

CYCLE SYNCHRONISATION IN RABBIT PRODUCTION

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I - INTRODUCTION

In most types of the animal production, (for example, for pig and poultry) cycle synchronisation of reproduction has been one of the reasons of the increased efficiency in management and of higher performances. Although cycle synchronisation has been used in rabbit production too, the results obtained have generally been poor if compared with other species. This, was mainly due to the fact that, as ovulation in the rabbit is induced by mating it was not considered necessary to use an hormonal treatment. The technique which will be presented, has enabled farmers to overcome many of the problems involved in cycle synchronisation in rabbit production. This method has been used for several years in many large Italian rabbits farms (from 500 to 2000 does) with very promising results.

II - CYCLE SYNCHRONISATION TECHNIQUE

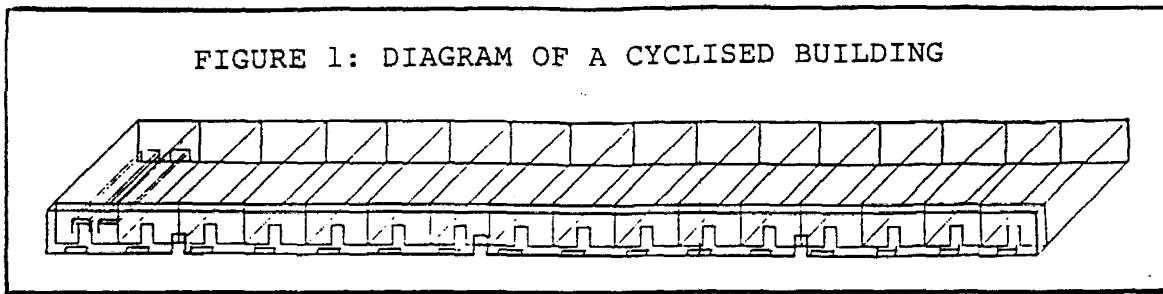
Provoking of ovulation, necessary to obtain a real synchronisation of the reproductive cycle, is obtained through an hormonal treatment by injecting PMSG 2-3 days before the mating. This enables fertility rates in the range of 80 to 90%. Under normal conditions three doses of the commercial hormonal product (Ciclogonina from solvay veterinaria - Parme Italy) each containing 1000 UI of PMSG are dissolved in 300 ml of Vitatox a commercial vitamin and energetic solution (BURATTO et COLIN 1992). This solution is injected to 100 does. It means each doe receives 30 UI of this commercial PMSG. In summer, two doses are dissolved in 250 ml of Vitatox and this solution is injected in 50 does. It means 40 UI of PMSG for each doe.

III - DESCRIPTION OF THE METHOD

The rabbitry is divided into 16 rooms (Figure 1) with the following repartition:

- \* 13 for does and growing fattening rabbits;
- \* 1 for males;
- \* 1 for the future breeders;
- \* 1 called "buffer room" from which function will be later described.

FIGURE 1: DIAGRAM OF A CYCLISED BUILDING



a) Does and growing - fattening rooms

Utilisation of these rooms is chronologically described below.

1st week - Arrival of the does after weaning of the litters. (These ones stay in place).

The cages have been cleaned and the nests prepared before the arrival of the does.

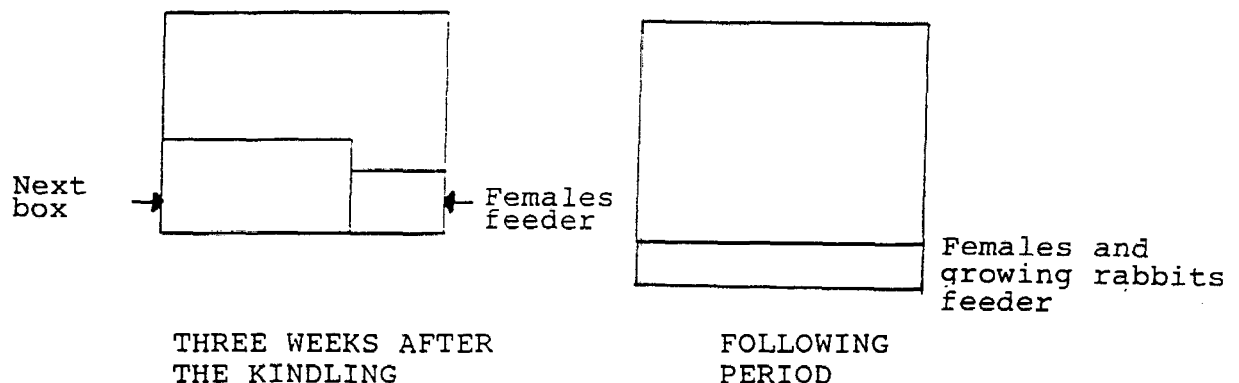
The kindlings take place 3-4 days after arrival during a maximum period of 36 hours (as a consequence of all the mating taking place the same day).

2nd week - Eight days after the kindling, (it means 11-12 days after the does are put into their cages) the does are injected with PMSG and 3 days after mated.

3rd week - At the end of the third week, the nestboxes are removed and young rabbits have to live in the cages with their mother.

Moreover this operation enables a changing of the feeders. The little feeder destined to the females, is replaced by a bigger one, which also enables feeding of young rabbits.

FIGURE 2: DIAGRAM OF THE TYPES OF FEEDER



4th week - Twelve - thirteen days after mating, the palpation takes place. If the does are pregnant, they continue to follow the cycle. If not, they will be remated a week later. After weaning their litters, those does will go into the "buffer" room to continue their pregnancy if the second mating has been successful. If not, they will be eliminated.

6th week - The weaning takes place at the end of the sixth week. When the young rabbits are 38 day old does are moved to another room leaving the young rabbits in place. At this time, females are already 27-28 day pregnant and they are moved directly to the new cage to deliver 3-4 days after (to see 1st week).

From the 7th to the 12th weeks

Fattening of the young rabbits which continuously stay in the same place from birth to the sale. After they have been sold, droppings are removed and cages cleaned and disinfected.

Schedule 3 and 3bis summarize these operations for the whole farm and for a single room.

FIGURE 3

## STORY OF A GROUP OF FEMALES

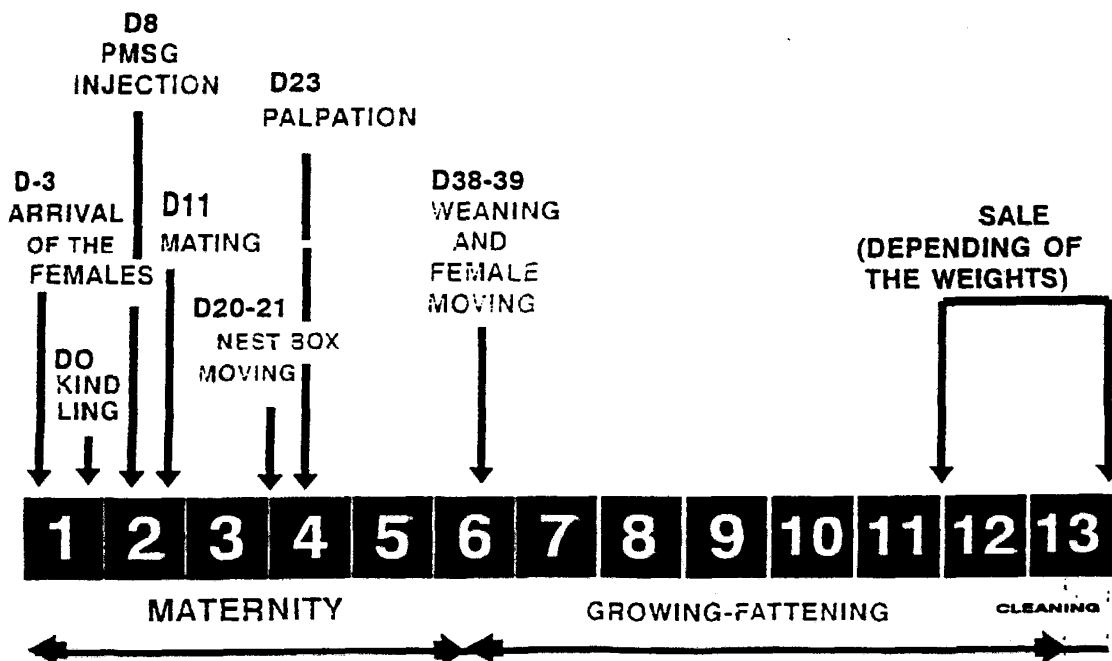
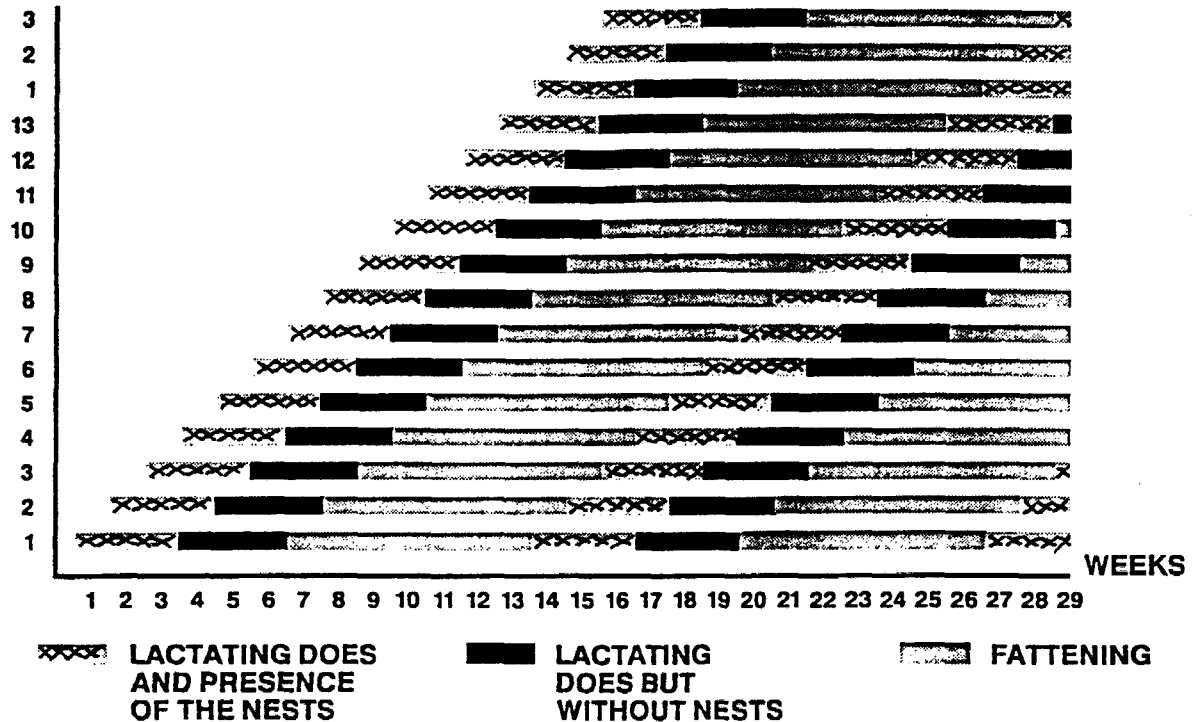


FIGURE 3 bis

### CYCLE SYNCHRONIZATION OF A RABBIT FARM

N° OF ROOMS



#### Use of the buffer room

Even if the use of PMSG improves the level of fertility rates these will still be some variability from one week to another. For this reason, the farmer has to mate more does than available cages. Example: with an average fertility of 85% ranging from 80 to 90%, the farmer has to mate about 125 does (100) for 100 cages. When the weekly fertility is

80

90%, he obtains 112 pregnant does ( $125 \times 0.9$ ). It means 12 does more than available cages.

These 12 additional pregnant does are moved to a special room called the buffer room.

This room is the only one in which does at any stage of the production cycle can be found.

#### Male room

Males are gathered in a room called the male room with special lighting and air conditioning designed to correspond to the needs of the males. For mating, the females are brought into the male room using a little truck.

#### IV -ADVANTAGES OF CYCLE SYNCHRONISATION

The advantages of cycle synchronisation in rabbit breeding take place at four levels:

- \* health aspects
- \* technical aspects
- \* final product homogeneity
- \* work time organisation

##### a) Health advantages

In rabbit production, the technique of cycle synchronisation is the only one enabling a real practice of the "all in - all out" for a room.

So each room is cleaned and disinfected, every 12 weeks.

##### b) Technical advantages

These have to be considered at four levels:

- \* supervision
- \* feed programs
- \* possibility of treatment in drinking water
- \* weaning improvement

##### 1) Supervision

As all the rabbits in one room are at the same physiological stage, the supervision is easy and an abnormal event is immediately detected.

##### 2) Feed program

The cycle synchronisation makes the distribution of several feeds in the farm easier. So it is possible to have a program adapted to each physiological stage of the rabbits (LEBAS 1980).

##### 3) Possibility of treatment in drinking water (antibiotics, vitamins)

In a classical farm, such treatments present a big inconvenience as they involve all the animals. In a practicing cycle synchronisation farm, they can be carried out room by room. This focusing the treatment on only the animals in need saves money and avoids any negative secondary effects of the treatments for other animals (for example, some antibiotics used in case of diarrhoea can provoke some abortions in the pregnant does).

#### 4) Weaning improvement

The importance of weaning stress has to be remembered. This weaning stress is due to a combination of five different factors:

- \* dietary stress: replacement of the milk by the pelleted dry feed;
- \* separation of the young rabbits from their mother;
- \* cage changing (VERITA et FINZI 1980);
- \* stress corresponding to the first contact of the young rabbit with man (DUPERRAY et ADELIS 1990).
- \* In many cases, separation of the rabbits of the same litter and regrouping them with others rabbits.

In a practicing cycle synchronisation farm, the diet change and the separation of the rabbits from their mother are the only existing stresses. Moreover, the dietary stress takes places at an age of 38-39 days when the rabbit's digestive enzyme development is practically complete (CORRING et al. 1972). This means it is greatly reduced.

#### c) Final product homogeneity

For the slaughtering plants, it will be more and more important to obtain a quantitatively and qualitatively homogeneous production.

In a practising cycle synchronisation farm, the hormonal induction of the ovulation enables the farmer to reduce the variations in fertility and so the variation in the number of rabbits. In fact, the fluctuation in the number of rabbit sold each week will not exceed 10-15%.

On the other hand, with this method all the rabbits in one room are effectively born on the same day. So they are much more homogeneous than those of a classical farm (One week of age difference means an average weight difference of 200-250 grams).

#### d) Work time organisation

All the breeding operations take place on the same day enabling the farmer to have better work organisation and to save time. Table 1 gives an example of such an organisation.

TABLE 1 - WORK PLANNING IN A PRACTISING CYCLE  
SYNCHRONISATION FARM

DAY	BREEDING OPERATION
MONDAY	MATING (WEEK 2)
TUESDAY	WEANING OF YOUNG RABBITS (WEEK 6) FEMALES MOVING (WEEK 6)
WEDNESDAY	PALPATION (WEEK 4) SALE (WEEKS 11-12)
THURSDAY	
FRIDAY	* KINDLING (WEEK 1) * PMSG INJECTION (WEEK 2) * REMOVING OF NEST BOXES (WEEK 3)
SATURDAY	KINDLING (WEEK 1)

### III - RESULTS

The following are the results of a farm of 15 rooms of 96 cages of which 13 are used for the females and the growing fattening rabbits, the fourteenth is used for the males and the fifteenth as a buffer room and for the future breeders. This farm has always 606 females in lactation: 576 for the basic rooms and 30 for the buffer room. The Table 2 summarizes the results for 1989-90.

TABLE 2 - OBTAINED RESULTS FOR A PRACTISING CYCLE  
SYNCHRONISATION FARM (YEARS '89 AND '90)

CRITERIA	VALUE
FERTILITY (%)	82.3
INTERVAL BETWEEN TWO BIRTHS (DAYS)	42
NUMBER OF LITTERS/NEST BOX/YEAR	8.7
NUMBER OF RABBITS/LITTER	BORN ALIVE 8.6 WEANED 7.9 SOLD 7.7
MORTALITY BEFORE WEANING (0-38 DAYS) %	8.2
MORTALITY AFTER WEANING %	2.4
NUMBER OF RABBITS/NEST BOX/YEAR	BORN 74.5 WEANED 68.4 SOLD 66.6
WEIGHT OF THE RABBITS AT THE SALE (KG)	2.560
TOTAL WEIGHT OF SOLD RABBITS/NEST BOX/YEAR (KG)	171
CONSUMED FEED/NEST BOX/YEAR (KG)	572
INDEX OF CONVERSION	3.35

The high level of fertility, the excellent feed conversion and the mortality before and after weaning have to be emphasized. The last criteria may possibly explained by the good control of microbism and for the mortality after weaning, by the weaning conditions improvement.

#### V - CONCLUSION

Cycle synchronisation has demonstrated its interest for rabbit breeding. Without doubt, it constitutes a winning method, enabling the rabbit farmer to benefit from the same technical advantages as the pig farmer or the poultry farmer. It can be adapted to many types of farm, even without partitioned rooms, as is demonstrated by example in Italy. In this case a group of females constitutes those females in a line of cages. Finally, cycle synchronisation facilitates the adoption of new techniques such as artificial insemination.

#### ACKNOWLEDGMENTS

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#### L I T T E R A T U R E

- 1) BURATTO L., COLIN M. 1992. Experimental field vaccination against Rotavirus enterites in growing rabbits. Memoire 5° Congress International of Rabbit Science, Corvallis 27-30 July 1992.
- 2) CORRING T., LEBAS F., COURTOT D. 1972 - Controle de l'évolution de l'équipement enzymatique du pancreas exocrine du lapin de la naissance à 6 semaines. Ann. Biol. Anim. Bioch Biophys 12, 221 - 231
- 3) DUPERRAY J., ADELIS R. 1991 - Effet d'une manipulation des lapereaux avant sévrage sur le taux de mortalité par troubles digestifs en periode post sévrage. 5eme Journée de la Recherche Cunicole en France, Paris 12-13 Décembre 90, 36.
- 4) LEBAS F., 1980 - Les recherches sur l'alimentation du lapin: évolution au cours des 20 dernières années et perspectives d'avenir. Memoire II Congrès Mondial de Cuniculture - Barcelone 4-8 Avril 80, 1-17.
- 5) PRUD'HON M. 1975 - Physiologie de la reproduction. Méthode de reproduction. Information techniques des services vétérinaires 51-54, 87-105.
- 6) VERITA P., FINZI A. 1980 - Cages changing as a stressor in rabbit. Memoire 2e Congrès International de Cuniculture, Barcelone Avril 80, 417-421.



S U M M A R Y

Cycle synchronisation of reproduction is a classical method used in many types of animal production but until today its results in rabbits breeding have been poor. This mainly was due to the fact that, as ovulation in the rabbit is induced by mating, it was not considered necessary to use hormonal treatment.

This paper describes a real method of synchronisation of the ovulation in the doe, using an injection of PMSG 2-3 days before mating. This enables the constitution of homogenous groups of does and of growing rabbits.

Such a method presents advantages at the following levels:

- \* possibility of using the "all in, all out" method for each farm room and so of improving of the rabbits health;
- \* better supervision of the animals;
- \* possibility of using alimentary programs with feeds adapted for each physiological status of the animal;
- \* improvement of the conditions of weaning;
- \* better final product homogeneity;
- \* reduction of working hours;

The results obtained at the farm level are excellent, particularly for fertility, feed conversion and mortality.

So cycle synchronisation has demonstrated its value for rabbit breeding. Without doubt, it constitutes a winning method, enabling the rabbit farmer to benefit from the same technical advantages that are available to pig farmer or the poultry farmer.