Experimental Study on Partial Replacement of Fine Aggregate by using Agro Waste in PCC

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Abstract:- **Partial replacement of fine aggregate by agro product. Agro waste are used for partially replacement of fine aggregate. This pape discuss a study on the use of agro waste as partial replacement of fine aggregate in PCC. When agro waste is added to the concrete the compressive strength of concrete is found to reduce marginally. However, This marginally reduction can obtain with applicable percentage of addition thereby satisfaction result can be achieved. It is also result in lower consumption of natural material in the manufacture process in concrete thereby resulting in environmentally friendly and cheaper.**

Keywords; Agro waste, PCC,Fine Aggregate, Partial Replacement.

I. INTRODUCTION

Concrete is mixture of cement ,Fine Aggregate, Coarse Aggregate and Water in are all natural resource .This paper presents the studies of conducts strength of characteristic of PCC with agro waste of coconut rachis .cubes casting with % of 20,25,30 of fine aggregate with cement, sand, coarse aggregate. Compared with PCC cubes with standardized proportion. Increased consumption create as scarcity motivates us to look for alternate materials which are easily available in abundanceand economically better economically better and environmentally less polluted .Generally more study is needed for long term durability properties of this type of concrete.

II. MATERIAL USED:

A. Cement

The commonly used cement is Portland Pozzolana Cement with grade 43.

B. Sand

It is a granular material which is loose and obtained from the crushing of quarry or if is also taker from the river.

C. Rachis

It is obtained from the coconut tree. We make it is dry state and grinded to fine aggregate

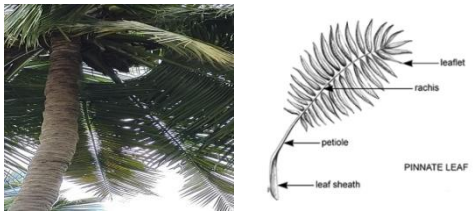

Fig 1 coconut rachis

D. Water Cement Rachis

Typically water cement ratio is used in different grades of concrete to bond the mixture it varies between 0.40 to 0.60.

Table -1 Mix design ratio

Cement(kg)	Fine aggregate(kg/m^3)	Coarse aggregate(kg/m^3)	Water(lit)
54	21.92	162.5	24.3
1	1.5	3	0.45

Table -2 Percentage of rachis

RACHIS			
Perentage (%)	20	25	30
kg	1.35	1.68	2.01

III. PROPERITIES OF MATERIALS

Table-3 Properties of material

Tests	Coarse Aggregate	Fine Aggregate	Cement	Rachis
specific gravity	2.8	2.7	3.15	2.19
Water absorption (%)	1.07	0.6	-	3
Abrasion (%)	30	-	-	-

A. Specific gravity test
In this test materials are required to know the density of water in the material for getting good quality of materials.

B. Sieve analysis
It is also known gradation test, where it determines the aggregate particle by all size with given sample of distribution.

C. Abrasion test
In this test it measure the size of aggregate ,toughness of aggregate and resistance like crushing ,disintegration and degradation.

IV. PROPERITIES OF CONCRETE

A. Fresh concrete test
A. Vee bee consitometer
It is test which measure the change a concrete of mass from one fine shape to another cylinder by means of vibrates

B. Flow table test
It is a method to find the consistency of fresh concrete and also identify workability moisture limits in the concrete.

Table 4 Flow table test

% of rachis	% of flow
20	60
25	54
30	64

C. Slump cone test
It is also measure the consistency of workability of the concrete before it sets. It can also be identify the improperly mixed proportion of the batch. In this there are only three type's values is taken in this test they are:

- True slump
- Shear slump
- Collapsed slump

Fig 5 Slump test

Table 5 Slump cone test

% of rachis	w/c ratio	slump value(mm)
20	0.45	139
25	0.45	147
30	0.45	168

B. Hardened concrete test

A. Compression test
This test is which a specimen experiences the compressing force that enters upon the specimen from the opposite side. It will squash or crushed or smashed.

Table 6 compression test for cube

normal	16.26	22.29
	14 days(kg/m)	28 days(kg/m)
20% of rachis	15.26	20.96
25% of rachis	18.96	26.28
30% of rachis	19.70	28.28

Table 7 compression test for cylinder

normal	15.77
	7 days(kg/m)
20% of rachis	15.63
25% of rachis	15.58
30% of rachis	15.74

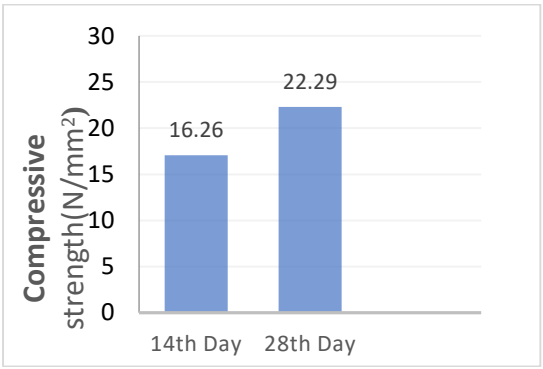

Fig 7 Conventional concrete for compressive strength

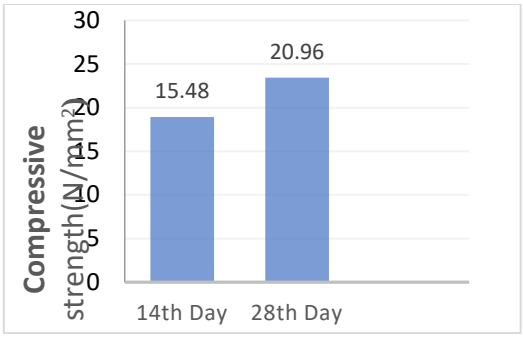

Fig 8 20% of rachis for compressive strength

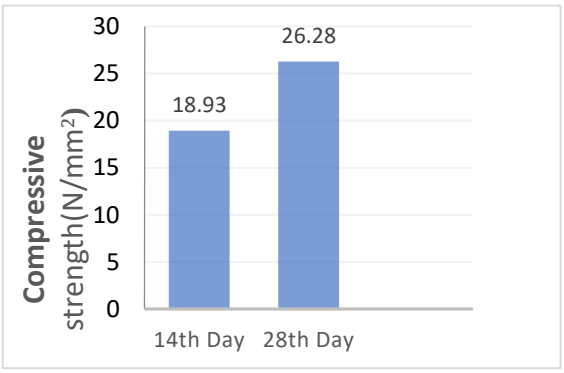

Fig 9 25% of rachis for compressive strength

B. Split tensile test

It is also referred as Brazillian test is notch performed on 150mm diameter, 300mm long cylindrical specimen .It is given a diametric suppressive load along the total length until failure occurs.

C. stress strain curve

It is a relationship between stress and strain of the specimen where the load is gradually applied to measure the deformation from which stress and strain can be determined separately.

V. CONCLUSION

- It is fire resistance it can be use in rural housing
- It has lesser strength concrete
- It may be used partition wall ,Thermal insulation, Sound insulation ,floor finish etc.,

VI. REFERENCE

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