REARING OF LATE AGE SILKWORMS

Late age worms of 4th and 5th instars need less humid rearing conditions and preferably a lower temperature. Further, these are the real feeding stages when the worms consume about 90 to 95 % of the total feed. The necessity for all this food becomes apparent when it is remembered that not only has the worm to develop silk glands and secrete silk, but has also to store up nutrient and energy for the coming series of metamorphosis from the larval to the pupal condition and finally to moth. These ages are no less important in the life history of the worm than they are to its industrial value. The worms in these ages should therefore have as much food as they require. It would be false economy to save leaves. It is also very important that the quality of leaves is good. From the 4th age onwards entire leaf may be supplied and even chopped shoots may be fed to the worms. Because entire leaves or even shoots are fed to the late age worms, the leaves remain fresh for a longer period and therefore, only three to four feedings need be given during 24 hours. It would however, be advisable to give large feed at night.

Methods of rearing late age worms

Three methods are in vogue for rearing of late age worms. They are: (i) shelf rearing; (ii) floor rearing and (iii) shoot rearing.

(I) Shelf rearing: In this method, silkworms are reared in bamboo trays which are arranged one over the other in tiers on rearing stands. Generally, the rearing stands are arranged in two rows parallel to the wall, with adequate space in the centre, for removing the trays and for conducting the cleaning and feeding operations. Each rearing stand can accommodate ten rearing trays. As already mentioned, in India, round bamboo trays of 1.2 to 1.4 m diameter are most commonly used for rearing late age silkworms. Under this system of rearing, generally, leaves picked individually from the plants or branches of mulberry cut to convenient size, are fed to the silkworms at the final instar. Usually four to five feedings are given in a day and nets are used for cleaning the beds. Since cleaning is practiced more frequently and also trays removed from the stand for every feeding, labour required is somewhat high in this method. However, this method has the advantage of accommodating more silkworms in a limited area than the other two methods and is preferred by the Indian farmers who are invariably confronted with the problems of rearing space. In this method great care should be bestowed to ensure proper spacing for the worms and thus to enable them to grow properly.

Shelf rearing using bamboo and wooden trays

(ii) Floor rearing: This is another method of rearing silkworms on fixed rearing seats. The rearing seats are arranged in two or three tiers for accommodating as large a number of silkworms as possible. The rearing seats may measure 1 to 1.5 m wide and 5 to 7 m long according to the size of the rearing room. The space between the tiers is 0.6 to 0.8 m. sufficient space is left all round the rearing seat for attending to feeding and other rearing operations. The rearing seat is made of wood or bamboo strips. As in the shelf rearing, the silkworms are fed with leaves/branches cut to small size. The number of feedings given is three to four in a day. Bed cleaning is also followed in the same way as for shelf rearing by using nets, but it is done less frequently-twice during the fourth instar and thrice in the fifth instar. The main advantage in this system as compared to shelf rearing is that feeding and cleaning processes do not involve the handling of innumerable trays. As such there is considerable saving on labour. However, care must be taken to provide sufficient spacing as in the case of shelf rearing.

Conventional Floor Rearing

Floor Rearing in Bulgaria

Floor Rearing in Afghanistan

(iii) Shoot rearing: This is the most economical method of rearing as labour requirements for the processes of feeding and bed cleaning are kept at the minimal level. By following shoot rearing it is possible to reduce the labour requirements by about 60 per cent in the IV age and 50 per cent in the 5^{th} age. This system also leads to the most economical use of mulberry leaf. The saving in leaf is roughly estimated at 25 % in the 4^{th} age and about 10 % in the 5^{th} age. The rearing seats are usually a meter in width and of any convenient length, according to the size of the rearing room. Usually it is

done as a single tier at a height of 20 cm above the ground level and occasionally in two tiers when the gap between the tiers is about a meter. It can be practiced both indoors as also outdoors in the open. The outdoor rearing however is possible when the atmospheric conditions are favourable and the temperature is around 25°C and there is no likelihood of rain. Presently in South Korea, large scale rearings of this type are conducted in specially built polythene sheds which facilitate rearing operation unencumbered by the external climatological factors.

In this method of rearing big shoots harvested as such from the mulberry bushes are straightaway fed to the silkworms. As whole shoots are placed on the silkworm bed at every feed the larvae keep moving upwards consuming the mulberry leaves. Since the leaf supply due to shoot feeding is distributed in three dimensions, there is better aeration of the rearing beds and therefore, it is possible to have 50 per cent more worms per unit area of rearing seat as compared to the shelf or floor rearing. Cleaning in this method is also reduced to the minimum, which is normally carried out once each in the fourth and fifth instars. Ropes of convenient length are spread parallel to each other lengthwise on the rearing bed. Fresh branches of mulberry are supplied for feeding. After two or three feeds, when all the worms have crawled on to new branches, the bed held by the ropes is rolled in to loose bundles, the old branches and dirt removed, the bundles are later spread and rearing beds are made afresh. This method is less laborious and labour consuming as both feeding and cleaning are easy require less attention.

Shoot Rearing

Table shows the overall requirement for rearing of 2 boxes/40000 eggs/100dfls of MV x BV

	Temp.	R H	Size of leaf	Quantity of leaf	No. of feeds	No. of Cleanings	Spacing	Duration	Moulting

Age	C°	%	Sq Cm	Kg			Sq mt	Days	Hr	Days	Hr
IV	24-25	70-75	Entire Leaves	70-80	4	daily once	6-18	4	12	1	00
V	23-24	65-70	-do-	600-650	4	-do-	18-36	6	00		
