



Final Year Project Showcase Batch-2017 Year 2021

Department: Textile Engineering		Programme: Textile Sciences	
1	Project Idea	Characterization of Natural Fiber Reinforced Concrete	
2	Process	Jute and Hemp fibers were incorporated in concrete mix to increase the strength of concrete and turn the brittle concrete into ductile nature to prevent cracks during earthquake. Jute fiber were incorporated with concrete at fiber length 1cm, 1.5 cm and 2 cm each at 0.1%, 0.25% and 0.5% concentration by weight of cement. These were kept in sunlight for 24 hrs and curred for 28 days in water. Hemp were casted at best results of Jute fiber at 1.5 cm 0.5% and both were compared for better results at this length and concentration.	
3	Outcome	The Hemp fiber reinforced concrete showed great increase in compression strength, while, Jute fiber reinforced concrete showed great increase in flexural and split-tensile strength.	
4	Evidence (Theoretical Basis)		
5	Competitive Advantage or Unique Selling Proposition (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence		
a	Cost Reduction of Existing Product	Although, there is no cost reduction of standard concrete; but, jute fiber reinforced concrete doesn't increase price, as jute is cheap and available in abundant quality in Pakistan. Hemp fiber market is currently growing in Pakistan and will be available easily in a few years.	
b	Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process (e.g. What is the issue is current process and what improvement you suggests)	The blocks made from standard concrete are brittle in nature and doesn't have adequate strength. By incorporating fibers in reinforced concrete, the compression, split tensile and flexural strength increase and prevent cracking of concrete.	
c	Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region)	SDG#9 Industry Innovation and Infrastruture Natural fiber reinforced concrete is based on those fiber that are extracted from natural sources and are biodegradable. Jute and Hemp fibers both are eco-friendly and sustainable that gives enough strength to concrete as compared to steel reinforced concrete that is not sustainable or eco-friendly.	
d	Expanding of Market share (e.g. how it expand and what is the problem with the current market)	Around the world, reinforced concrete is been practicing, meanwhile, in Pakistan it is not yet worked upon. The constructional companies should work upon jute and hemp fiber reinforced concrete to prevent cracks from earthquake in the most effected areas.	
e	Capture New Market (e.g. Niche market or unaddressed segment)	Building construction, shatter and earthquake resistant constructions, floor foundation for machinery in factories, fabrication of lightweight cement based roofing and ceiling boards and construction materials	

		for low cost are niche markets and unaddressed segments.
f	Any Environmental Aspect (e.g. carbon reduction, energy-efficient, etc.)	Natural fiber reinforced concrete mainly focuses on those fibers that are extracted from natural sources, are environmentally friendly with adequate strength that prevent harm to environment and doesn't corrode concrete than steel fibers reinforced concrete. They provide adequate strength as Synthetic fiber reinforced concrete that are not decomposable and harm nature.
6	Target Market (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service	The end user can be construction companies, concrete block making industries, civil engineers and every person involved in construction.
7	Team Members (Names & Roll No.)	Radma Fatima TS-17004 Layla Khan TS-17024 Sadaf Aqeel TS-17034 Maham Jamal TS-17040
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