nearly impossible for farmers to collect rice residue by employing big numbers of labor or dump stubble at one place and spray waste decomposer on it. Stubble must not be left to decay itself as decaying of crop residue produce huge amounts of GHGs methane and carbon dioxide which is again harmful to the climate whereas our solution decompose crop residue without emitting any gas with the help of efficient, effortless, and effective spraying of Bio-waste decomposer.

We are looking to collaborate to enable farmers with such an easy-to-use solution that they find burning cumbersome.

We request for collaborations to end the the stubble burning but use it for carbon sequestration to improve the fertility of soil wealth.

I hope international acknowledgment to our technology so that we can serve our farmers in best manner.

Meet the team

During the indicated periods, one of the team members is available for a video chat.

Stand No	Time zone	+/-UTC	Date	Start local time (hh:mm)	Duration (hh:mm)	Attendant	Video chat link
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PNG File Handout Pic.png	Apr 28, 2022 by Marc Bernard
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Microsoft Word Document Seeking Support for innovation to eliminate Stubble Burning.docx	Apr 28, 2022 by Marc Bernard

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