INTRODUCTION
The emerging trends in agriculture, the changes in the land use pattern, the changing trend of cultivation and increase in human population compel identification, selective breeding and propagation of animal species which are prolific, which can grow fast and which can convert feed not utilized for human consumption. Small livestock like rabbits have number of characteristics that are advantageous to small holders. Food and Agriculture Organization have projected rabbit as perfect answer to demand for sustainable development schemes and one third of the global meat requirement would be met from rabbit meat alone. In developing countries, rabbits may emerge as low-cost answer to the problem of hunger. Backyard rabbitries are the perfect answer to today’s demand for sustainable development projects. Rabbits have a number of characteristics that make them highly suitable, for sustainable meat production system in India and other developing countries. Rabbits have many biological and managerial attributes of production like small body size, short generation interval, utilization of non-competitive feeds, rapid growth, potential for genetic improvement and production of high quality meat. Taking into the consideration the scope and rabbit rearing in our country, Central Sheep and Wool Research Institute (CSWRI) has imported rabbit for meat in 1978 to study the adaptability and performance.

MANAGEMENT AND HOUSING
Information was collected from various report and data analysis done on White Giant (WG) and Soviet Chinchilla (SC) breeds of rabbits maintained at CSWRI, Avikanagar in semi-arid region of Rajasthan. Data was also taken from farmer’s unit, which were provided germ plasm and technical guidance. These animals were housed in individual cages of size 76 cm x 51 cm x 36 cm made up of galvanized iron wire mesh. The rabbit shed was constructed of tubular structure and cages kept in a two-tier system with soil floor. The adult animals were fed concentrate pelleted feed 100g/day + chopped green fodder ad-lib and grower rabbits were provided concentrate 50 g/day and green fodder. Pregnant and lactating females were provided pelleted feed 150g/day. Kits were kept with mothers up to 28 days and they were provided opportunity to suckle milk once in a day. Rabbits were bred for 8 months in a year i.e., from July to February so as to avoid summer months for better survivability and growth.

ADAPTABILITY
Adaptability and performance studies on broiler rabbits have revealed that they were adapted to semi-arid conditions (Gulyani et. al., 2000). Similar findings were earlier reported by Damodar and Jatkar (1985). In the semi-arid region, the rabbits however, show lower body weights from April to August and improvement in body weights as environment becomes favourable from September onwards.
GROWTH PERFORMANCE

Growth is an important aspect of broiler rabbit production. The growth performance of WG and SC breeds of broiler rabbit in the semi-arid region is presented in Table 1. The growth of the young during the suckling period, especially during the first three weeks, greatly affects their later performance (Cheeke, *et al*, 1987). Apart from milk yield, the litter size and doe's nursing ability also influence the pre-weaning growth. In the semi-arid region the average birth weight was 54.05 and 54.57 g while 12-week weight was 1554.60 g and 1578.6 g in WG and SC breeds respectively showing no marked breed difference. The body weight at 12 weeks is of crucial significance as the broiler rabbit is usually marketed and slaughtered at this age. The growth is fastest during 7-12 weeks period. The higher the body weight at 12 weeks, the more the carcass yield and profitability. The various feedlot experiments including individual versus group feeding have established that broiler rabbits are capable of achieving body weight of 2.00 kg at 84 days of age. Under conventional management and feeding practices, the 84 days weight achieved is around 1.500 kg (Singh, 1997). Under experimental *ad lib* complete diet feeding system, average weight of 2.0 to 2.3 kg at 12 weeks has been achieved at this Institute (Prasad *et al*, 1996). Under the farmer’s condition average body weight at 12 week was 1303 g which was lower than our institutional flock. This was mainly due to the fact that farmers rabbits were mainly dependent on leguminous green fodder with little supplementation of concentrate (CSWRI, 2000).

<table>
<thead>
<tr>
<th>Breeds</th>
<th>Body weights in g at weeks</th>
<th>0</th>
<th>6</th>
<th>12</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>WG</td>
<td></td>
<td>54.05</td>
<td>764.4</td>
<td>1578.6</td>
<td>2645.3</td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td>54.57</td>
<td>758.0</td>
<td>1554.6</td>
<td>2502.8</td>
</tr>
</tbody>
</table>


REPRODUCTION

Short generation time and high reproductive potential of rabbit makes it the ideal meat producing small livestock for our country. Rabbits are induced ovulators and can be bred within 24 hours of parturition. Thus it is theoretically possible to produce over 11 litters per year under intensive production system (Cheeke, 1986). The average number of kindling/doe/year and average number of offspring/doe/year achieved in the semi-arid region under the semi-intensive production system are 3.5 and 24.1, respectively (Table 3), while under intensive system it was marginally higher at 4.0 litter/doe/year (Singh, 1998). In the semi-arid region rabbits are mostly bred for 8 months of the year i.e. from July to February. Fertility is adversely affected during summer in the semi-arid region as the semen quality of bucks deteriorates and this condition continues up to the first half of the July. However, in the temperate region it was possible to achieve an average of 5.16 litters/doe/year (range 4-9) or 35-40 offspring/doe/year under the intensive production system (Gulyani and Rai, 1987).
Efforts are now being made to increase doe productivity by developing a package of practices suitable for the semi-arid region.

### Table 2. Reproductive performance of broiler rabbits

<table>
<thead>
<tr>
<th>Trait</th>
<th>LSB (g)</th>
<th>LWB (g)</th>
<th>LSW (g)</th>
<th>LWW (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WG</td>
<td>6.28±0.19(199)</td>
<td>329.90±9.76(199)</td>
<td>5.30±0.21(160)</td>
<td>1832.03±63.35(160)</td>
</tr>
<tr>
<td>SC</td>
<td>6.32±0.16(260)</td>
<td>325.05±8.13(260)</td>
<td>4.94±0.18(200)</td>
<td>1744.46±54.75(200)</td>
</tr>
<tr>
<td>Overall</td>
<td>6.30±0.14(459)</td>
<td>327.47±7.28(459)</td>
<td>5.14±0.16(360)</td>
<td>1788.24±48.20(360)</td>
</tr>
</tbody>
</table>

The reproductive performance of broiler rabbits is presented in table 2. The average litter size at birth (LSB), litter size at weaning (LSW), litter weight at birth (LWB) and litter weight at weaning (LWW) were 6.30±0.14, 5.14±0.16, 327.47±7.28 g and 1788.24±48.20 g respectively. Litter size at birth and weaning in the farmer’s unit was 6.00 and 4.17, which was little lower than the organized farm but could be very well improved by increasing supplementation of concentrate. Supplementation of concentrate with green leguminous fodder increases the milk in doe and results in higher litter size at weaning. These results are in agreement with those reported by Damodar and Jatkar (1985). The average LWB and LWW ranged from 312.21 to 370.42 g and 1683.21 to 2033 g, respectively. Higher LSB was recorded in SC breed than WG but other litter traits viz., LSW, LWB and LWW traits were higher in WG breed. This may possibly due to the fact that WG breed produces more milk. Thus, assuming 3.5 kindling/doe/year and litter size of live kits per doe per year of 5.5 and litter size at weaning of 4.6, a total of 19.2 kits may be born and 16.1 will be weaned per doe/year.

### Table 3. Kindling performance of broiler rabbit does

<table>
<thead>
<tr>
<th>Breed</th>
<th>No. of kindling / doe / year</th>
<th>No. of kits born</th>
<th>No. weaned</th>
</tr>
</thead>
<tbody>
<tr>
<td>WG</td>
<td>3.3</td>
<td>25.9</td>
<td>17.3</td>
</tr>
<tr>
<td>SC</td>
<td>3.7</td>
<td>22.4</td>
<td>16.6</td>
</tr>
</tbody>
</table>


**MARKETING AND ECONOMICS**

The economics of rabbit production at different levels has been worked out keeping in consideration the present level of production, market price of various inputs and products and marketing strategies. Under farmer’s condition where suitable package of practices are adopted each rabbit giving a profit of Rs. 40/ after attaining slaughter weight at the age of 12 weeks. The total profit of this unit will be more than Rs. 6400/- per annum (Gulyani et. al, 1999) which is good enough for a landless or small farmer.

Keeping 5-6 does on locally available green forage and kitchen waste can provide about 2.5 kg meat per week for domestic consumption or for sale. This type of rabbit rearing can be easily managed by a housewife in whatsoever little time she can spare from routine household work. This way she can improve the menu of her house or add about RS. 300-400 per month to her domestic purse (Singh, 1997).
A small scale rabbitry on 0.5-0.6 hectare land holding, otherwise may not be sufficient enough for agricultural production, can provide the means to meet both ends to a small Indian family. From this unit about Rs. 900 per month can be earned in the first year in addition to the increase in assets (10 bucks+50 does) and in subsequent years, the production will be multifold provided that the assumed production levels are maintained by efficient and careful management.

RECOMMENDATIONS

Broiler rabbits in semi arid region are well adapted and can be reared successfully. Small scale broiler rabbit rearing may be established and can be looked by family members in their spare time and can earn additional income as well as gainful employment and improve the nutritional quality of their food.

REFERENCES


