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Protective Measures from the Interference of Confining Animals to Farm Site

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Abstract: ***A farm producing grains, vegetables and crops are required to be protected from unwanted interference of animals. It is necessary to demarcate the boundary between farms. Due to non-hindrance the crops are damaged by the roaming animals resulting in severe loss of manpower and money.***
The research is aimed to resolve such consequences by the use of fencing at farm site. For the research purpose agricultural farm of College of Agricultural Engineering is considered.
A design of fencing is proposed as a protective measure and cost estimation is done to analyse the approximate cost for the designed fencing.
Keywords: Agriculture, farm, fencing, barbed wire, cost estimation.

I. INTRODUCTION

Fencing is a barrier extensively used for the protection of farms from the animals keeping them out of a particular area. India is an agricultural based country and most of the people are dependent on agriculture for their survival.
A agricultural land is highly susceptible to the roaming animals, large amount of crops are damaged and gets wasted by their activities.
Therefore a farm producing crops, grains or vegetables uses fencing to keep stray or wild animals away from the farm. Fencing may also be used to distinguish the boundary region between different farms. Various types of fencing are available but the selection of fencing is governed by its type and purpose of usage. Earth or masonry wall, dead or live hedges, ditches etc. are commonly used as fencing in India.
From the serviceability and feasibility point of view most of these fences are not effective on a permanent basis.

Wire fencing are getting employed on many large size mechanised farm. This fencing is proved to be most effective and depending on the construction and material there are various classification such as:

1) *Woven Mesh Type:* these are mostly used in general farms than any other type. These are suitable for large animals, cattle, buffaloes etc. They are properly galvanized and weather protected wires.
2) *Closed Mesh Type:* These may be considered as an ideal for poultry houses. The horizontal wires are made heavier than the vertical wire and are wrapped around the horizontal wires.
3) *Barbed Wire:* these are available in various standard sizes to meet the functional requirement. It generally made of two strands twisted together with one or two bits of wire wrapped around the strands. They are generally composed of plain and barbed wire alternately or the entire fence is made of barbed wire.
4) *Electric Fencing:* It consists of one or more strands of bare wire supported by insulators and connected to controller to form a barrier. It works on high voltage current between the fence wire and the earth. It is mainly used for confining dairy cattle.

II. METHODOLOGY

Site Selection: It is situated at College of Agricultural Engineering Jabalpur. The farm is a fertile land and is used for crop production. Due to interference of roaming animals the crops gets affected and sometimes damage therefore to avoid such circumstances a fencing system is proposed.

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The fencing proposed for the farm site is barbed wire fencing. The barbed wire proposed is of 14 gauges. The pacing between the barbs used is between 7.5 cm to 15 cm. The length of wire available is of 160 m long. The height of fencing is taken as 1.8m having following properties:

Table 1: Wire Specification

Ground and First wire	Frist and second wire	Second and third wire	Third and fourth wire	Fourth and fifth wire	Fifth and top wire
15 cm	15 cm	15 cm	22.5 cm	30 cm	30 cm

High angle iron posts are proposed for the barbed wire fence. These steel angles iron post are 1.8 m long and are supplied with pre-drilled holes for the line wire to go through.

III. CALCULATION

Area of farm = 4 hac.
Hence length of one side of square farm = 200 m
Perimeter of farm = 4 x 200 = 800 m
Assuming 1.8 m high angle post spaced 3 m apart with barbed wire of six lines.
Total number of post = 800/3 = 267 nos.
Cost of post @ Rs 70/post = Rs 18690/-
Cost of 4 corner post at Rs 125/post = 125 x4 = Rs 500/-
Total length of barbed wire = 800 x 6 = 4800 m
Cost of wire @ Rs 250 / m = Rs 12000/-
Volume of earthwork for digging work of 267 pits = 267 x ¼ x ¼ x ½ = 8.34 m^3
Cost of earthwork @ Rs 2/pit = 2 x 267 = Rs 534/-
Cost of concrete @ Rs 10/pit and filling = 267 x 10 = Rs 2670/-
Labour charge = Rs 2000/-
Cost of iron gate = Rs 2500/-

Table 1: Quantitative description of farm fence

S.No	Description	Rate applied @	Amount (Rs)
1	Cost of straight post	Rs.70/post	18690/-
2	Cost of corner post	Rs.125/post	500/-
3	Cost of iron gate	Approximate	2500/-
4	Cost of barbed wire	Rs.250/m	12000/-
5	Cost of earth work	Rs.2/pit	534/-
6	Cost of cement concrete	Rs.10/ pit	2670/-
7	Labour charges	Approximate	2000/-
Total			38894/-

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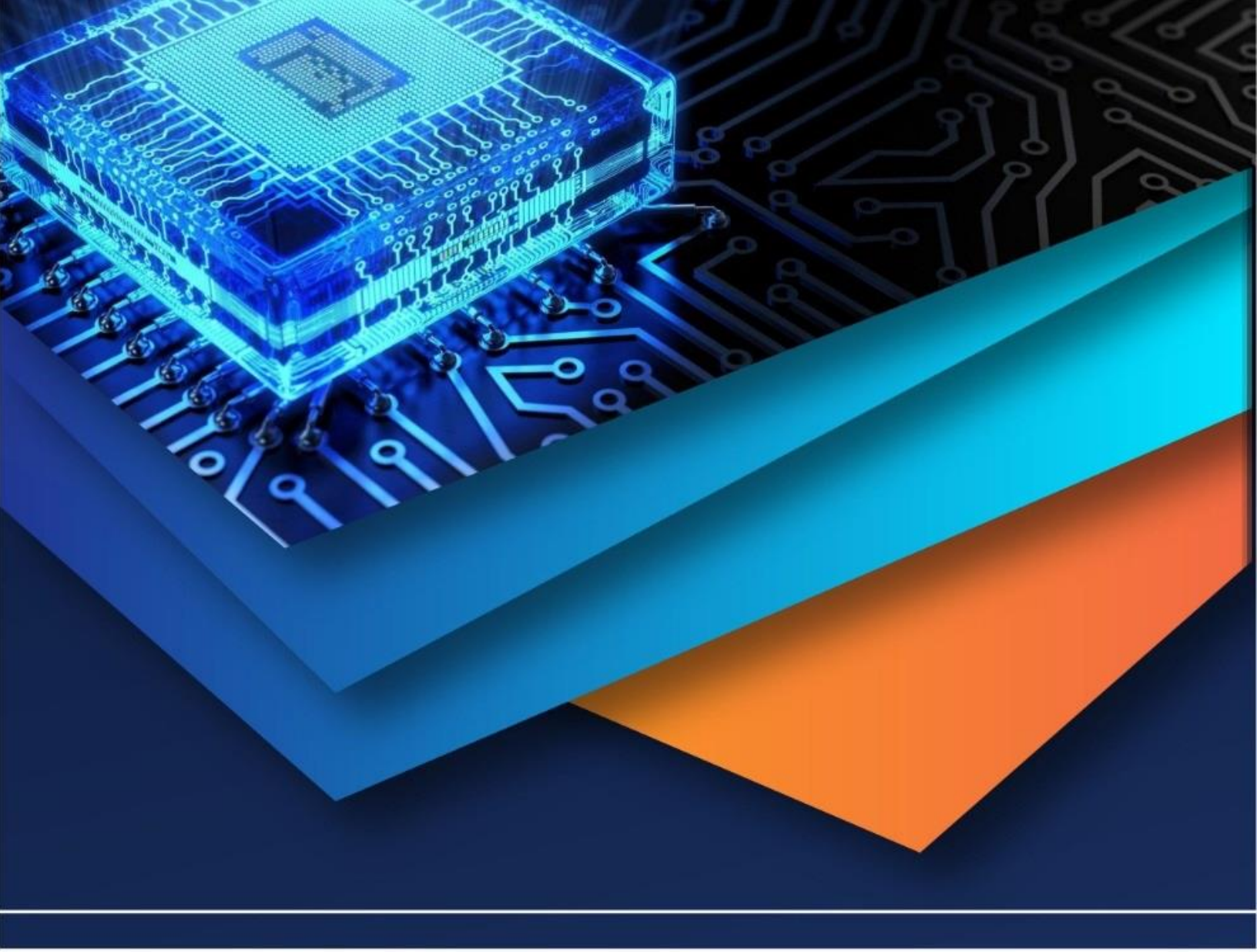
IV. RESULT AND DISCUSSION

The total cost of fencing was found to be Rs.38894/- for 4 hectare of farm land, therefore the cost of fencing per running meter was Rs.48.62 / metre. The above fencing may be adopted for safety and security of farm from the roaming animals. The proposed design may be used for other farms and calculation may be used for finding the required design for different farm sites. The cost estimation may be used to get an approximate idea for analysis of amount to be required for adopting such method.

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