ABSTRACT

In the present paper, an attempt has been made to analyze the use of wall materials in rural Haryana. Haryana state is a northern part of India. The state of Haryana has 21 districts. The total rural households are 29.66 lac. For the present research work, 2011 census district wise household data has been used. Census of Haryana has classified wall material used for residential houses into ten types like burnt brick, mud/un-brunt brick, grass/thatch/bamboo, stone packed with mortar, stone not packed with mortar, concrete, wood, plastic/polythene, GI/metal and other materials in rural Haryana. The wall material used for residential houses has been calculated in percentage in proportion to total rural households of a district.

Further, the study area has been divided into six broad regions. It is recorded that the maximum wall of the houses are made of (87.69 %) burnt brick, followed by mud/un-burnt brick (4.68 %), grass/thatch/bamboo (0.69 %), stone packed with mortar (4.21 %), stone not packed with mortar (1.31 %), concrete (1.12 %), wood (0.06 %) and G/I/metal asbestos Sheets (0.03 %) in rural Haryana. Further, it is observed that more than 90 per cent houses of the wall are made of burnt bricks in eastern part and central part in rural Haryana as per 2011. On the other hand maximum mud/un-burnt bricks (7.77 %) are used in northwestern part, followed by northeastern part (7.07 %), while grass/thatch/bamboo (1.13 %) are used in northeastern part. However, stone packed with mortar is used in southeastern (8.48 %) and southern (8.26 %) part in rural Haryana. Nearly three percent houses of the wall are made of various materials such as stone not packed with mortar (4.21 %), concrete (1.12 %), wood (0.06 %), G/I/metal asbestos sheets (0.03 %), polythene/plastic (0.11 %) and any other materials (0.09 %) in rural Haryana. Finally, it is suggested that more attention should be given to improve the use of wall materials particularly in northwestern comprises the districts of Sirsa, Faridabad and Palwal.

Source of Data and Research Methodology

For the present research work district wise census data of 2011 has been used. Census has classified the wall material used for residential houses into ten categories like burnt Brick, mud/un-brunt brick, grass/thatch/bamboo, stone packed with mortar, stone not packed with mortar, concrete, wood, plastic/polythene, GI/metal and other materials in rural Haryana. The wall material used for residential houses has been calculated in percentage in proportion to total rural households of a district. Further, the study area has been divided into six broad regions and shown with the help of map by using the Arc GIS (9.3 version).

Study Area

Haryana state is a northern part of India. It has 21 districts as per 2011 census. The total rural population of Haryana is 16509359 persons which resides in 29.66 lac rural households. It is recorded that the maximum wall of the houses are made of grass/thatch/bamboo (0.69 %), Plastic/Polythene (0.11%), followed by mud/un-burnt brick (4.68 %), wood (0.06 %), stone packed with mortar (4.21 %), stone not packed with mortar (1.31 %), G/I/metal asbestos Sheets (0.03 %), burnt brick (87.69 %), concrete (1.12 %) and any other material (0.09) in rural Haryana.

Further, it is observed that more than 90 per cent houses of the wall are made of burnt bricks in eastern part and central part in rural Haryana as per 2011.

About 95 % houses used four major types of wall materials namely, burnt brick, Mud unbrunt brick, Grass Thatch

INTRODUCTION

Dwellings are the universal and basic element of settlement geography. Many geographers have also studies the dwelling in different forms in India as well as abroad. House is also a social concept its nature and cognition are varying with caste, class, religion and region. The word has been used as a synonym for census house, which in defined as, “a building or Part of a building having a separate main entrance form the road or common courtyard or staircase etc, used or recognized as a separate unit. It may be occupied or vacant. It may be used for residential or non-residential purpose or both” [Kniffen, 1965].

• The environment and economic conditions of the people are reflected in the use of building materials.

• Generally, the houses in a rural set up, are built by using materials available locally.

In the present paper, an attempt has been made to analyze the use of wall materials in rural Haryana.

OBJECTIVE OF THE STUDY

• To study the use of wall materials at district and broad regional level in rural Haryana.

SOURC E OF DATA AND RESEARCH METHODOLOGY

For the present research work district wise census data of 2011 has been used. Census has classified the wall material used for residential houses into ten categories like burnt Brick, mud/un-brunt brick, grass/thatch/bamboo, stone packed with mortar, stone not packed with mortar, concrete, wood, plastic/polythene, GI/metal and other materials in rural Haryana. The wall material used for residential houses has been calculated in percentage in proportion to total rural households of a district. Further, the study area has been divided into six broad regions and shown with the help of map by using the Arc GIS (9.3 version).

KEY WORDS: Burnt Brick, Mud, Grass/Thatch/Bamboo/Stone/Wood.
Bamboo and Stone packed with mortar in rural Haryana.

**District - Wise Pattern of Wall Materials in Rural Haryana**

- According to census 2011, it is observed that Grass/Thatch/Bamboo is maximum used in the districts of Yamunagar (1.67%), followed by Mewat (1.65%), Panchkula (1.53%), and Sirsa (1.47%) while lowest is used in Rewari (0.21%), Gurgaon (0.23%), Mahendergarh (0.23%) and Sonipat (0.28%).

- Polythene/polythene as wall materials has been used highest in the districts of Sirsa (0.19%), Ambala (0.18%) and Karnal (0.17%) and lowest in Rohtak (0.04%) followed by Panipat (0.05%) and Jhajjar, Rewari (0.06%) etc.

- Mud Unburnt brick as wall material has been used highest in the districts of Sirsa (13.74%), Mewat (12.32%), Yamunanagar (6.29%) and Fatehabad (6.23%) lowest used by Rewari (1.58%), Mahendergarh (2.18%) followed by Sonipat (2.19%).

- Wood are mostly used by Mewat (0.21%), Faridabad (0.13%) and Mahendergarh (0.11%) and lowest used by whole part of the study area. Highest proportion of stone packed with mortar used by Mahendergarh (21.52%), Mewat (15.45%), Rewari (12.30%) and lowest used in Sirsa (0.30%) and Hisar (0.66%). Highest proportion of stone not packed with mortar used by Mewat (3.80%), Faridabad (2.75%) and lowest used by Fatehabad (0.59%), Sirsa (0.63%) and Hisar (0.65%).

- Concrete are mostly used by Ambala (3.21%), Kurukshetra (2.28%), and Yamunagar (2.22%) and lowest proportion of concrete used in Mewat (0.19%) followed by Palwal (0.29) Mahendergarh (0.30%). Any other material is (0.24%) highest used in Faridabad and lowest (0.04%) is used in Panckula district.

**Zone - Wise Analysis**

- It has been observed that the maximum 87.69 % of the houses in the whole part of the study area.

**HARYANA ZONE WISE : USE OF WALL MATERIAL (%) : 2011**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>Grass/thatch bamboo</th>
<th>Palastic/ Polythene</th>
<th>Mud/unbrunt brick</th>
<th>Wood</th>
<th>Stone not packed with mortar</th>
<th>Stone packed with Mortar</th>
<th>GI /Metal/ Asbestos sheets</th>
<th>Brunt brick</th>
<th>Concrete</th>
<th>Any other material</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Eastern</td>
<td>1.13</td>
<td>0.15</td>
<td>4.45</td>
<td>0.05</td>
<td>0.05</td>
<td>1.10</td>
<td>2.11</td>
<td>0.04</td>
<td>88.32</td>
<td>2.57</td>
</tr>
<tr>
<td>Eastern</td>
<td>0.47</td>
<td>0.10</td>
<td>3.27</td>
<td>0.05</td>
<td>1.05</td>
<td>1.94</td>
<td>0.03</td>
<td>91.77</td>
<td>1.26</td>
<td>0.06</td>
</tr>
<tr>
<td>South Eastern</td>
<td>0.97</td>
<td>0.12</td>
<td>7.07</td>
<td>0.12</td>
<td>2.40</td>
<td>8.48</td>
<td>0.08</td>
<td>80.08</td>
<td>0.54</td>
<td>0.15</td>
</tr>
<tr>
<td>Southern</td>
<td>0.32</td>
<td>0.07</td>
<td>2.69</td>
<td>0.07</td>
<td>1.58</td>
<td>8.26</td>
<td>0.04</td>
<td>86.17</td>
<td>0.68</td>
<td>0.11</td>
</tr>
<tr>
<td>Central</td>
<td>0.75</td>
<td>0.08</td>
<td>3.65</td>
<td>0.05</td>
<td>1.09</td>
<td>5.28</td>
<td>0.08</td>
<td>89.08</td>
<td>1.42</td>
<td>0.11</td>
</tr>
<tr>
<td>North Western</td>
<td>0.85</td>
<td>0.13</td>
<td>7.77</td>
<td>0.04</td>
<td>0.63</td>
<td>0.60</td>
<td>0.01</td>
<td>88.99</td>
<td>0.91</td>
<td>0.06</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.69</td>
<td>0.11</td>
<td>4.68</td>
<td>0.06</td>
<td>1.31</td>
<td>4.21</td>
<td>0.03</td>
<td>87.69</td>
<td>1.12</td>
<td>0.09</td>
</tr>
</tbody>
</table>

- Similarly, the houses using grass thatch/bamboo as wall material accounted for 0.69 % in the study region and 1.13 % of the houses in north-eastern part, eastern part (0.47 %), in south-eastern part (0.97 %), southern (2.69), central part (0.75%) and (0.85 %) in north-western part in rural Haryana.

- The proportion of houses using Mud Unburnt brick as wall material was 4.68 % in rural Haryana. About 4.45 % residential houses in north eastern part, eastern (2.27 %),
south eastern (7.07 %), southern (2.69 %) and 3.65 % in central part, 7.77 % in north western part have used as wall materials.

- The houses using stone packed with mortar as wall material accounted for 04.21 % in the study region and 2.11 % of the houses in north-eastern part, eastern part (1.94 %), in south-eastern part (8.48 %), southern (8.26), central part (1.45%) and (0.60 %) in north-western part in rural Haryana.
- It is recorded that the maximum Grass/Thatch/Bamboo (1.13 %) is in the construction of wall in north-eastern and lowest (0.32 %) in southern part of Haryana.
- It is recorded that the highest polythene/plastic (0.15%) is used in the construction of wall in northeastern part and lowest (0.07%) in southern part of Haryana state.
- More than 7 % houses used Mud/ Un-brunt bricks in constructing the wall in south - eastern and north - western part and lowest in southern part of Haryana. Wood (0.12%) is highest used in south-eastern part and lowest (0.04%) used in northwestern part of Haryana.
- Stone not packed with mortar and stone packed with mortar (2.40%, 8.48%) are highest used in southeastern part and lowest (0.63%, 0.60%) in northwestern part of Haryana.
- More than 0.8% GI/Metal/Asbestos sheets is used in south eastern part and lowest (0.01%) in central and north western part.
- More than 92 % Burnt Brick is used in eastern and central part of Haryana. It is mostly used in whole part of Haryana.
- More than 2.57 % Concrete is used in northeastern part and lowest (0.54%) in southeastern part of Haryana.

References