

MULTI SEASONAL LIVESTOCK HOUSING MODULE DEVELOPED UNDER NICRA PROJECT

One multi seasonal housing module has been designed and fabricated under NICRA Project considering the seasonal variations in environmental parameters. This module may help in mitigate the effect of external environment on different types of livestock dairy species. This module has three types of modifications:-

- 1- **Winter Season:** For winter season this housing module can be modified to restrict the movement of Cold wave / Winds coming from different directions into the animal housing. For this purpose, Shield or Sheets are provided with a fixing and removable arrangement when these shields are not in use can be fix on the roof of Animal Housing (Fig. 1).



Figure 1. Livestock housing module for winter season with opaque panel

2- Summer Season: During Summer Season animals need two types of protections: -

Hot humid season and protection from insects and flies – Nylon fly proof mesh panel is provided with a fixing and removable arrangement, this panel will help in covering the livestock housing from all sides to check or to prevent the entry of flies and insects hence, communicable diseases and other infections can be prevented. During hot humid season the opaque winter panels and padded panels can be removed and fixed / adjusted on the roof of housing for safe storage. Only the fly proof nylon mesh panels will be used along with air blasting fans can be proved most effective to mitigate the effect of higher **Temperature Humidity Index (THI)** which is combination of temperature and humidity in the environment (Fig. 2).



Figure 2. Livestock housing module fixed with flies proof nylon mesh for hot humid season

Heat waves: For achieving the suitable housing temperature, this housing module is provided with third type of padded panels which are fixable and removable in the module. The padded panels receive water drops from the drip pipes at the rate of **2 ltr/hr.** for making the padded panel wet (Fig. 3).



Figure 3. Livestock housing module fixed with padded panel for hot dry season

These wet padded panels will help to cool down the temperature of hot waves / wind entering into the housing system. This arrangement will act like an air cooling system for whole livestock housing system. This Livestock Housing module will be proved effective in dry hot summer conditions and may be able to maintain the inside temperature within a range of **24°C to 28°C**.