Control of Reproductive Disorder and Monitoring of Herd Health Programme for Improvement of Dairy Production in Thailand II. Investigation on Infecundity (preliminary report)*

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เพื่อปรับปรุงการผลิตน้ำนมในประเทศไทย
2. การศึกษาปัญหาของการผสมไม่ติด (รายงานเบื้องต้น)

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การศึกษาระยะแรกในช่วง กรกฎาคม 2529 ถึง มีนาคม 2530 เพื่อหาข้อมูลพื้นฐานเกี่ยวกับการเลี้ยงโคนมที่จังหวัด
ราชบุรีโดยใช้แบบสอบถาม ผลการศึกษาชี้ให้เห็นถึงลักษณะการเลี้ยงโคนมแบ่งออกได้เป็น 4 กลุ่ม และมีปัญหาของการ
ผสมไม่ติดด้วย ซึ่งเป็นวัตถุประสงค์ของการวิจัยครั้งนี้ โดยใช้เวลาศึกษา 15 เดือน ประกอบด้วยการศึกษาปัญหาของการผสม
ไม่ติด ทำให้ทราบได้ถึงผลของพยาธิสภาพขณะคลอดลูกและหลังคลอด ปัจจัยหลักที่มีผลต่อการแพร่พันธุ์และความเกี่ยวพันกัน
โดยทำการสุ่มเลือกฟาร์มขนาดกลาง 43 ฟาร์มและฟาร์มขนาดใหญ่อีก 1 ฟาร์ม โคแต่ละตัวจากจำนวนทั้งหมด 700 ตัว
ได้รับการติดตามตั้งแต่คลอดลูกไปจนตั้งท้อง โปรแกรมการติดตามนี้ประกอบด้วย การตรวจสัตว์ในระยะที่สำคัญของวงจร
การสืบพันธุ์ : ที่ประมาณ 30 วันหลังคลอด ตรวจการกลับเข้าอยู่ของมดลูก ตรวจและให้การรักษา ประมาณ 60 วันหลัง
คลอด แม่โคที่ไม่แสดงอาการเป็นสัด จะได้รับการตรวจและรักษาด้วยวิธีการที่เหมาะสม ตรวจการตั้งท้องโดยการ วัดระดับ

โปรเจสเตอโรนในน้ำนมตัวอย่าง ซึ่งเก็บที่ 22 วันหลังผสม และพวกที่ไม่กลับสัดในช่วง 21-24 วันหลังผสม ทำการตรวจ และให้การรักษาโคที่ผสมไม่ติดเกิน 3 ครั้งและไม่ตั้งท้อง ตรวจการตั้งท้องโดยการล้วงตรวจทางทวารหนักประมาณ 60 วัน หลังผสม บันทึกข้อมูลต่าง ๆ รวมถึงอายุ จำนวนครั้งของการให้นม สภาพการคลอด (คลอดยากและรกค้าง) รายงานเบื้องต้น จากแม่โคคลอด 878 ราย ตรวจสอบมดลูก 792 ราย คลอดยาก 178 (20.3%) รกค้าง 132 (15.0%) และมดลูกอักเสบ 133 (16.8%) เปรียบเทียบสมรรถภาพทางการสืบพันธุ์ก่อนและหลังการใช้โปรแกรมดังกล่าวในช่วงปี 2529-2530 และ 2530-2531 ตามลำดับ พบว่าค่าเฉลี่ย (± ค่าเบี่ยงเบนมาตรฐาน) ระหว่างคลอดและผสมครั้งแรก และระหว่างคลอดและ ผสมติด (วัน) ของฟาร์มขนาดเล็ก คือ 104±56 (จำนวน 303 ราย) เทียบกับ 72±18 (จำนวน 518 ราย) และ 169±125 (จำนวน 304 ราย) เทียบกับ 110±56 (จำนวน 264 ราย) ผลที่ได้จากการศึกษานี้ชี้ให้เห็นถึงประโยชน์ที่ได้รับในแง่ ของการลดระยะเวลาดังกล่าวให้สั้นเข้า

คำสำคัญ : ความผิดปกติของการแพร่ขยายพันธุ์ ; การสำรวจด้านสุขภาพ ; การให้ลูกไม่ดกของวัวนม

Abstract : **Jean Marie Humbert, Peerasak Chantaraprateep, Dominique Planchenault, Noel Chabeuf, Samphan Singhajan, Krit Boonpitak, and Prasert Songsasen. 1933. Control of reproductive disorder and monitoring of herd health programme for improvement of dairy product in Thailand. 2. Investigation on infecundity (preliminary report). Thai J Hlth Resch 4 (1) : 33-37**

      Our preliminary investigation on baseline information of dairy farming in Ratchaburi by using questionaire during July 1986 to March 1987 indicated that there were 4 different groups of farming and the problem of infertility. Of which the objective of the present research was performed during a period of 15 months. This phase consisted of an approach to study the epidemiological problem of infertility which will allow us to percise the effects of pathology at parturition and post-partum, principal factors affect on reproduction and their interaction. Fourty-three farms and one big farm were randomly chosen among average good management practice. Each of the total 700 heads was followed up from calving to pregnant. The follow up programme composed of systematic examination of the key period of the sexual cycle. At around 30 days post-partum (p.p.) in order to control the uterine involution, detect and treat the uterine infection. At around 60 days p.p. anestrous animals were subjected to examination and appropriate treatment. Following insemination, examination for pregnancy by measuring the levels of prog sterone in the milk sample collelcted on day 22 after the insemination and non return to estrus between day 21-24, examination and treatment of the cows having inseminated more than 3 times and non pregnant (repeat breeder) were performed. Pregnancy diagnosis by examination per rectum was also carried out (about 60 days post insemination). Manual record of the findings and age of animal, number of lactation, condition of calving (dystokia and retention of placenta) were carried out. Preliminary results obtained from 878 calvings were control of uterine involution 792 cases, dystokia 178 (20.3%), retained placenta 132 (15.0%) and metritis 133 (16.8%). Comparison of reproductive performance prior to and post application of the programme : mean (± SD) interval between calving and first insemination and interval between calving to conception (days) during 1986-1987 and 1987-1988 for small holders were respectively 104 ± 56 (n = 303) VS 72 ± 18 (n = 518) and 169 ± 125 (n = 304) VS 110 ± 56 (n = 264). The present findings seem to be promising as the farmers obtained substantial gain of 40 and 80 days between calving to insemination and calving to conception respectively.

Key words : *Reproduction, disorder ; Health, surveys ; Infecundity, dairy cow*

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Introduction

Recent report of a survey by Humbert *et al.* (1987) using questionaires on 294 dairy farms with 2289 animals in the Ratchaburi and Nakhon Pathom provinces have revealed 4 different types of dairy production systems. A high incidence of infecundity was also observed as shown by the interval between the first and second, the second and the third, and the third and the fourth calving intervals which were 486 days (n = 629), 461 days (n = 424) and 452 days (n = 254) respectively. Furthermore, repeat breeding was up to 53.3% of the farms was noted. Certain management factors which may have a negative effect on fecundity were also identified such as the irregular distribution of mineral supplements and concentrate, poor heat detection and pathological conditions (anaplasmosis and trypanosomiasis) etc. All the factors mentioned can affect fecundity to a certain extent which has not been evaluated yet. Therefore our present research focuses on these factors. A systematic approach of epidemiological investigation of the infecundity problem of each individual animal will allow us to assess the effects of pathology of parturition and post-portum, principal factors which have impacts on the reproduction and their interaction. Furthermore, reproductive management and health care can increase productivity and profits by providing for optimum calving interval, reduced culling for reproductive failure and efficient utilization of labor (Weaver, 1986).

Materials and Methods

Forty three farms which possessed an average of 15 animals each were randomly selected and one big farm of 350 cows. The investigation was carried out in 2 successive stages. The first of which was analysis of the reproductive performance of the animals registered. While the second stage was a follow up of the fecundity based on the Programme d'Action Veterinaire Integre de Reproduction (P.A.V.I.R.) programme proposed by Thibier *et al.* (1982). This programme is designed to be computer processed.

1. Analysis of the fecundity of the cows previously recorded at the Research Centre of Artificial Insemination (AI) of Ratchaburi was performed.

2. A weekly visit to all farms involved in the programme and a systematic intervention of the problem were performed.

2.1 Data collection : The collection of data concerning calving conditions (difficult calving, assisted calving, retention of placenta and milk fever etc.) was carried out. The number of lactations, sex of the calf, date of estrus and insemination were also recorded.

2.2.1 Around 30 days post partum: in order to control and treatment of any uterine infection which might occur unobserved were performed.

2.2.2 Around 60 days post partum: animals which were not exhibited estrus were subjected to examinational of the genital organs by rectal palpation in order to differentiate post partum anestrus and cycling as well as establishing appropriate treatment.

2.2.3 After AI : in order to carry out early pregnancy diagnosis, the level of progesterone in the milk was checked on day 22nd after AI by using Ovucheck kit. Non return animals between day 21 to 24 after AI was also checked for anestrus post insemination and appropriately treated.

2.2.4 Repeat breeders : examination and treatment of animals inseminated 3 times or more (repeat breeders) and non pregnant were performed.

2.2.5 Pregnancy diagnosis was carried out by rectal palpation 60 and 90 days after insemination.

Parallel to the P.A.V.I.R. monitoring programme, different treatments for each pathological condition (metritis, ovarian cyst, anestrus post partum and post insemination, repeat breeder etc.) were conducted in order to determine which treatment was more appropriate and cost effective.

Manual recording of all the data concerned in the note book of reproduction (reference to : event at parturition, date of estrus and inseminations, date and results of analysis of milk samples, pregnancy diagnosis, examinations carried out by veterinarian and treatment employed) was carried out along with

the programme for the processing of the data. "Carnet de l'eleveur" created by Institute Technigue d'Elevage Bovine (l' I.T.E.B.) was used.

The investigation was carried out in Nong Pho district, Ratchaburi since August 1987 to October 1988.

Results

1. Analysis of reproductive performance of crossbred dairy cows at the Research Centre in AI, Ratchaburi were as followed.

1.1 Intervals between calving and first insemination and calving to conception during 1986-1987 and 1987-1988 prior to and after the trial respectively as shown in table 1. Analysis was also carried out as the combination of the total records and followed up individually using certain number of animals. The latter provided a better understanding.

1.2 Level of fertility calculated by the number of AI per conception and sucessful rate of first insemination as well as the cows with 3 inseminations or more were calculated. The average number of AI per conception was 3.7 (SD = 3.2) (n = 212). Successful rate of first AI was 30.7% and the "repeat breeder" rate was found to be 47.6%.

Table 1. *Comparison of reproductive performance prior to and post application of the programme (preliminary results).*

Farms		Calving to first insemination interval (days)		Calving to conception interval (days)	
		1986-1987	1987-1988	1986-1987	1987-1988
Small herds	Total	$\overline{X} = 104$ SD $\pm$ 56 (n = 303)	$\overline{X} = 72$ SD $\pm$ 18 (n = 518)	$\overline{X} = 169$ SD $\pm$ 125 (n = 304)	$\overline{X} = 110$ SD $\pm$ 56 (n = 264)
	Individual	$\overline{X} = 111$ SD $\pm$ 51 (n = 150)	$\overline{X} = 71$ SD $\pm$ 16 (n = 150)	$\overline{X} = 172$ SD $\pm$ 98 (n = 150)	$\overline{X} = 111$ SD $\pm$ 56 (n = 150)
Large herd	Total	$\overline{X} = 112$ SD $\pm$ 50 (n = 114)	$\overline{X} = 81$ SD $\pm$ 39 (n = 185)	$\overline{X} = 201$ SD $\pm$ 106 (n = 109)	$\overline{X} = 132$ SD $\pm$ 74 (n = 81)
	Individual	$\overline{X} = 120$ SD $\pm$ 48 (n = 35)	$\overline{X} = 69$ SD $\pm$ 18 (n = 35)	$\overline{X} = 207$ SD $\pm$ 102 (n = 35)	$\overline{X} = 131$ SD $\pm$ 80 (n = 35)

Table 2. *Calving and Postcalving Problems.*

Farms	Calving (n)	Control of uterine involution (n)	Dystocia, Assisted delivery N	Dystocia, Assisted delivery %	Retained placenta N	Retained placenta %	Metritis N	Metritis %	Anestrus post-partum true N	Anestrus post-partum true %	Anestrus post-partum cyclic N	Anestrus post-partum cyclic %	Ovarian cysts N	Ovarian cysts %
Small Herds	623	567	125	20.06	101	16.21	87	15.34	17	6.56	6	2.31	9	3.47
Large Herd	255	225	53	20.78	32	12.15	46	20.44	5	6.84	12	16.43	5	6.84
Total	878	793	178	20.27	132	15.03	133	16.79	22	6.62	18	5.42	14	4.21

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Table 2 revealed 2 problems during calving and post calving, the incidence of calving, control of uterine involution, dystocia, retained placenta, metritis, and ovarian activities. Of the total 878 calvings only 792 cows were subjected to uterine control. It was found that dystocia and retained placenta were 20.3% and 15.0% respectively while metritis and anestrus were 16.8% and 6.6% respectively and ovarian cyst was 4.2%. The majority of the problems investigated were similar between small and large herds excepted anestrus which was found higher in large herd than those small ones (16.4% VS 2.3%) the same apply to ovarian cyst (6.8% VS 3.5%).

Discussion :

The present findings revealed some reproductive problems, prolonged interval from calving to first service (116 days) and from calving to conception (194 days) days open which rendered prolong calving intervals 486, 461 and 452 days for the first, second and third parity respectively. For most dairy herds production is optimized when the calving interval for the herd is less than 380 days (Kirk, 1986). Only 30.7% of animals investigated were pregnant from first AI and 25% were inseminated between 40-90 days. These problems cause economic lost in term of days open. However, using the clinical examination systematically of the key reproductive period, both intervals can be improved.

Reproductive performance at calving and post calving (n = 699) when compare between average of small farms (n = 43) and a big farm for the incidence of dystocia was similar, in case of retained placenta it was found higher in ther small farm than those in a large farm (16.2% VS 12.2%) whereas it was contrary in case of metritis (20.4% VS 15.3%). In case of anestrus, for true anestrus it was similar for both small and large herds. However, for cyclic or untrue anestrus it was much higher in large herd than in those small ones (16.4% VS 2.3%). This might be a real problem of unobserved estrus in a large herd as there are more than 200 milking cows in this large herd. One would realized the problem through clinical examination of ovary per rectum. These reproductive problems contributed to prolong calving interval. Table 2 demonstrated the benefit gained from using the P.A.V.I.R. programme to improve calving to first insemination interval (around 40 days) and calving to conception interval (around 80 days) in both small and a large herds. However, definite analysis of the finding has to be carried out in order to establish a model for further reference.

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REFERENCES

Humbert J M, Chantaraprateep P, Planchenault N, Chabeuf N, Lohachit C, Singhajan S, Songsasen P, and Sekasiddhi P. 1987. Control of Reproductive disorder and Monitoring of Herd Health Programme for Improvement of Dairy Production in Thailand. I. Survey of Data Base of Dairy Farming at Ratchaburi and Nakhon-pathom. The 14th Annual Vet Sci Conference, Asia Hotel, Bangkok. 28-27 November p 42.

Kirk J H. 1986. Programmable Calculator Uses in Herd Reproductive Health Programs for Dairy Cattle. In : Current Therapy in Theriogenology. D A Morrow (ed). W B Saunders Company, Philadelphia. pp 48-422.

Thibier M, Attonaty J M, and Gozland F. 1982. Le Programme d'Action Veterinaire Integre de Reproduction. Communication : maitrise de la reproduction, informatique et sante.

Weaver L D. 1986. Reproductive Management Programs for Large Dairies. In : Current Therapy in Theriogenology. D A Morrow (ed). W B Saunders Company, Philadelphia. pp 383-389.