Pig Breeding Stock Information System

By

Mr. Siripong Rongsirikul

Final Report of the Three - Credit Course
CS 6998 System Development Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer Information Systems
Assumption University

April, 1998

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Project Title	:	Pig Breeding Stock Information System
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Academic Year	:	1998

The Graduate School of Assumption University had approved this final report of the three-credit course, CS 6998 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

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ABSTRACT

According to high competition among pig farms, the need of productivity improvement is very important. One way among other alternative ways that Theerawat Farm decides is to replace the computerized system, PBSIS, with the existing manual system. The scope of the new system is in Mate and Farrow unit. There are 9 subunits which are: heated boar analysis, inspected heated sow, mating, not-gestation analysis, farrowing, health analysis, receive new breeding stock and print overview report.

PBSIS is designed after studying the existing system. The objectives are to improve human error; data redundancy, data integrity and consistency problem and other problems exist in manual system. Besides solving problems, the system is designed to be easy for computer illiteracy user. PBSIS is developed by using Microsoft Access 7 because it is generally used and can operate in personal computer which make the hardware investment much cheaper.

The initial investment in computerized system is dramatically reduced as the capability is, in the other hand, higher. The recovery period of investment is less than 4 years.

Finally, the successful implementation of PBSIS is not considered as the ultimate achievement of the farm improvement. The system should be improved to extend its scope of function to other area of the farm such as feeding and main farm unit.

ACKNOWLEDGDMENT

As the writer of this project, he would like to extend his gratitude to member of persons who are very helpful to this project. Most importantly, he would like to acknowledge the advice and guidance of his advisor, Dr. Suphamit Chittayasothorn for spending his valuable time in providing him consultancy, motivation, and suggestion which, drives this project to complete according to the timeframe.

This project will never be completed if there is no assistance from Khun Preeda Theeranuwat, Farm Manager of Theerawat Farm. He gave all requirements and business processes.

The writer, finally, would like to extend his special thanks to those persons behind this project, whose names have not mentioned.

He would like to convey that whatever might not be as accurate as they should be correction and recommendations are welcome.

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TABLE OF CONTENTS

Chapter	Page
ABSTRACT	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF FIGURES	v
LIST OF TABLES	viii
I. INTRODUCTION	
1.1 Background	1
1.2 Introduction of the project	5
1.3 Objectives of the project	6
1.4 Scope of the project	6
1.5 Deliverables	8
1.6 Project plan	10
II. ANALYSIS OF THE EXISTION SYSTEM	
2.1 Background of Theerawat Farm	12
2.2 Existing business functions	12
2.3 Function descriptions	16
2.4 Current problems	18
III. PROPOSED SYSTEM	
3.1 User requirements	19
3.2 Input requirements	20
3.3 Output requirements	20
3.4 System design	21
3.5 User interface	22
3.6 Security control	22
3.7 Software specifications	23

Chapter **Page**

3.9 Cost and benefit analysis 25

3.10 Implementation 26

3.11 Testing 28

3.12 Result of the implementation 29

IV. CONCLUSION AND RECOMMENDATION

4.1 Conclusion 30

4.2 Recommendation 30

BIBLIOGRAPHY 31

APPENDIX A Context Diagram and Data Flow Diagram 32

APPENDIX B Data Dictionary 45

APPENDIX C Structure Chart 47

APPENDIX D Process Specification 56

APPENDEX E Screen of PBSIS 62

APPENDIX F Report and Form of PBSIS 80

APPENDIX G Conceptual Schema and Tables 105

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LIST OF FIGURES

Figure		Page
1.1	Sow mate cycle	3
1.2	Show Gantt chart of PBSIS	11
2.1	Theerawat Farm organization chart	14
2.2	Detail function area of mate and farrow	15
3.1	System configuration	24
3.2	Graph shows cost and benefit analysis	27
A.1	Context diagram of PBSIS	32
A.2	Level 0 of PBSIS	33
A.3	DFD Level 1 process 1	36
A.4	DFD Level 1 process 2	37
A.5	DFD Level 1 process 3	38
A.6	DFD Level 1 process 4	39
A.7	DFD Level 1 process 5	40
A.8	DFD Level 1 process 6	41
A.9	DFD Level 1 process 7	42
A.10	DFD Level 1 process 8	43
A.11	DFD Level 1 process 9	44
C.1	Structure Chart Process 1	47
C.2	Structure Chart Process 2	48
C.3	Structure Chart Process 3	49
C.4	Structure Chart Process 4	50
C.5	Structure Chart Process 5	51
C.6	Structure Chart Process 6	52
C.7	Structure Chart Process 7	53
C.8	Structure Chart Process 8	54
C.9	Structure Chart Process 9	55
E.1	Verify user name and password screen	62
E.2	Main menu screen	63
E.3	Add boar and sow screen	64

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Figure		Page
E.4	Add supplier screen	65
E.5	Sperm event screen	66
E.6	Sow menu	67
E.7	Mate event screen	68
E.8	Farrow event screen	69
E.9	Pregnant check screen	70
E.10	Weaning event screen	71
E.11	Other event screen	72
E.12	Boar/sow health menu	73
E.13	Vaccine event	74
E.14	Disease event	75
E.15	Claim and culling menu	76
E.16	Culling event screen	77
E.17	Claim event screen	78
E.18	Print report screen	79
F.1	Sow report	80
F.2	Boar report	81
F.3	Lactation sow	82
F.4	Sperm report	83
F.5	Culling	84
F.6	Claim report	85
F.7	Dry sow report	86
F.8	Abort report	87
F.9	Not pregnant report	88
F.10	Not found pregnant at pregnant date report	89
F.11	Check mate sow report	90
F.12	Farrowing report	91
F.13	Pseudorabies vaccine for sow report	92
F.14	Mycopasma vaccine for sow report	93
F.15	Swine fever vaccine for sow report	94
F.16	Parvovirus vaccine for sow report	95

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Figure		Page
F.17	Worm control vaccine for sow report	96
F.18	Swine fever vaccine for boar report	97
F.19	Foot and mouth vaccine for boar report	98
F.20	Pseudorabies vaccine for boar report	99
F.21	Overview report	100
F.22	Sperm form	101
F.23	Sow card	102
F.24	Vaccine form	103
F.25	Other event form	104
G.1	Conceptual scheme	105
G.2	Table GS	106
G.3	Table CLAIM	107
G.4	Table CULLING	108
G.5	Table DISEASE	109
G.6	Table FARROW	110
G.7	Table MATE	111
G.8	Table OTHER EVENT	112
G.9	Table QTY	113
G.10	Table SPERM	114
G.11	Table SUPPLIER	115
G.12	Table VACCINE	116
G.13	Table WEANING	117

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LIST OF TABLES

Figure		Page
1.1	Boar utility table	4
3.1	Cost and benefit analysis	26

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I. INTRODUCTION

1.1 Background

Pig is the general name of mammals in the family of Suidae. However, it is known scientifically as Sus scrofa for domestic animal.

It is a fast growing animal. Boar and sow begin their mate cycle at the age of 8 months. (125 kg. for boar and 110 kg. for sow) In the good managed farm, boar has 8-9 years fertile life and 7-8 years for sow. Pig also has high fertility rate. Each sow has the average farrow of 2.2 litters per year, and each litter has 6-15 piglets.

Boar

Boars in Theerawat Farm are Duroc Jercy, which is generally raised in pig farm in Thialand. As stated above, boar starts its first mate at the age of 8 months and its fertile life is 8-9 years. To optimize the production of piglet, boar utilization management is considered important.

(See Table 1.1)

Major events for boar

1. Get sperm
2. Health control
    - Disease diagnosis
    - Vaccine
3. Culling

Theerawat Farm divides boar into several groups for vaccine injection. Vaccine will be given to each group every 3 months. In each month, each group of boar will egiven different type of vaccine. The reason behind is to reduce risk of out breaking of a certain disease. There are 3 vaccine types that are given to boar.

- Swine disease vaccine
- Foot and mouth disease vaccine
- Pseudorabies vaccine

Sow

All sows in Theerawat Farm are Large White, which has the average farrow of 11 - 12 piglets per litter. Mate cycle of sow starts at the age of 8 months . (110 Kg.) Normally, Theerawat Farm schedule two mate programs a day and each mated sow will be usually mated at least twice. The mate programs are in the morning (7 AM) and in the evening .(5 PM)

When heated sows are found, they will get mate at least 10 hours latter. After that count for another 10 hours then ,put to the next nearest mate program. Sow mate cycly in shown in Figure 1.1.

The major events that occur to sow :

1. Mate
2. Farrow
3. Weaning
4. Health control
    - Disease diagnosis
    - Vaccine
5. Culling

Vaccine schedule for sows are :

- Worm control vaccine : 2 weeks before farrow
- Parvovirus vaccine : 2 weeks after farrow.
- Swine fever vaccine : 3 weeks before farrow.

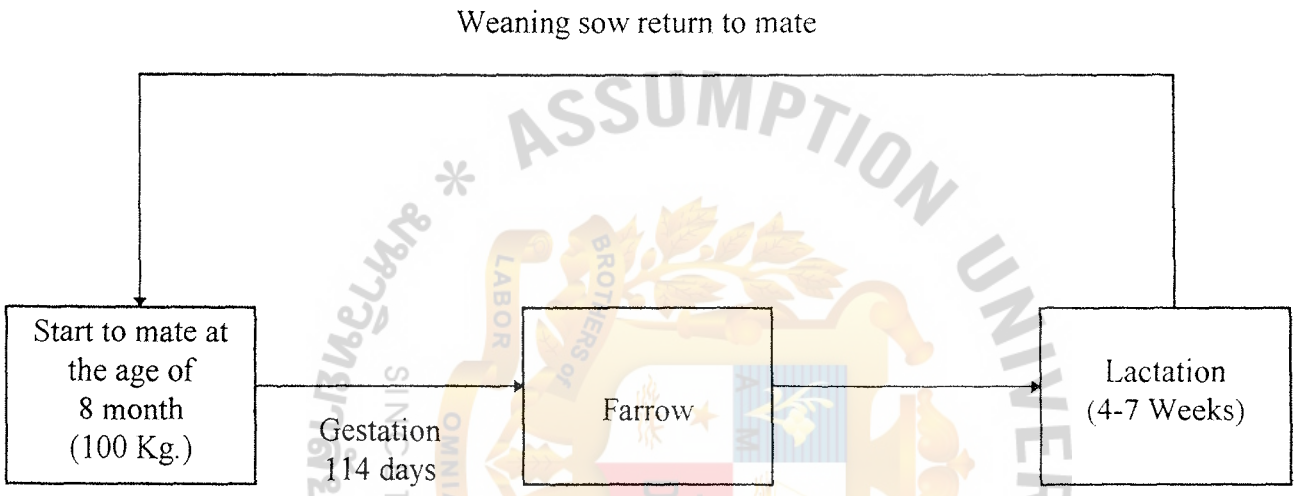

Figure 1.1. Sow mate Cycle

- Mycopasma vaccine : 2 weeks before farrow.
- Pseudorabies vaccine : 4 weeks before farrow.

1.2 Introduction of the Project.

The system development plan is considered to develop the computer-based information system (CBSIS). After the study of the existing manual system, the new computerized system is developed with the expectation of making all transactions in Theerawat Farm more easier for farm manager and other users to manage, control and make decision in order to achieve the altimate goal of more productivity. Additionally, the new system facilitate farm planning process with the reliale information.

Pig Breeding Stock Information System (PBSIS) is the name of the system which is, basically, expected to keep general information of boar, sow, mating program, treatment schedules and be able to update when changes occur. The system will ease the cumbersom routine task of the veternarian because information kept in the system will help defining the status of each breeding stock. For example, heated sow will be found by checking the sow status, then, the veterinarian can prepare that sow for the mating program. The process is done faster and , of cause, better than walking through the whole farm everyday.

Report generator units is also provided in PBSIS. All transactions in PBSIS can be retrieved, sorted, classified, summarized to produce a well-organized management reports. Reports of the system are the critical success factors that empower the farm manager the capability of effective analyzing and planning tasks.

1.3 Objectives of the Project.

The objectives of the project on PBSIS for Theerawat Farm are :

1. To analyze and design the proper computerized system that keep necessary information of boar and sow.
2. To keep track of status of breeding stock.
3. Sow and boar can be analyzed.
4. To record all event that occur to boar and sow.
5. Provide the report generating system for decision making.

1.4 Scope of the Project.

PBSIS covers the following areas :

Heated boar Analysis

The veterinarian manually checks the heated boar against the boar utilization record. Then, the veterinarian obtain sperm and analyzed them. Qualified sperm will be dissolved and used in the mating process, otherwise, discard and go to check boar's health. In whatever case, the sperm record must be updated. Sperm Report and Boar Report are printed to farm manager.

Inspect Heated Boar

In the normal case, sow will return to heat within 21 days after weaning. The weaning report will help veterinarian specify the most likely date that sow will get heat. After getting the heated sows, keep those sows for 10 hours and then bring them to the first mate program.

Mating

Normally, Theerawat Farm has twice mating program a day,

7 A.M. and 5 P.M. The veterinarian inject dissolved sperm into sows' womb. To guarantee the success of mating, each sow must be mated twice according to the daily mate schedule.

After the twice mate program is completed, mating information are recorded in the Mating File. In case of more than those twice mate is needed, sows will turn to mating program again. However, in whatever case, the number of mate is counted and recorded.

Not-Gestation Analysis

This process get the information from pregnant check information, verify each case of not-gestation that occur. Not-Gestation analysis process also provide report system which produce Abort Report, Sow Report, Farrowing Report, Dry Sow Report, Not-Gestation Report, and Heat/Gestation Report to farm manager.

Farrowing

This process record all farrowing information and get update weaning data when weaning event occur. Lactation Report is printed to farm manager.

Health Analysis

Health analysis can be either vaccination and disease diagnosis. In case of vaccination, the veterinarian has to check the vaccine schedule manually. After vaccination is completed, vaccine information is recorded. In the other hand, if it is disease diagnosis, the veterinarian check the symptom of each sick pig and select the proper medical treatment ot apply to each sick pig . Disease is also kept in the disease file.

Culling

Farm manager is the decision maker in the Culling Process by the assisting of infrmation from disease file. Culling Report is prepared to farm manager.

Receive New Breeding Stock

This process is to set code number to each new purchased boar and sow. Codes number must not be duplicated and will be used to identify each breeding stock for its whole life in the farm. This process will add new breeding stock to the Breeding Stock File. In case of supplier name is not found, this process facilitates the adding new supplier, too.

Print Overview Report

This process read information from Mating File, Farrowing File, and Weaning File. The report print out show the over all performance of the farm during a certain period.

1.5 Deviverbles

The deliverables of the PBSIS are as followed :

1. A software package written in database language.
2. Screen layout for user-interface.
    - Receive New Boar/Sow screen
    - Culling input screen
    - Claim input screen
    - Farrowing input screen
    - Sperm input screen
    - Mating input screen

- Weaning input screen
- Pregnant check input screen
- Other event input screen
- Vaccination input screen
- Disease input screen

3. Various hard copy layout include :

- Sow report sequence by date
- Boar report sequence by date
- Farrowing report sequence by pig code
- Lactation report sequence by pig code
- Abort report sequence by pig code
- Culling report sequence by pig code
- Claim report sequence by entry date
- Vaccination report sequence by entry date
- Sperm report sequence by pig code
- Overview report
- Dry sow report sequence by pig code
- Not-Gestation report sequence by pig code
- Heat/Gestation inspection report sequence by pig code

1.6 Project Plan

The time frame of PBSIS project development is altogether 4 months. PBSIS starts its step of development with identify the area that the system will serve up to fully computerized system to replace the manual system. Besides, documentation of system analysis and design is including for sake of either further development or system modivication. (See Figure 1.2.)

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PROJECT PLAN

The project plan is represented in Gantt Chart as Follows:

ID	Task Name	Dec					jan				Feb				Mar				
		48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13
	Identify the area under syudy																		
	Develop Logical DFD of the system																		
	Identify contents of data for the sys.																		
	Data dictionary																		
	Structure Chart																		
	Database Design																		
	Screen Layout																		
	Report Layout																		
	Programming																		
	Data Conversion																		
	Testing																		
	Training																		
	Documentation																		

Figure 1.2. Show Gantt chart of PBSIS

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II. ANALYSIS OF THE EXISTING SYSTEM

2.1 Background of Theerawat Farm

Therawat Farm is a pig farm. It is established in 1982, located in Nakornprathom Province. The farm size is medium within which compose of approximately 6,000 pigs altogether and can be categorized as :

- Sows (about 1,000)
- Boars (about 20) and
- Fatten pig which roughly range from piglets up to finished pig. (about 4980).

The purpose of the farm is to produce finished pig supply to domestic market. Customers of the farm are the middlemen who sell pork and other by-products to retailers.

Few years ago, Therawat Farm has changed its mating program from the traditional mating program to artificial insemination and obstetric program in order to increase the number of litters by using the same number of breeding stocks. By means of the new method of mating program, Therawat Farm can save paramount of investment in purchasing additional breeding stocks ,but achieved the more higher productivity of finished pig.

2.2 Existing Business Function

Generally, pig farm can be classified as :

1. Breeding Stock Farm. This kind of farm provide only breeding stock (Sow and boar) To growing pig farm with mating unit and pig farm that has both greeding stock farm unit and growing pig farm unit.

2. Growing Pig Farm without Mating Unit. It is a farm that has growing pig unit and finished pig unit. (See Figure : 2.1) This type of farm buy piglet from other farm such as piglet farm or big farm that has mating unit.
3. Growing Pig Farm with Mating Unit. This type of farm has its own little breding stock herd and mate their breeding stock by themselve. A herd of breeding stock is supplied by breeding stock farm. This type of jarm has mating and farrowing unit and main farm unit.

   (See figure : 2.1)
4. Piglet Farm. This type of farm has mating and farrowing unit and starter pig unit (within main farm. See figure : 2.2) Piglet farm provides only piglet ot other type of farm especially growing pig farm without mating unit.
5. Pig Farm that has both Breeding Stock Farm Unit and Growing Pig Farm Unit. It is a sort of big farm which has separate unit of breeding stock farm and growing pig farm. Each farm unit operates its functions like medium breeding stock farm and growing pig farm with mating unit.

Theerawat Farm is a family business and considered as growing pig farm with mating unit.

As it is seen in the organization chart (See figure : 2.2), there are 6 functional areas in Theerawat Farm as :

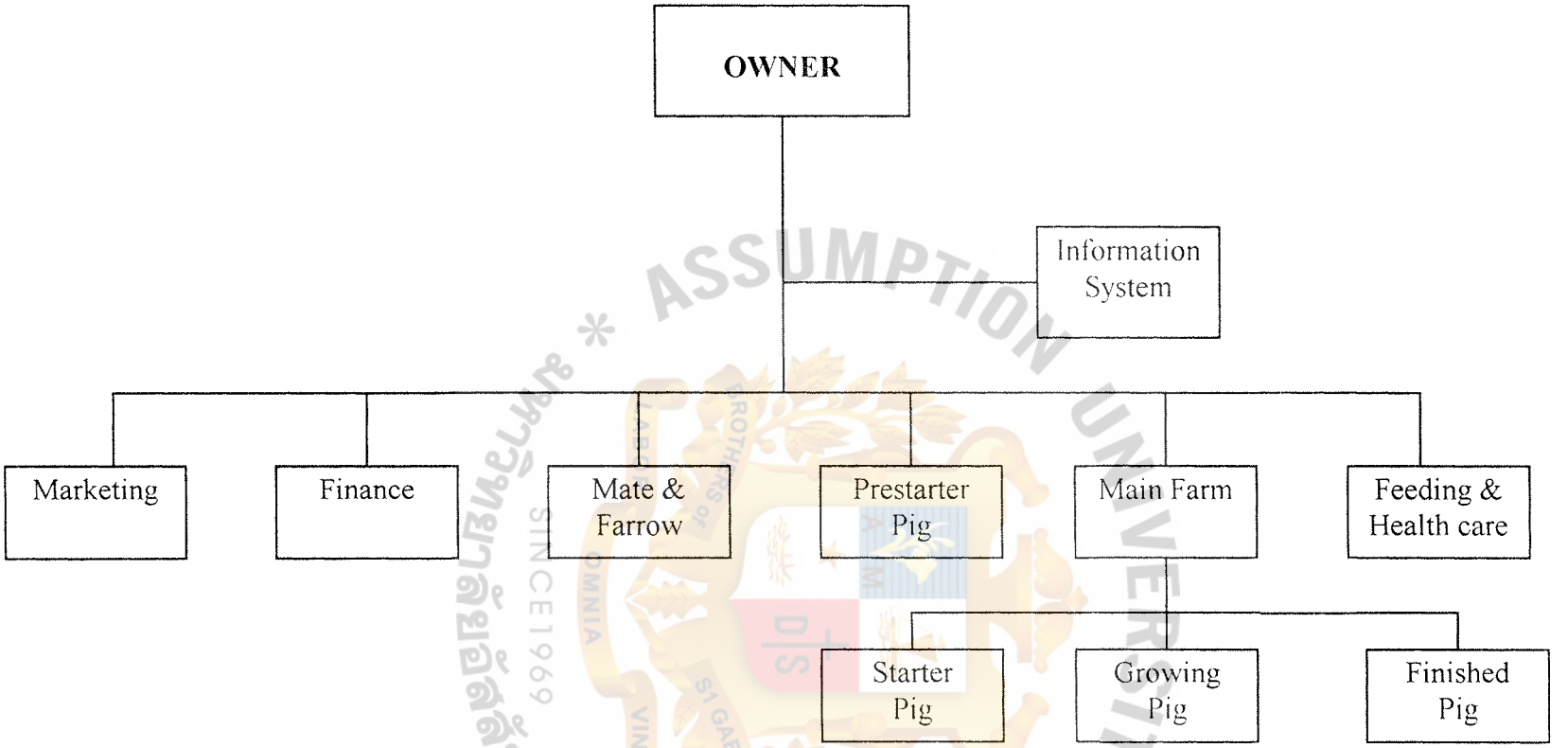

Figure 2.1. Theerawat Farm Organization Chart

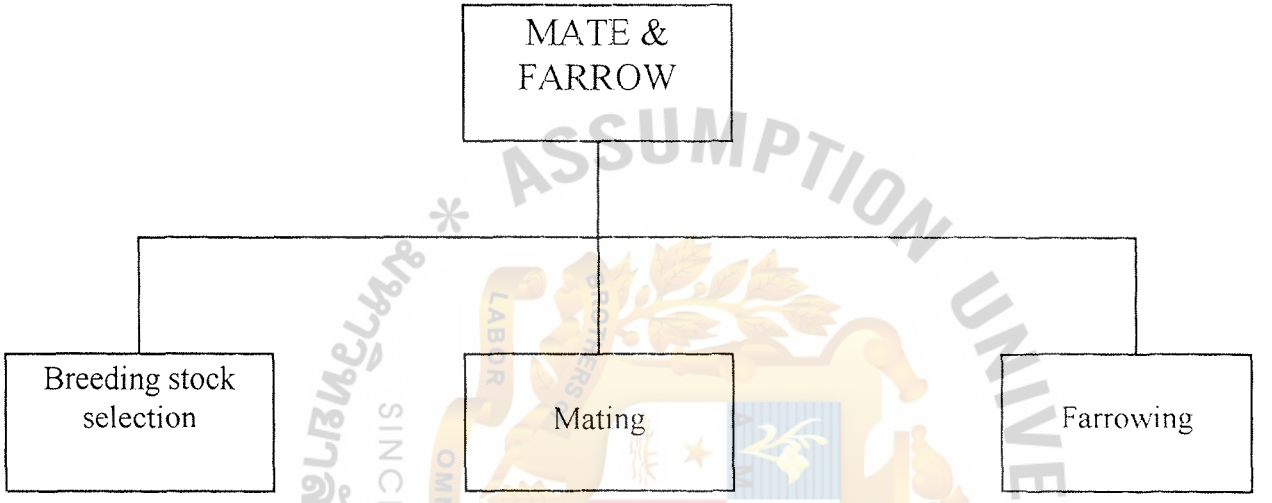

Figure 2.2. Detail function area of mate and farrow

1. Marketing
2. Finance
3. Mating and farrowing
    3.1 Breeding stock selection
    3.2 Mating
    3.3 Farrow
4. Pre-starter pig
5. Main farm
    5.1 Starter pig
    5.2 Growing pig
    5.3 Finished pig
6. Feeding and health care

2.3 Function Descriptions

The derscriptions of each function area are as follow :

Marketing

- Purchasing new breeding stock
- Purchasing piglet (If needed)
- Sale finished pig
- Sale culling pig
- Purchas food and medical product

Finance

- Pay all bills.
- Receive income from sale

- Manage cash inflow and outflow

Mating and farrowing

Breeding stock selection

- Select proper boar (See Table : 1.1) and get sperm
- Select heated sow

Mating

- Artificial mating program
- Pregnant check
- Not pregnant analysis

Farrowing

- Farrow monitoring
- Piglet check

Pre-Starter pig

- Lactation monitor
- Weaning

Main farm

Main farm is a feeder pig farm. Pig in this unit are ranging from weaning to finished pig.

- Starter pig (Weaning litter)
- Growing pig
- Finish pig
  - Select a herd of finished pig for sale.

Feeding and health care

- Ingredient selection
- Provide nutrition service
- Disease diagnosis
- Vaccination
- Culling

2.4 Current Problem

1. Error on calculation always happen
2. It is impossible ot retrieve specific set of data
3. No report system in the existing system
4. Data duplication
5. No data integrity and consistency.

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III. PROPOSED SYSTEM

Nowsaday, computing technoloty's price become cheaper while its efficiency is surprisingly increase. Then, this proposed system is the computerized system base on current technology. The advancement of technoloty and its cost effectiveneww are the reason why Theerawat Farm and other various kinds of small- and medium- scale business can afford for it. Besides, programming language are drastically improved to be more easily developed and coded to meet the unique need of different types of users. Up to this point of he project, when the existing system is analyzed, and all requirements are realized, it reaches the stage to design the proposed system.

In this project, PBSIS is developed with the attention to keep record of all transactions that occur in mate and farrow functional area.(See figure 2.2) The reasons behind are these functional areas are the most critical to the productivity of Theerawat Farm. Further more, poor manage of breeding stock can lead to waste of investment.

PBSIS is proposed to achieve the better breeding stock management. Farm manager can keep himself closer to everything that happen to all breeding stock in the farm.Besides, reports from PBSIS help farm manager in planning and decision making.

3.1 User Requirements

The main objective of Pig Breeding Stock Information System (PBSIS) is to improve The breeding stock(boar and sow) management.The new system requires the assemble of all inputs, output, and operatons in the area of Mate and Farrow. Further more, PBSIS is designed to cope with current problems and future needs. After analyzing the existing system, user requires the new system that meet the following difinitions :

1. To eliminate as much error on calculation and other human error as possible.
2. To generate reports that is flexible to the needs of user
3. Specific set of data can be grouped.
4. To reduce data redundancy, paper works, and times consumption
5. To increase the accuracy of data.
6. To improve decision making process.
7. To control all transactions occur in Mate nad Farrow unit.

3.2 Input Requirement

There are 4 types of form that manually fill-in by staff of the farm, and input to PBSIS. Those forms are :

1. Sow card (See appendix F : figure F.23)
2. Sperm (See appendix F : figure F.22)
3. Other events (See appendix F : figure F.25)
4. Vaccine (See appendix F : figure F.24)

3.3 Output Requirement

There are several kinds of output report as follow :

1. Sow report
2. Boar report
3. Lactation report
4. Culling report
5. Claim report

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6. Sperm report
7. Overview report
8. Dry sow report
9. Abort report
10. Not-Gestation report
11. Heat/Gestation inspection report
12. Farrowing report
13. Pseudorabies vaccine for sow report
14. Pseudorabies vaccine for boar report
15. Swine fever vaccine for sow report
16. Swine fever vaccine for boar report
17. Mycopasma vaccine for sow report
18. Pavovirus vaccine for sow report
19. Worm control vaccine for sow report
20. Foot and mouth vaccine for boar report

3.4 System Design

After the system analysis and the logical desings are finished, the system design phase begin. It is dealing with physical or implementations aspects of the system and base on that logical design. There are 4 criteria that concern when the PBSIS is designed :

1. Technology feasibility, which consider the PBSIS can be possibly designed according to the current technoloty.

2. Operational feasibility. It is to be reminded that PBSIS is a solution that satisfies users' requirements. Further more, PBSIS is inevitable change the work environment of user in the level that users are acceptable.
3. Economically fesibility. This concern the benefit the user will gain from this investment in PBSIS.
4. Schedule feasiblility. It is to consider the time frame that will be spent on developing PBSIS. The length of time must not too long.

3.5 User Interface

To hide the complexity of the system, graphic user interface (GUI) is applied to develop PBSIS. All screens in the systemare usr-friendly, easy to use. In order to reduce typing error, the system provides several drop-down lists, which store a set of expected data to be put in. Further more, both mousr and deyboard are able to be used.

3.6 Security Control

Physical Security

- All computer devices are installed in a room that would allow no entry any unauthorized person.
- UPS is installed to guarantee the stability of power supply.

Logical Security

- Use password system to verify authority
- Follow the perodic backup scheme
- Follow virus protection scheme.

3.7 Software Specifications

1. Microsoft Windows 95 Thai Edition.
2. Microsoft Access Version 7.

3.8 Hardware Specification

1. Personal computer 1 Unit

Porcessor	Pentium 166MMX
Cash Memory	256k
RAM	32Mb
HDD	2.1Gb
FDD	1.44Mb
Monitor	Super VGA Color Monitor 14"
Display Card	Super VGA Care 1 Mb
Keyboard	US Standard 101 keys Thai/Eanlish
Power Supply	250 Watt
Mouse	

2. UPS 500 VA 1 Unit.
3. Dot Matrix Printer 1 Unit.

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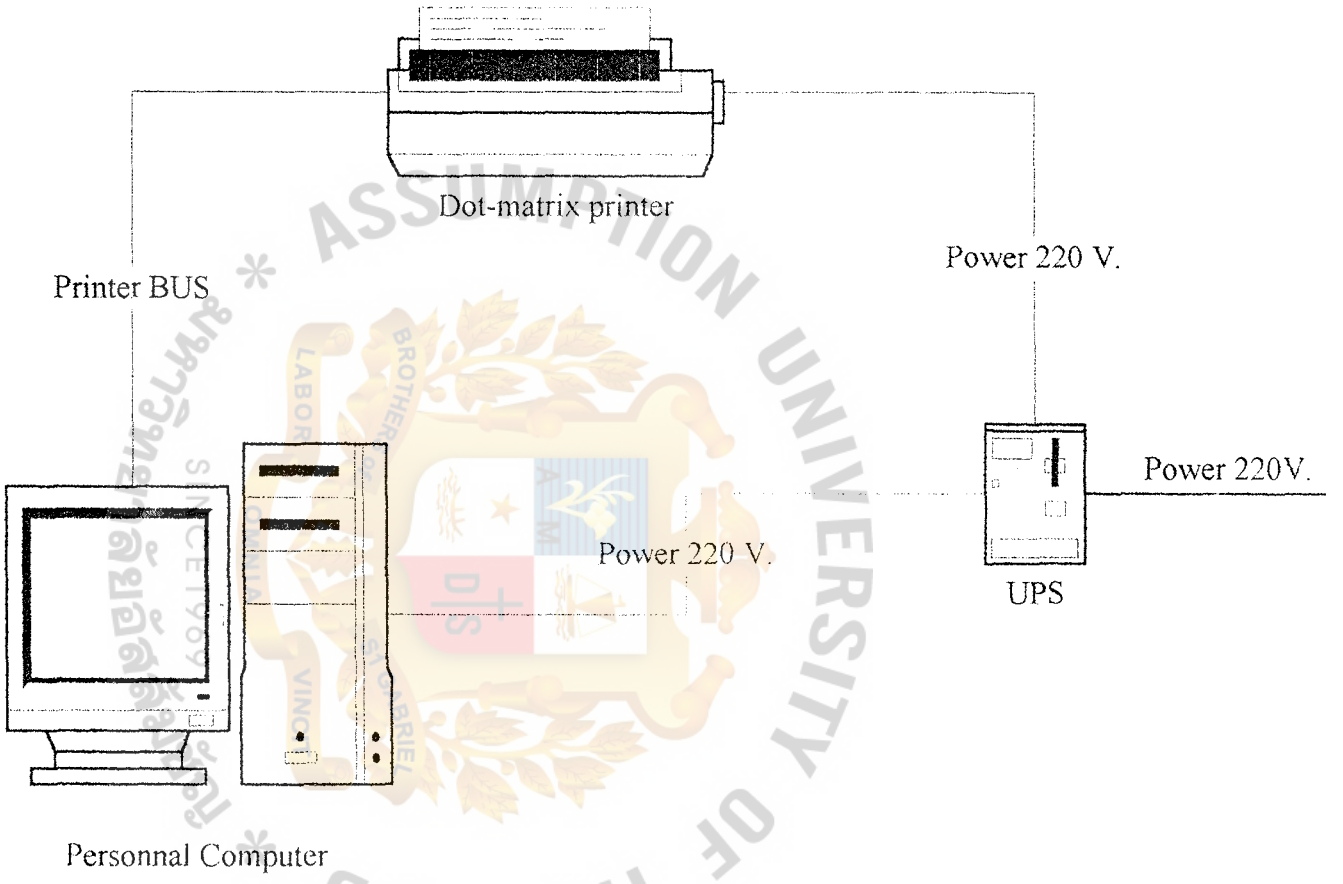

Figure 3.1. System configuration

3.9 Cost And Benefit Analysis

Cost

System analysis and design	20,000
System coding	20,000
System tests and modification	20,000
Maintainance	20,000
Total	80,000

Benefit

1. Tangible benefit

■ Reduction of resource waste	20,000
■ Increase number of piglets	40,000
Total	40,000

2. Intangible benefit

- Improve farm management
- Reduce human error
- Information retrieving
- Better farm planning

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Table 3.1. Cost and benefit analysis

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Cash Saving	0	40,000	100,000	140,000	180,000
Cash Expense	80,000	64,000	51,200	40,960	32,768
Net Cash	-80,000	-4,000	48,800	99,040	147,232
Aggregate Cash	-80,000	-84,000	-35,000	63,840	211,072

3.10 Implementation

Programming

The algorithm are written in the computer understandable language according to the dataflow diagrams (DFD) and the structure charts. (See Appendix A and C)

Testing

Program is tested in order to find out new problem that has not been discovered in system analysis and the early stage of system design phase. A complete schedule of testing involves :

- Test individual program.
- Generate the test data.
- Link, string, and single-threat testing
- The whole system testing
- Backup and retest.

Installation

All hardware devices are installed into the selected site. The operating system and application programs are setting up to the personal computer. Up to this point, the system is ready to be used.

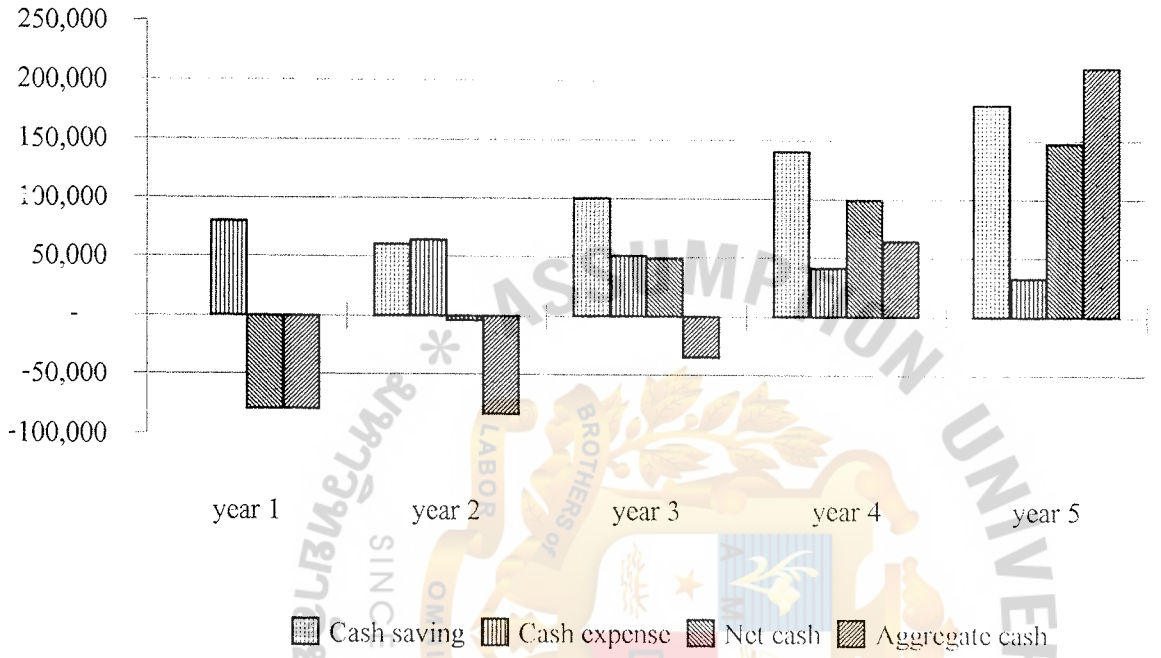

Figure 3.2. Graph shows cost and benefit analysis

Implementation Plan

The detailed implement plan is set. For Theerawat Farm, manual work and PBSIS are implemented parallel at the first step of implementation. Many resources that are needed msut be prepared before hand.

User Training

It is one of the critical parts of implementation. Selected user must be trained how to operate the system. The success of the PBSIS is very much depending on how well user understand and can operate it.

Documentation

Documentation of the system will be :

- User manual
- Data dictionary and document that describe the flow of the system.

3.11 Testing

Hardware and software are throughtly tested before the conversion stage of implementation. It is to assure the system quality performance. It is very usual that problem is arisen while proceed the system testing. Modification is required to adjust the system to achieve user requirement.

Not only modify the new system while testing, the nature of work in the organization is also change. It is not possible at all in the way to improve performance by computerized system and the work habit remains unchanged. Users' function that stated in the job description must be restructured to consonat with the computerized system.

3.12 Result of the Implementation

Result of the implementation shows that user is computer illiteracy and computer phobia. User also hesitates to use the new system because he gets used to the old, manual system.

The routine work has been changed and this causes obscure job description. The user finds himself do not sure about what he has to do and what he has not to .

However, when user gets more experiences, these problems will be eliminated.

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IV. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

PBSIS has an intention to improve the farm management of Theerawat Farm. This new system tries to overcome the shortcoming of the existing manual system. PBSIS's scope concern about mating and farrowing functional area within which several transactions and events about boar and sow are recorded. Variouse types of reports are the products of the system assisting farm manager in monitoring and improving decision-making process. By means of the new computerized system, the goal to optimize productivity can be achieved more easily.

4.2 Recommendation

PBSIS can not claim to be a complete system because of many reasons such as technology and users' needs have been changing all the time. Broadly say, the further study is necessary to develop PBSIS in either vertically or horizontally.

Horizontally develop the PBSIS is to expand the system to cover other fuctional areas because the PBSIS still has a limit scope of functional area of mate and farrow unit. It should be more efficient if this computerized system include other functional areas. It the whole farm is under the operation of computerized system, all data will be organized to generate the more complete information.

Vertically develop the PBSIS is to go in depth in the area of mate and farrow unit. The further development may head to be decision support system (DSS) or expert system (ES). For example, develop it to be a system that assist nutrition extimation or health advisor system.

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APPENDIX A

Context Diagram and Data Flow Diagram

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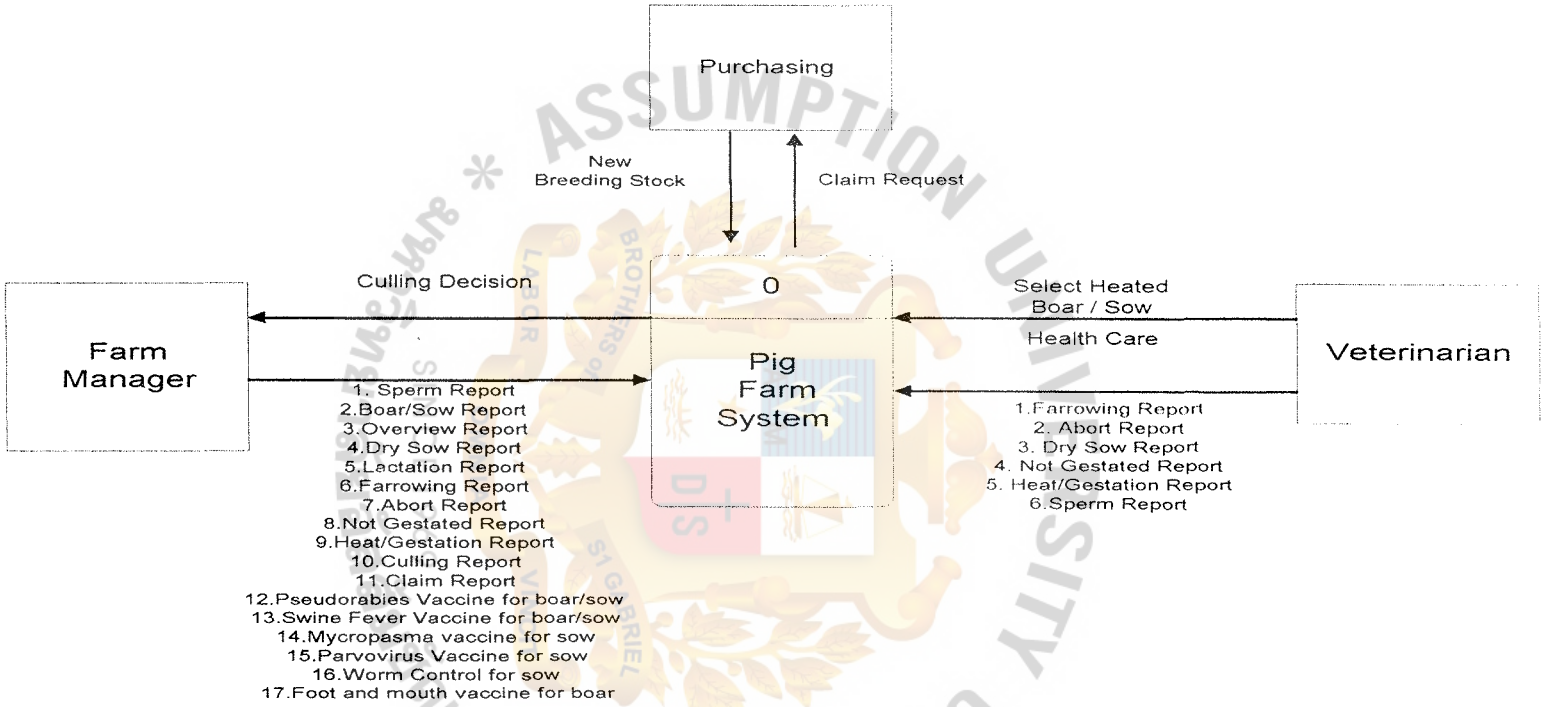

Figure A.1. Context Diagram PBSIS

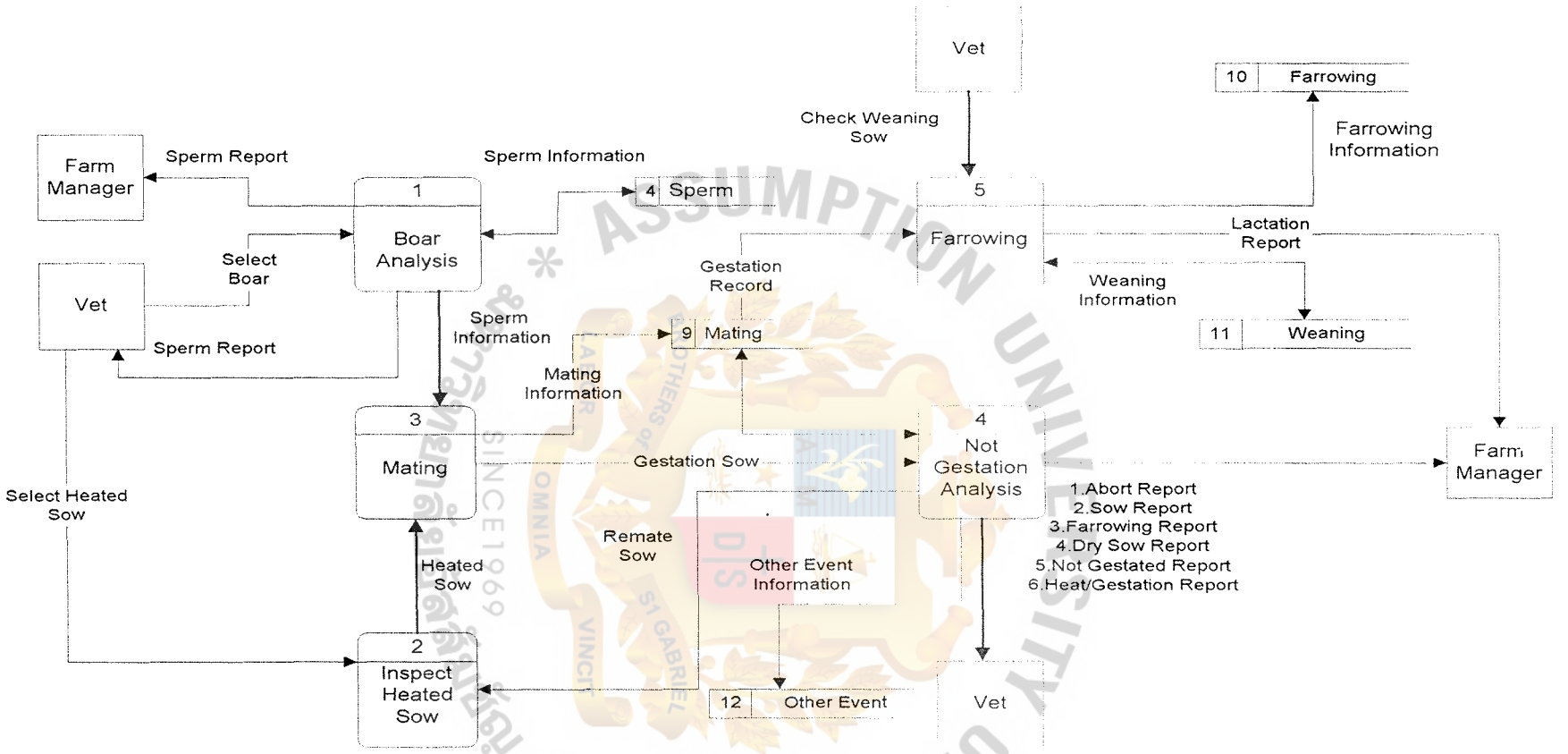

Figure A.2. Level 0 of PBSIS (cont.)

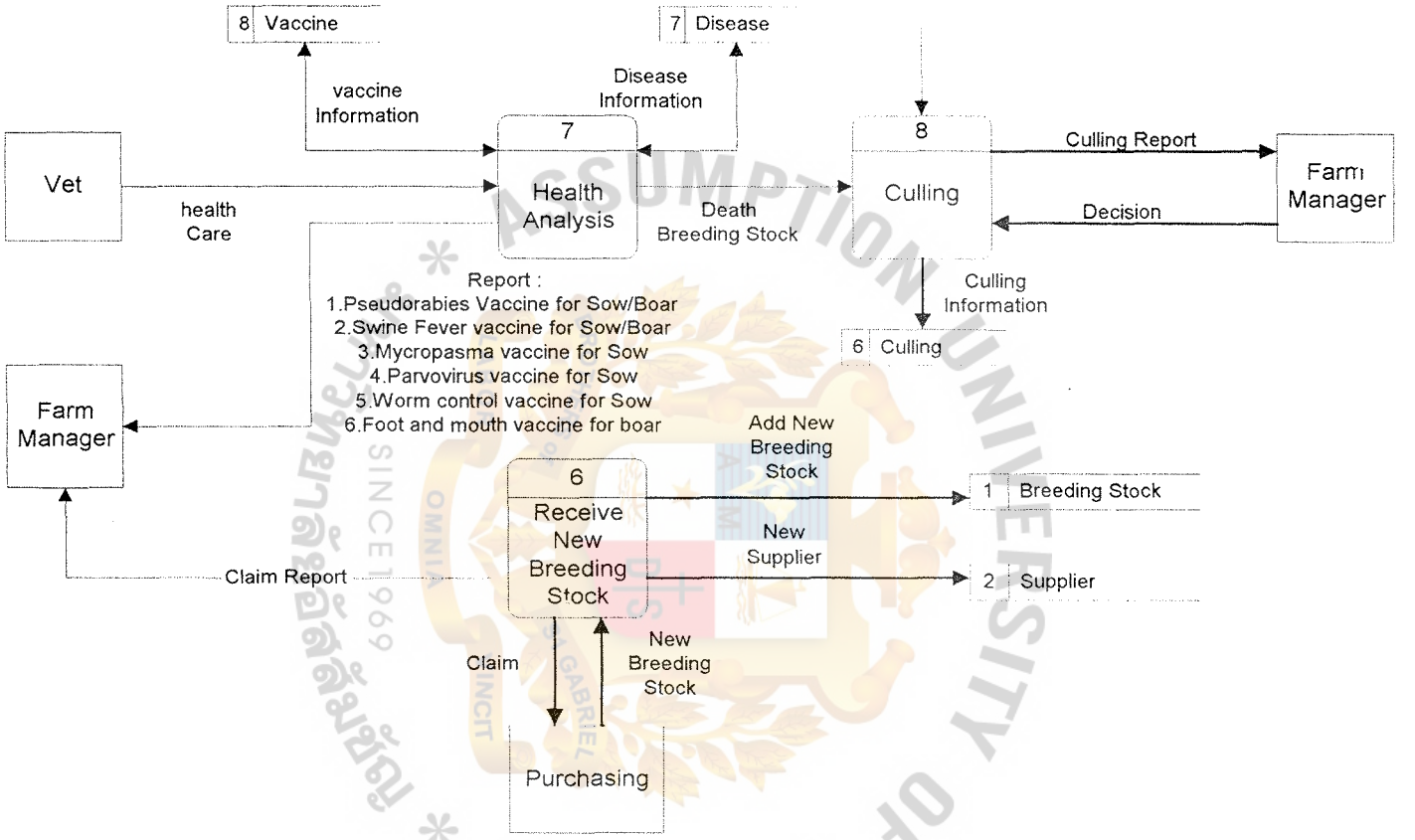

Figure A.2. Level 0 of PBSIS (Cont.)

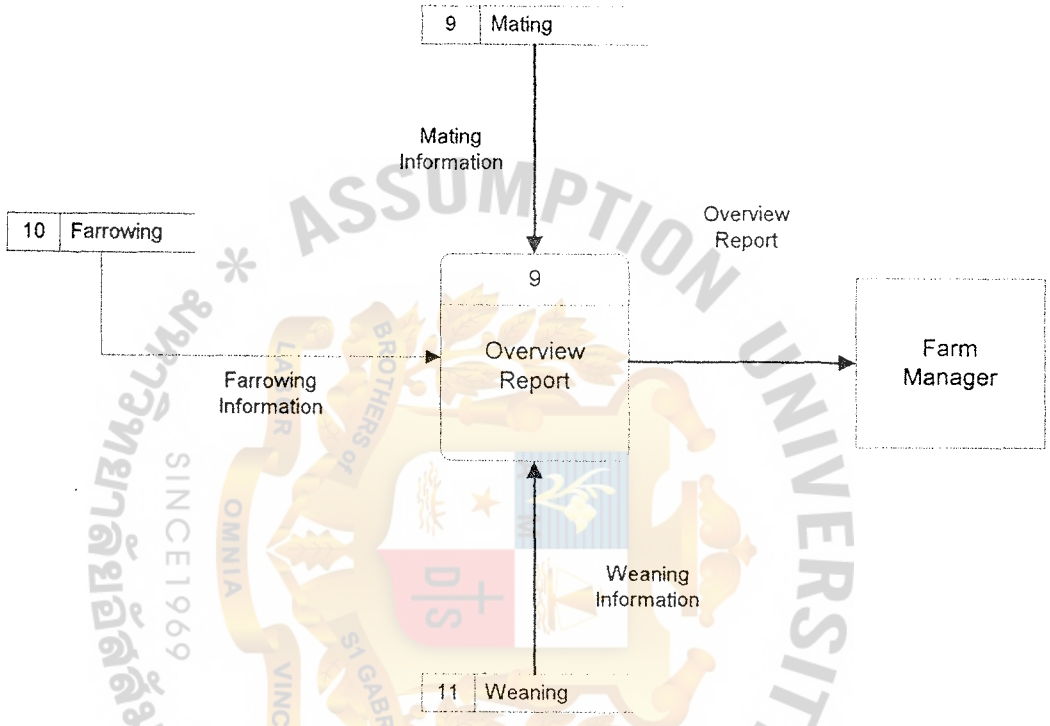

Figure A.2. Level 0 of PBSIS

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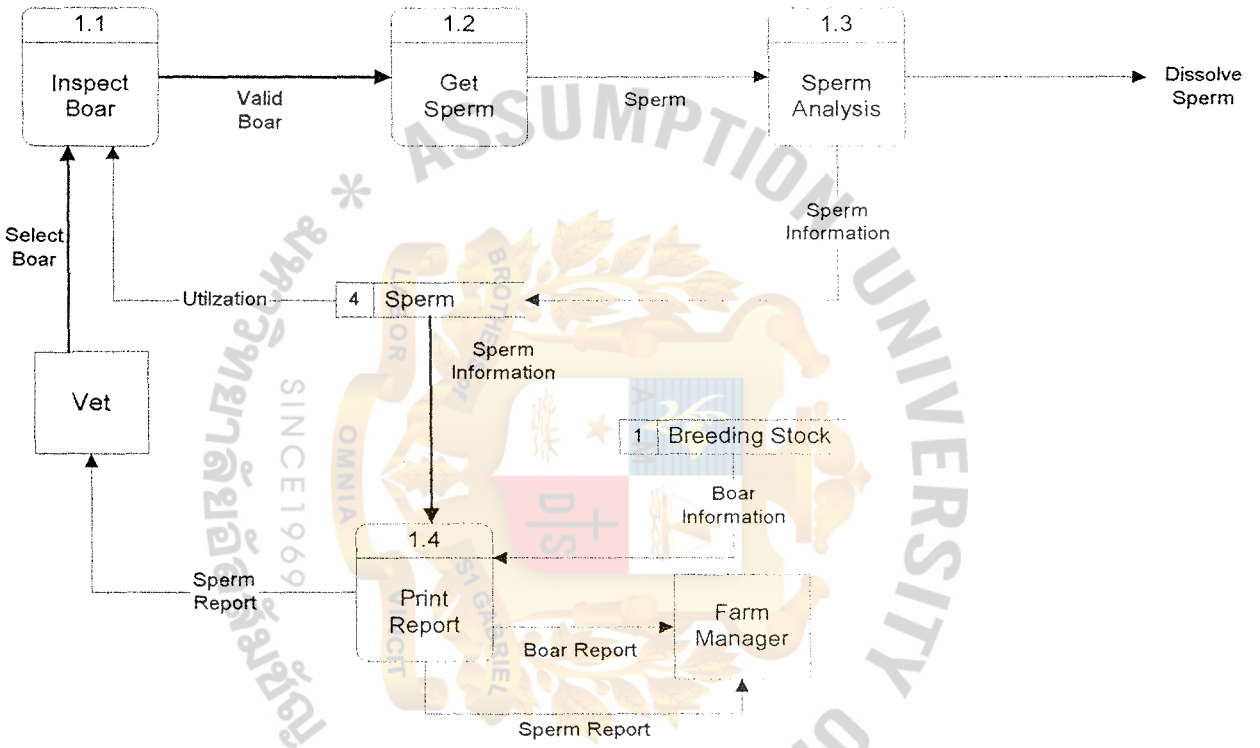

Figure A.3. DFD Level 1: Process 1 (Boar Analysis)

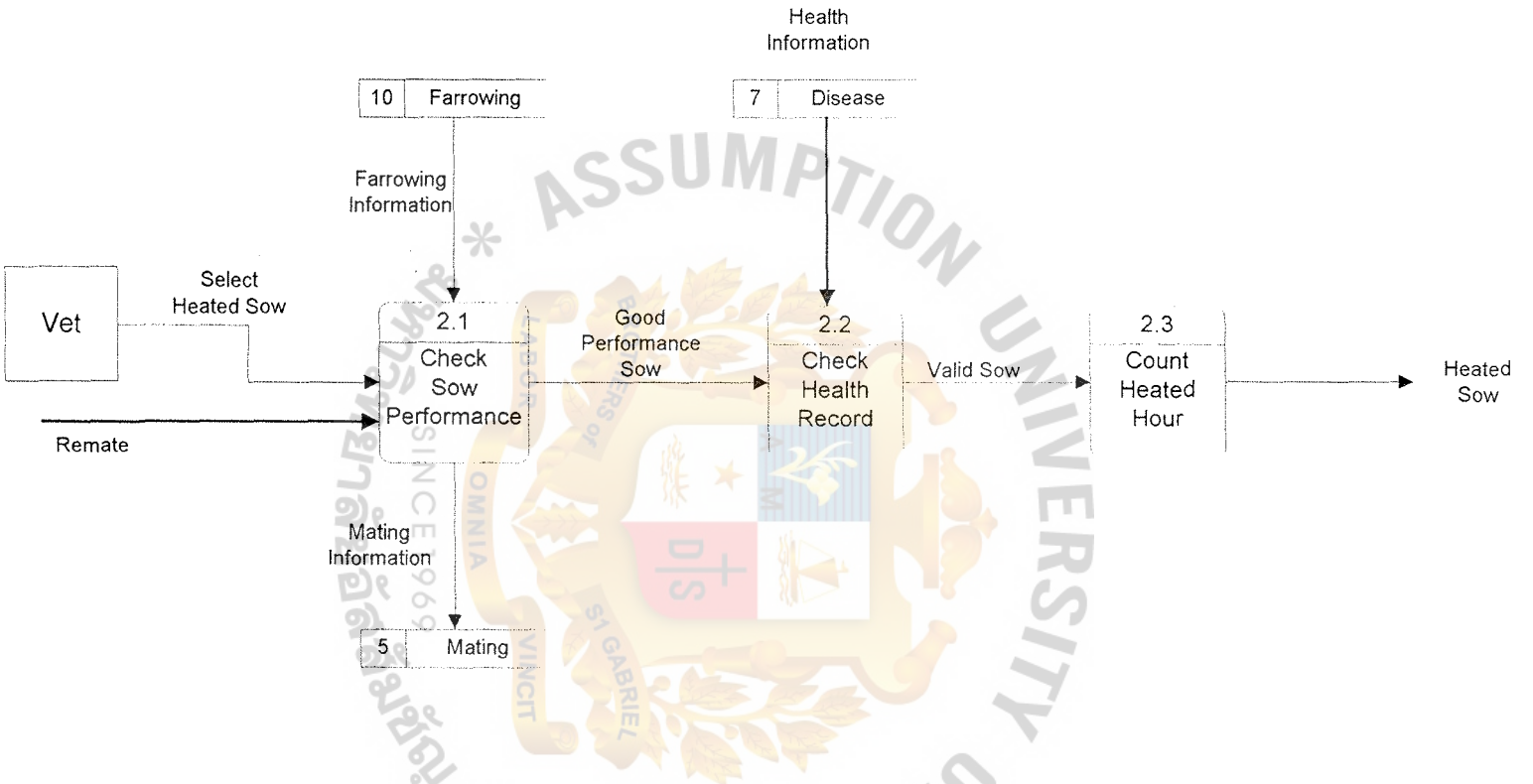

Figure A.4. DFD Level 1: Process 2 (Inspect Heated Sow)

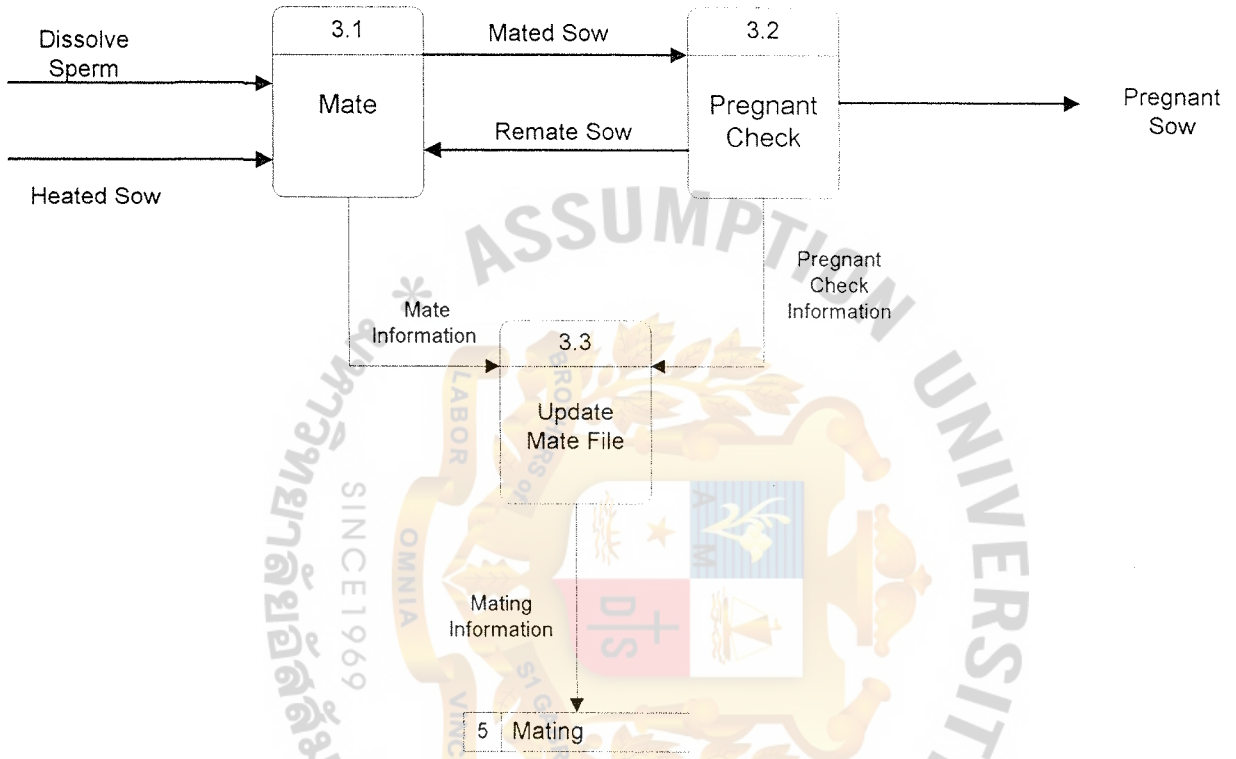

Figure A.5. DFD Level 1: Process 3 (Mating)

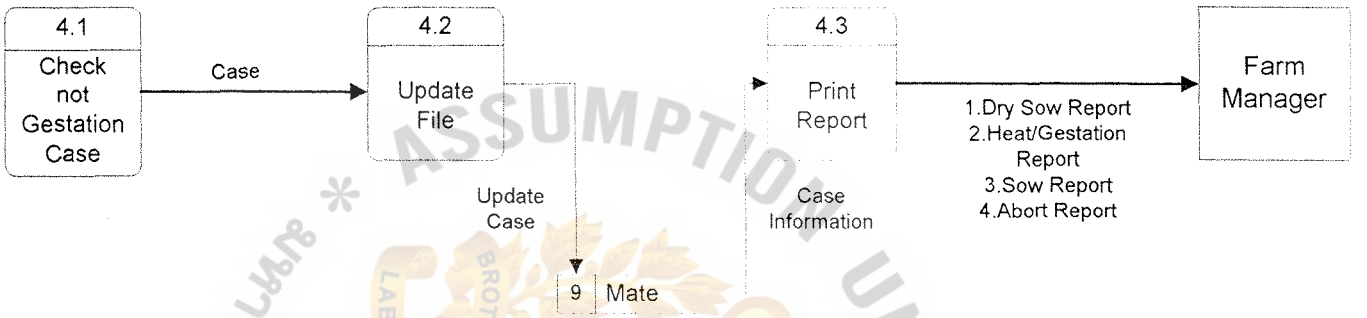

Figure A.6. DFD Level 1: Process 4 (not Gestation)

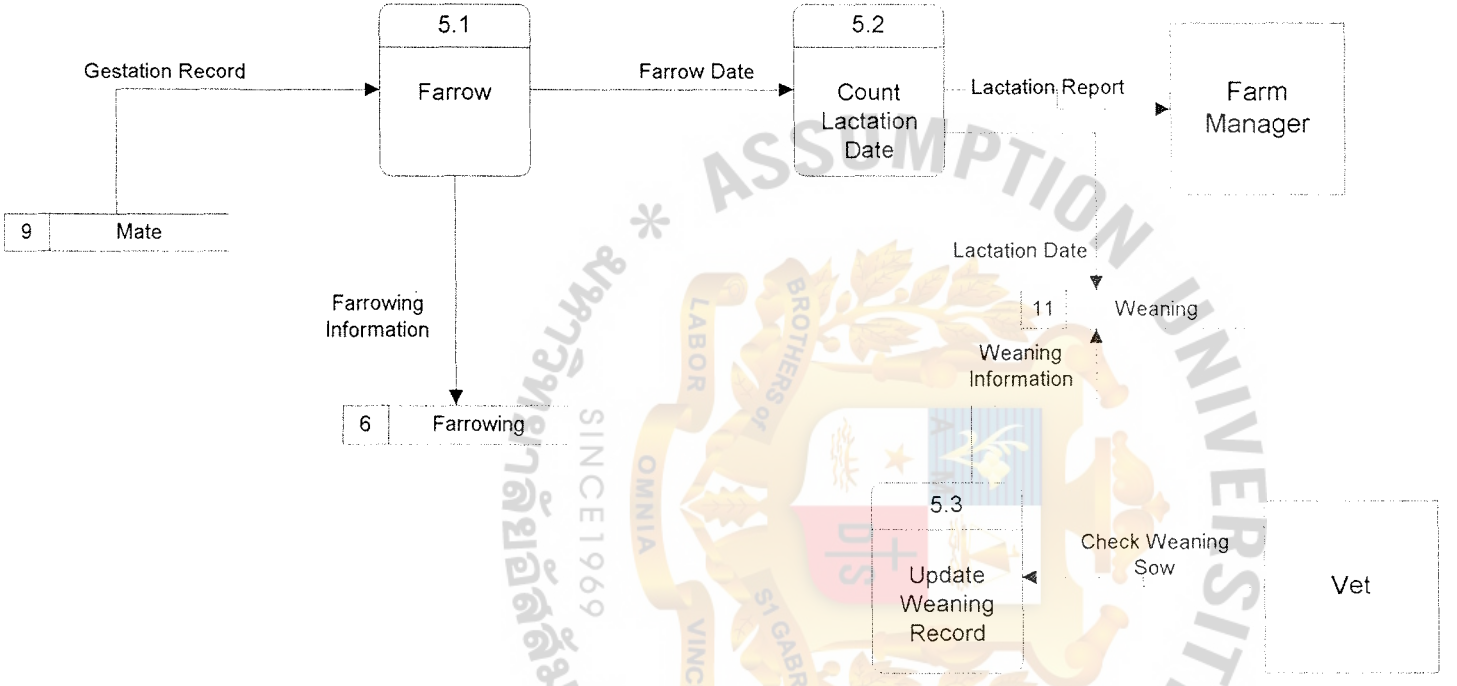

Figure A.7. DFD Level 1: Process 5 (Farrowing)

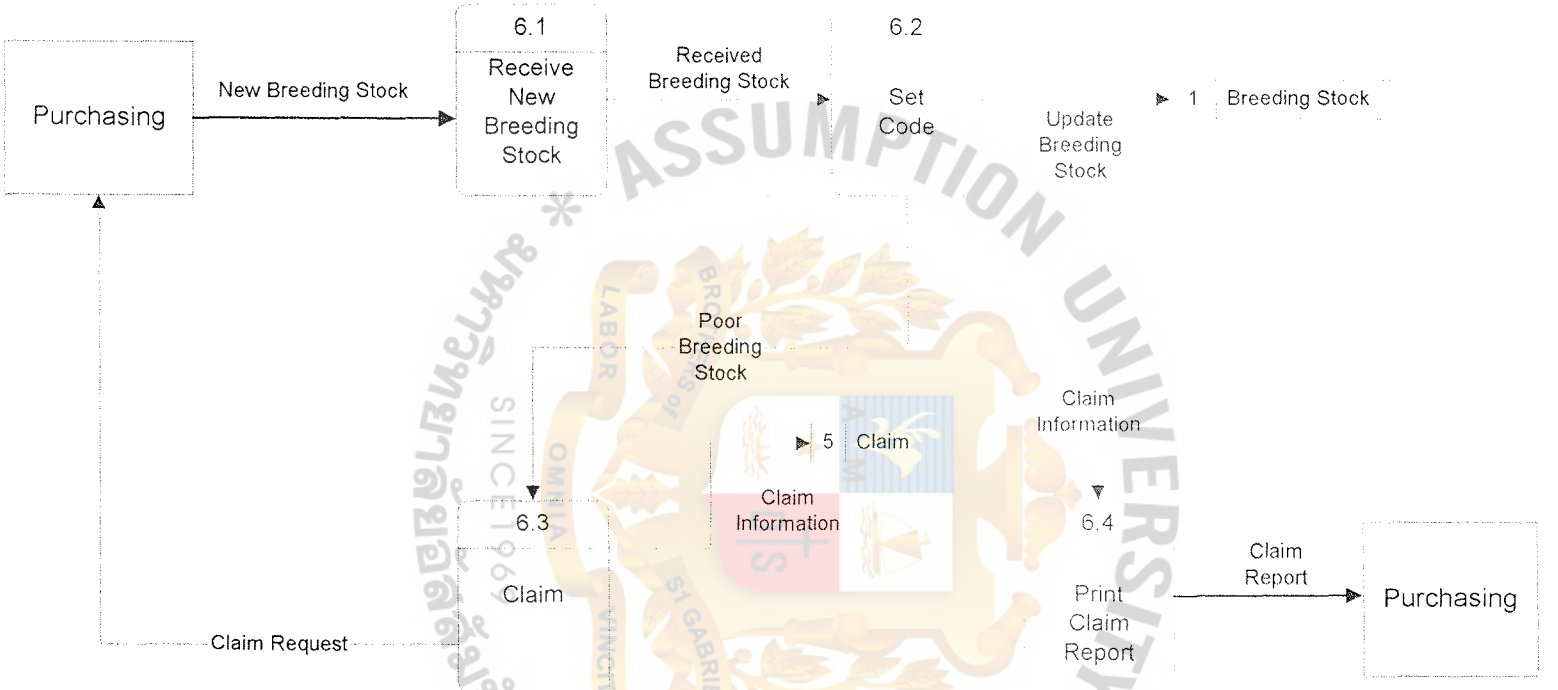

Figure A.8. DFD Level 1: Process 6 (Receive new Breeding)

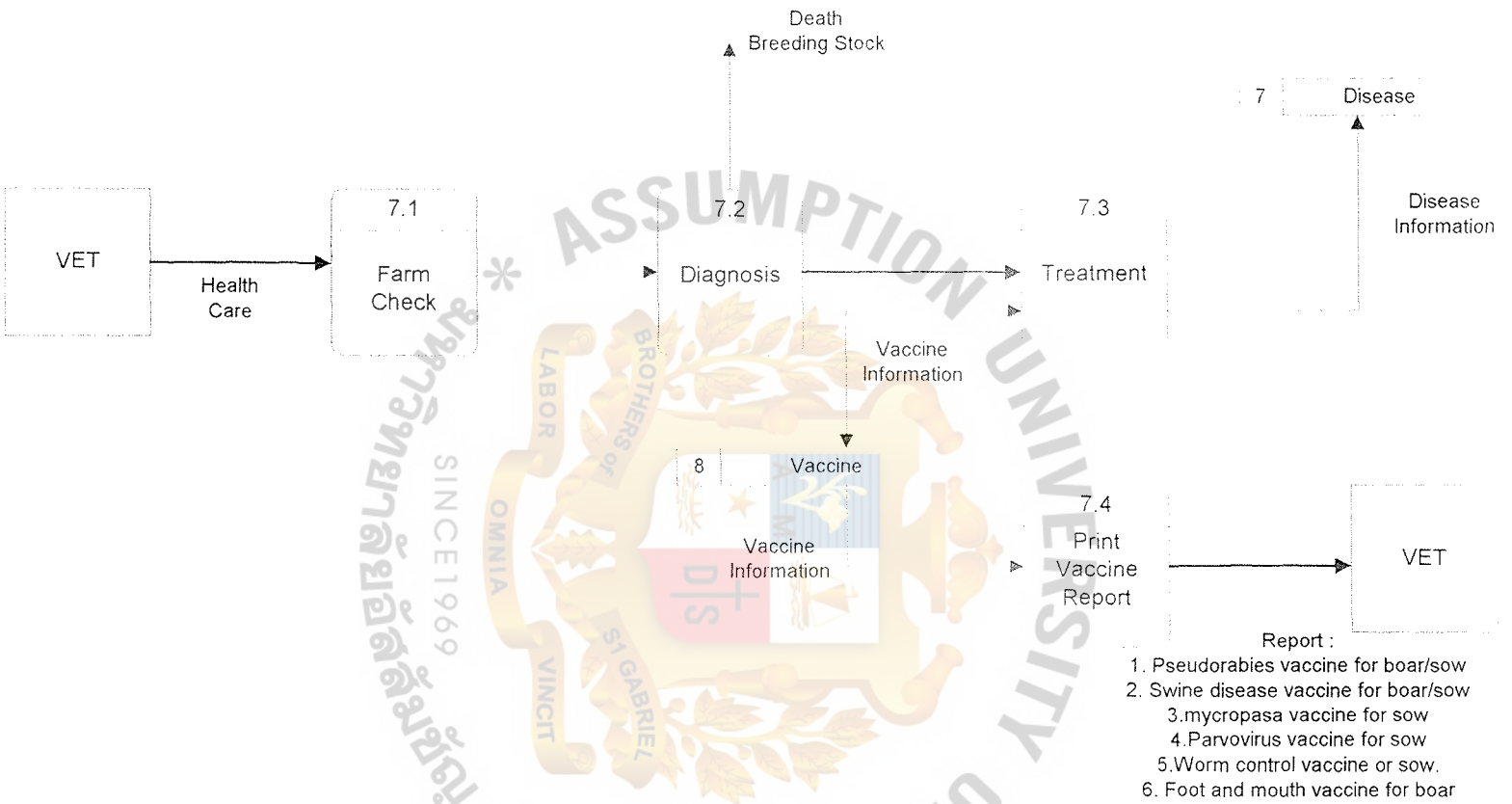

Figure A.9. DFD Level 1: Process 7 (Health Analysis)

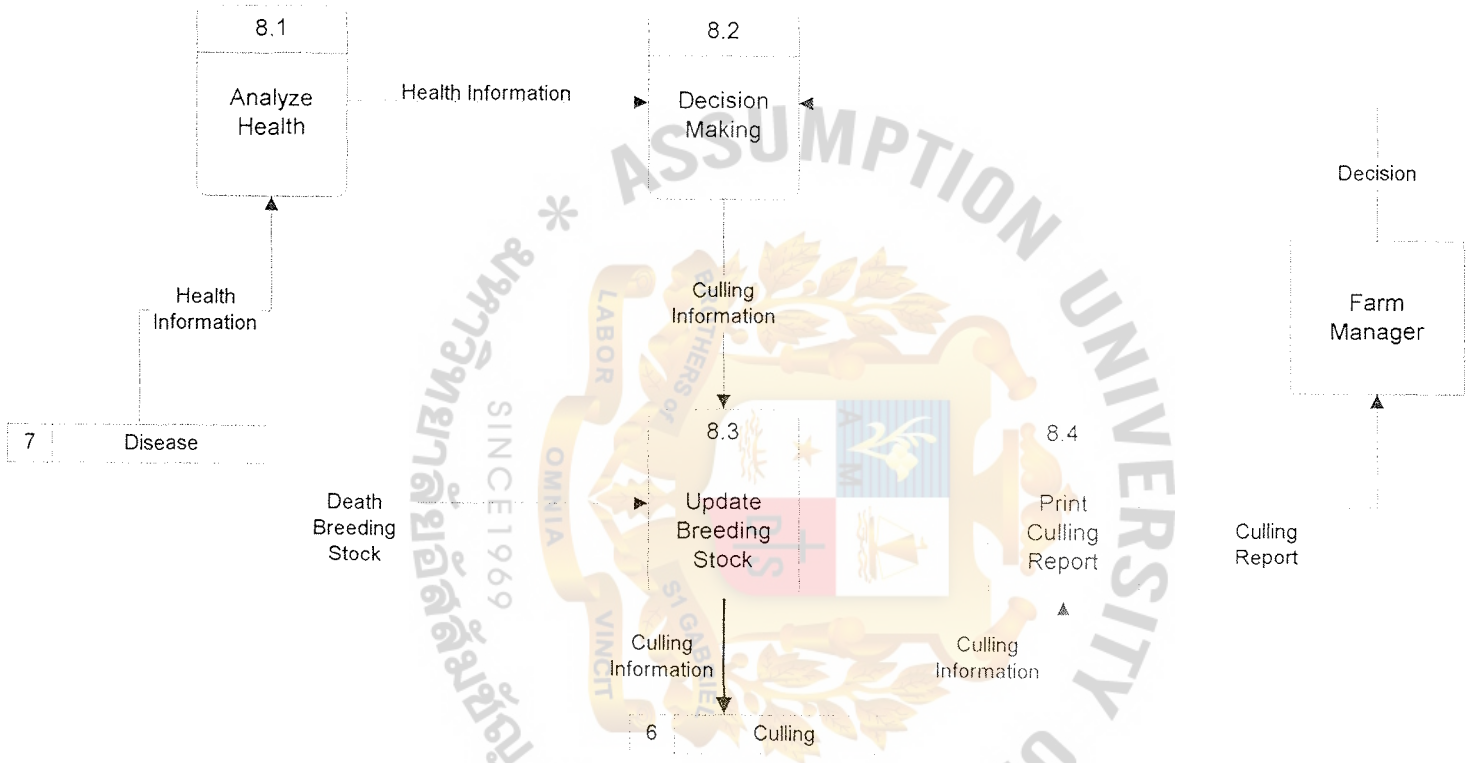

Figure A.10. DFD Level 1: Process 8 (Culling)

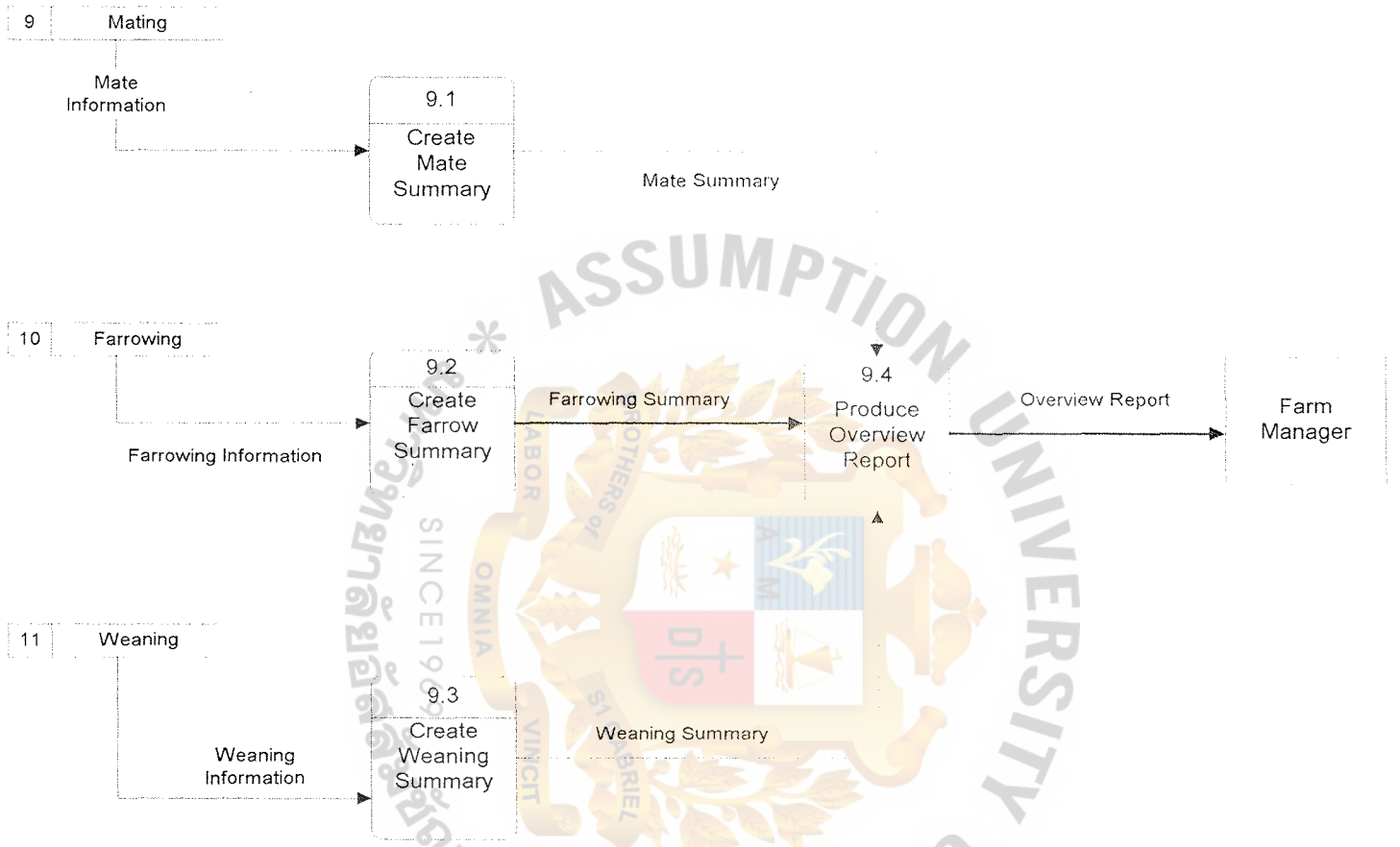

Figure A.11. DFD Level 1: Process 9 (Print overview)

APPENDIX B

Data Dictionary

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DATA DICTIONARY

ADDRESS =	*Suppliers'address*
BIRTH DATE =	*Birth date of boar and sow*
BOAR ID =	*Pig identification numnber which has SEX value "No"*
BREED =	*Species*
BS =	*Breeding stock table* @PIG_ID+BREED+BIRTH_DATE+DATE_IN+GROUP_NO +SEX
CHECK DATE =	*The date that the boars and saws are diagnosed*
CLAIM =	*Claim table* @CLAIM DATE+CLAIM REASON
CLAIM DATE =	*The date that claim event occur*
CLAIM REASON =	*Claim reason*
COLOR =	*Rating sperm's color quality ranging from 1-5*
COMMENT =	*Any comment about the event*
CULL DATE =	*The date that culling event occur*
CULL REASON =	*Culling reason*
CULLING =	*Culling table* @CULL DATE+CULL REASON
DATE IN =	*The date that boars and sows enter to farm*
DEATH NO =	*Number of death piglet*
DEATH REASON =	*Death reason of piglet*
DEATH REASON2 =	*Death reason of piglet at weaning*
DENSITY =	*Rating the dinsity of sperm ranging from 1-5*
DISEASE =	*Disease table* @CHECK DATE+DISEASE NAME
DISEASE NAME =	*Name of disease*
DOSE =	*The amount of dissolved sperm*
EVENT =	*Event name*
EVENT DATE =	*The date that any event occur*
FARROW =	*Farrow table* @GEST_NO+FARROW_DATE+PIGLET+(DEATH)+ (MUMMY)+WEIGHT+(DEATH REASON1)
FARROW DATE =	*Date of farrowing*
FAX =	*Suppliers'facsimile number*
GEST NO =	*Number of time of gestation*
GET DATE =	*The date that veternarian get sperm*
GROUP NO =	*Group number of boars and sows*
HEALTHY =	*Rating the amount of healthy sperm ranging from 1-5*
INFECT =	*Rating the amount of infective sperm ranging from 1-5*
LIVING =	*Rating the living sperm ranging from 1-5*
MATE =	*Mate table* @SOW_ID+BOAR_ID+MATE_DATE+PCHECK_DATE +RESULT+MATE TIME
MATE DATE =	*The date that mate occur*
MATE TIME =	*Number of mate per gestation*

MOVEMENT =	*Rating the sperm movement ranging from 1-5*
MUMMY =	*Number of mummy*
NEXT_DATE =	*The next vaccination date*
OTHER_EVENT =	*Other event exclude mate, farrow,weaning,disease,culling,vaccine and claim. For
PCHECK_DATE =	*Check pragnant date*
PIG_ID =	*Pig identification numnber* (BOAR_ID+SOW_ID)
PIG_QUANTITY =	*Quantity of boars and sows from each supplier*
PIGLET =	*Number of piglet*
PROVINCE =	*Province that suppliers are located*
QTY =	*QTY Table* @SUPPLIER_ID+PIG_QUANTITY
QUANTITY =	*Quantity of sperm in cubic centimeter*
RESULT =	*Result of pragnant date*
SEX =	*Select the sex of breeding stock* [Yes / No]
SOW_ID =	*Pig identification numnber which has SEX value "Yes"*
SPERM =	*Sperm table* @UTILIZATION+GET_DATE+QUANTITY+COLOR+ LIVING+MOVEMENT+DENSITY+HEALTHY+INFECT+ DOSE
SUPPLIER =	*Supplier table* @SUPPLIER_ID+SUPPLIER_NAME+(ADDRESS)+ (PROVWCE)+(ZIPCODE)+(TEL)+(FAX)
SUPPLIER_ID =	*Supplier identifier number*
SUPPLIER_ID =	*The identification number of suppliers*
SUPPLIER_NAME =	*Name of suppliers who sell breeding stock*
TEL =	*Suppliers'telephone number*
TREATMENT =	*Pharmacopeia*
UTILIZATION =	*The number of time veterinarian get sperm from boars*
VAC_DATE =	*Date at which vaccine is given to breeding stock*
VACCINE =	*Vaccine table* @GUOUP_NO+VAC_DATE+VACCINE_NAME+ NEXT_DATE
VACCINE_NAME =	*Name of vaccine*
WEAN_DATE =	*Weaning date*
WEAN_DEATH =	*Number of death piglets at weaning*
WEAN_KG =	*Total weight of alive piglets per litter at weaning*
WEAN_PIGLET =	*Number of alive piglets at weaning*
WEANING =	*Weaning table* @WEAN_DATE+WEAN_PIGLET+WEAN_DEATH+ WEAN_KG+DEATH_REASON2
WEIGHT =	*Total weight of piglet6 per litter*
ZIPCODE =	*Post code of suppliers*

APPENDIX C

Structure Chart

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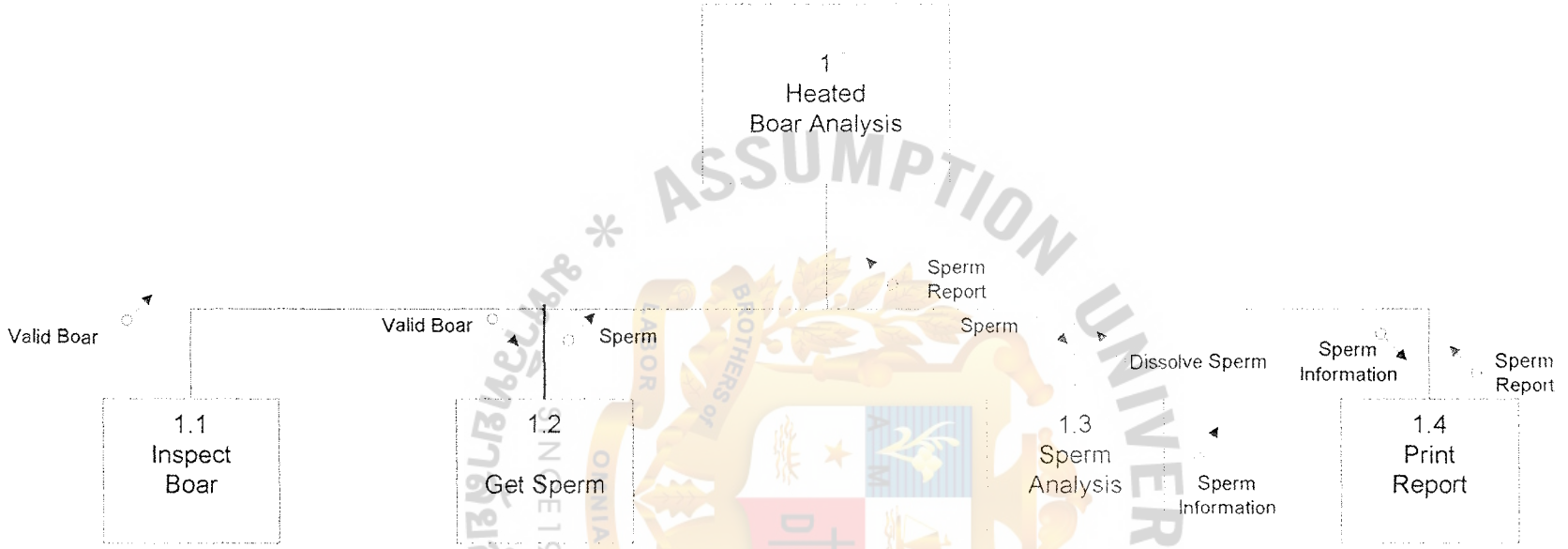

Figure C.1. Process 1: (Boar Analysis)

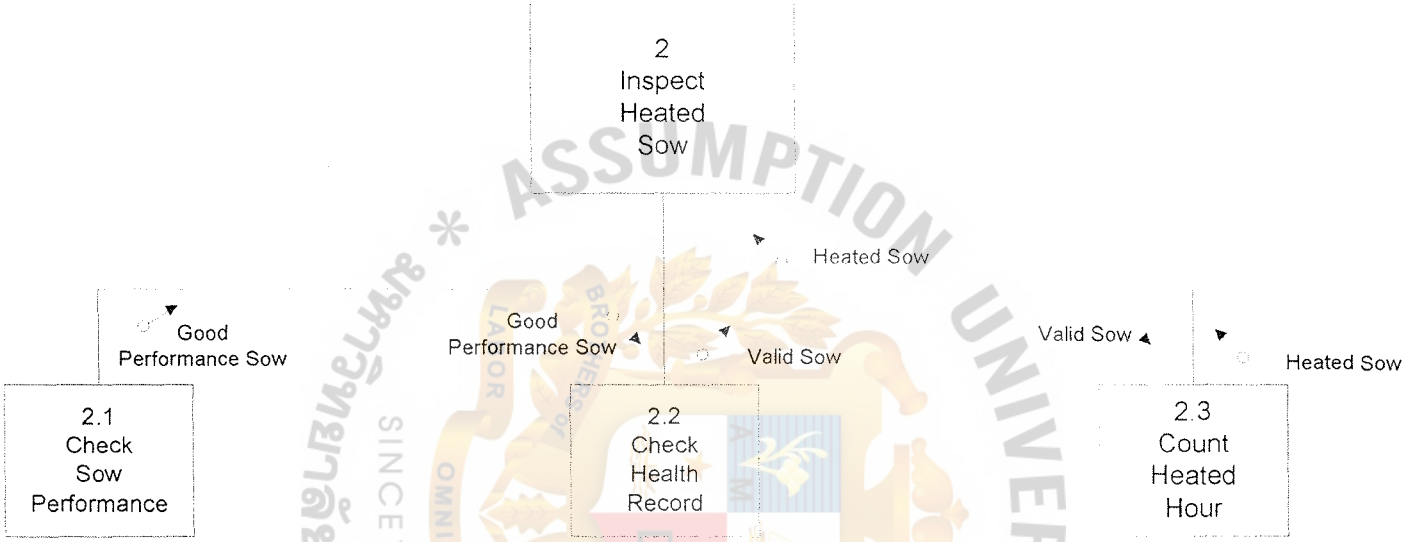

Figure C.2. Process 2: (Inspect Heated Sow)

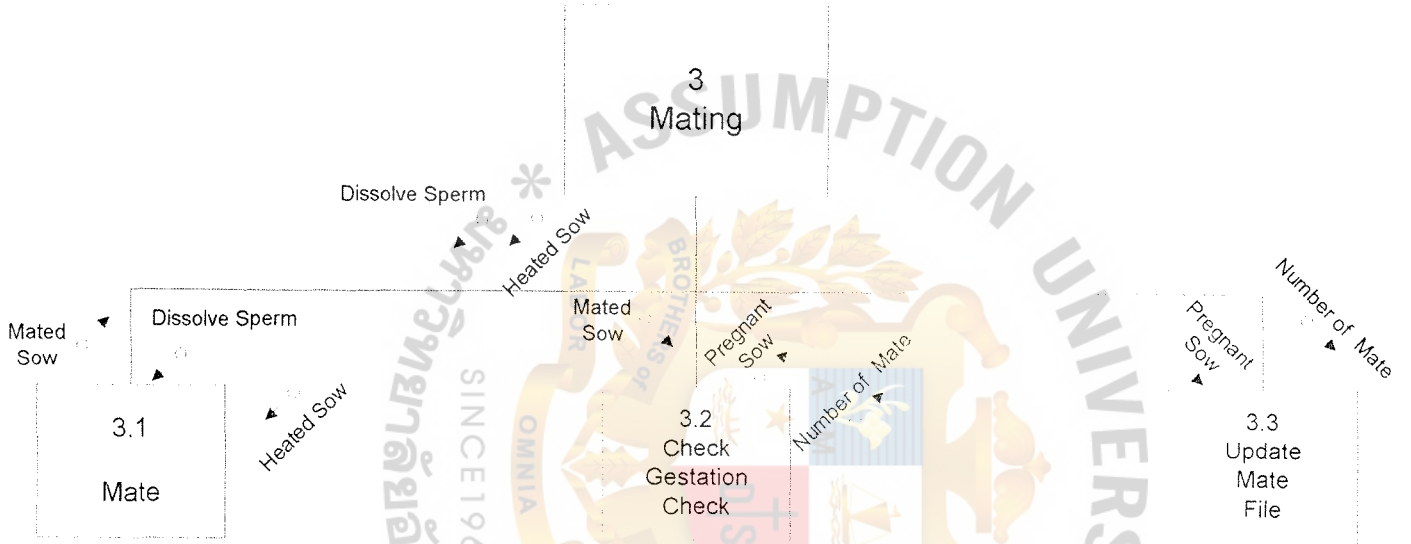

Figure C.3. Process 3: (Mating)

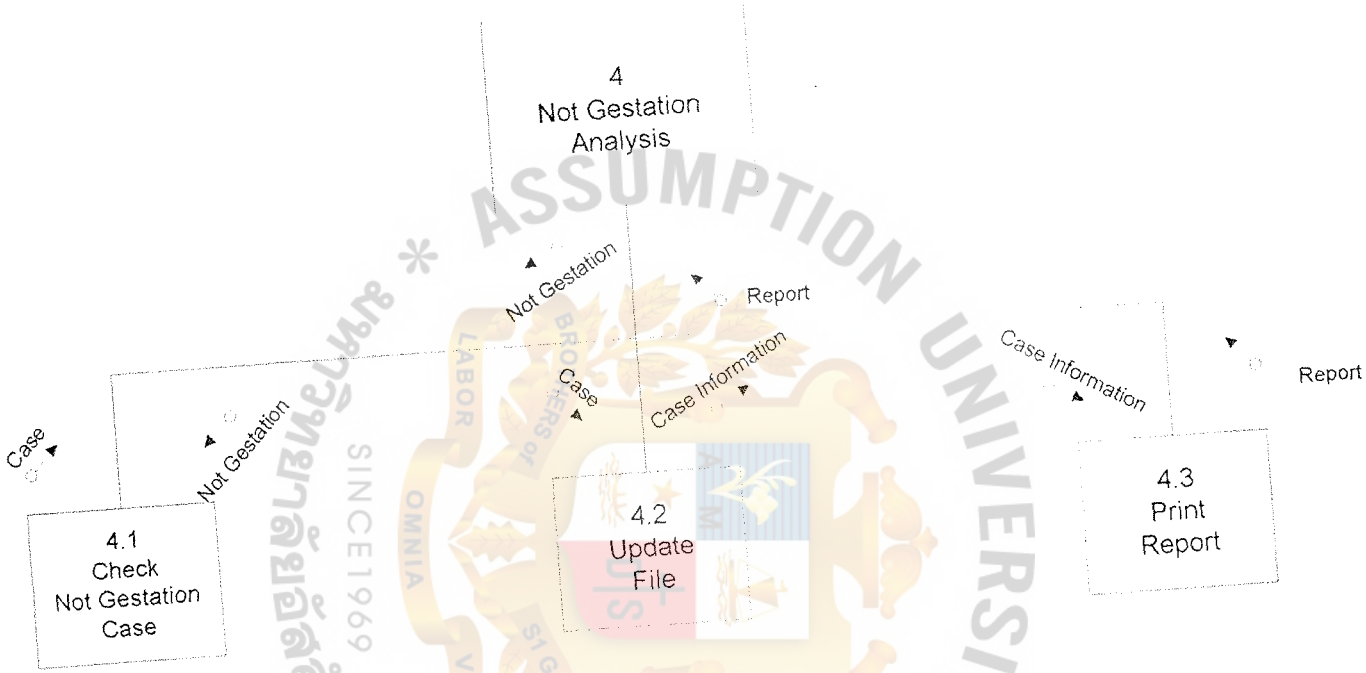

Figure C.4. Process 4: (Not Gestation)

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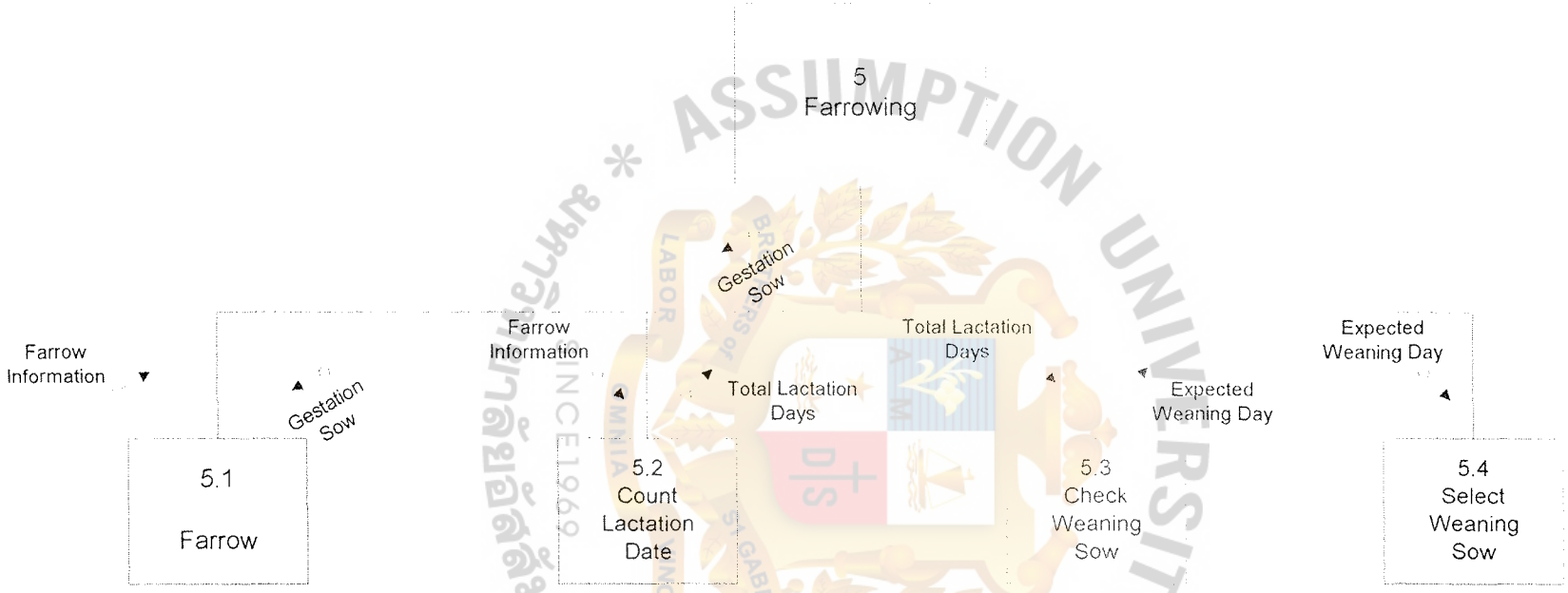

Figure C.5. Process 5: (Farrowing)

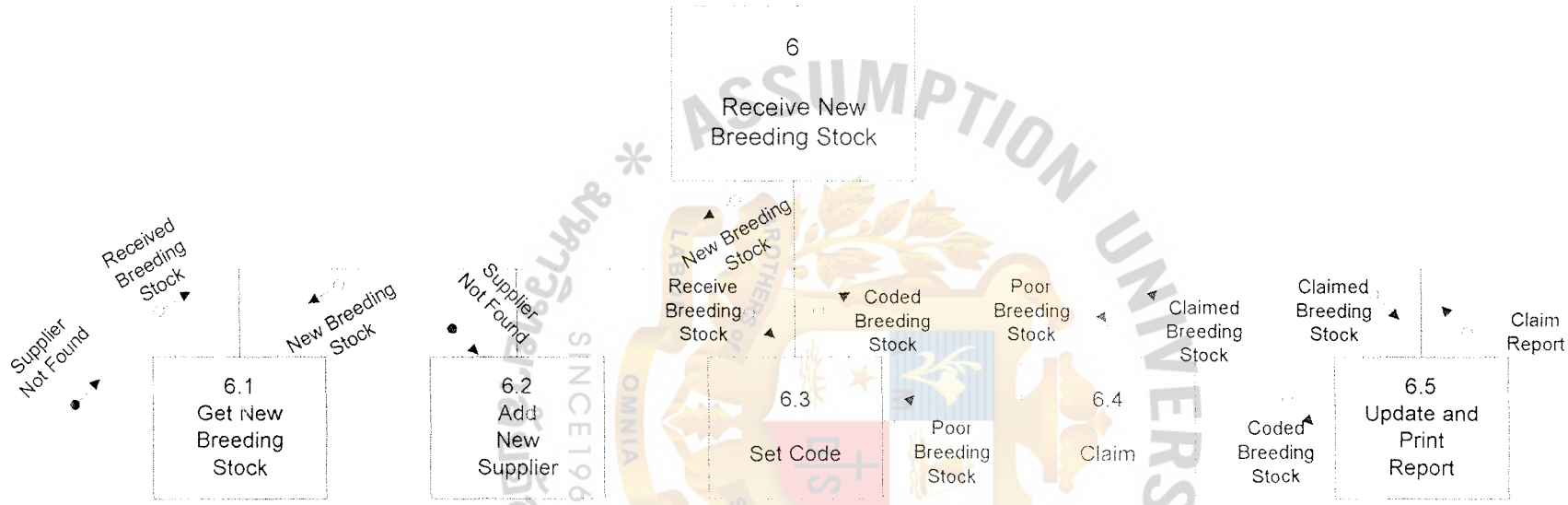

Figure C.6. Process 6: (Receive New Breeding Stock)

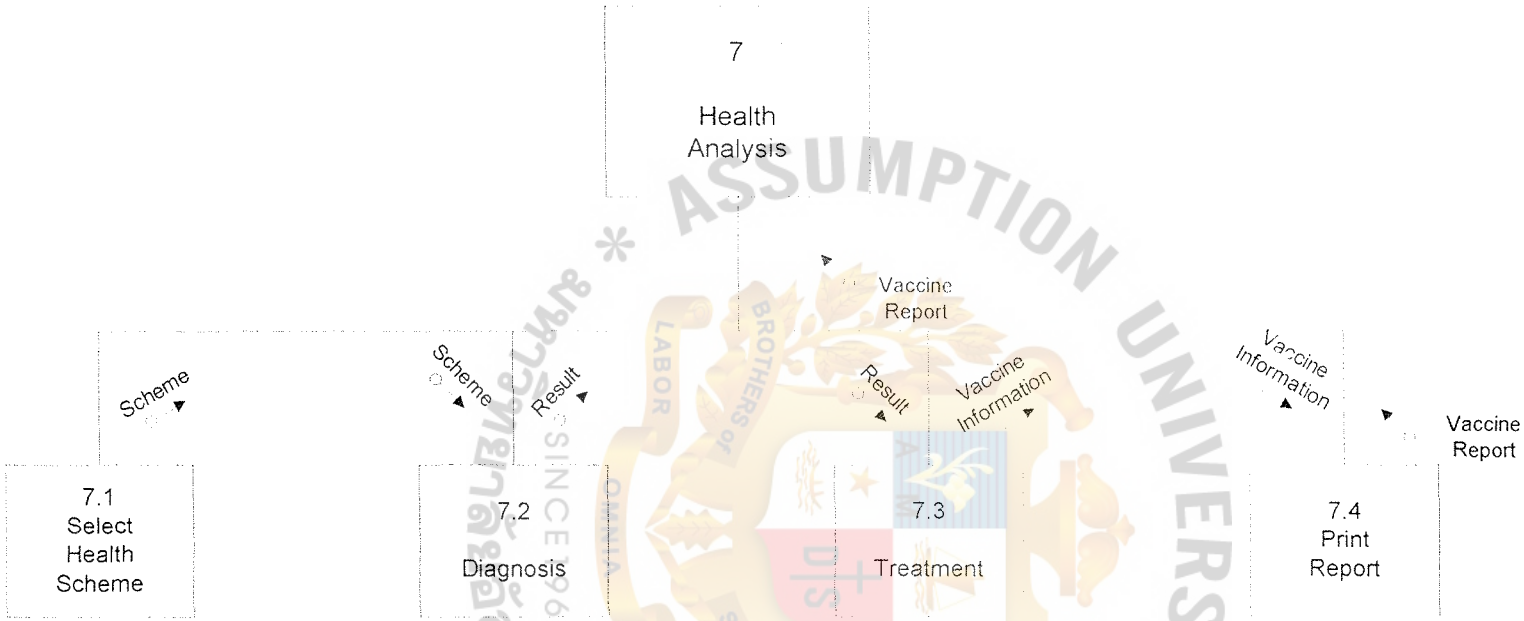

Figure C.7. Process 7: (Health

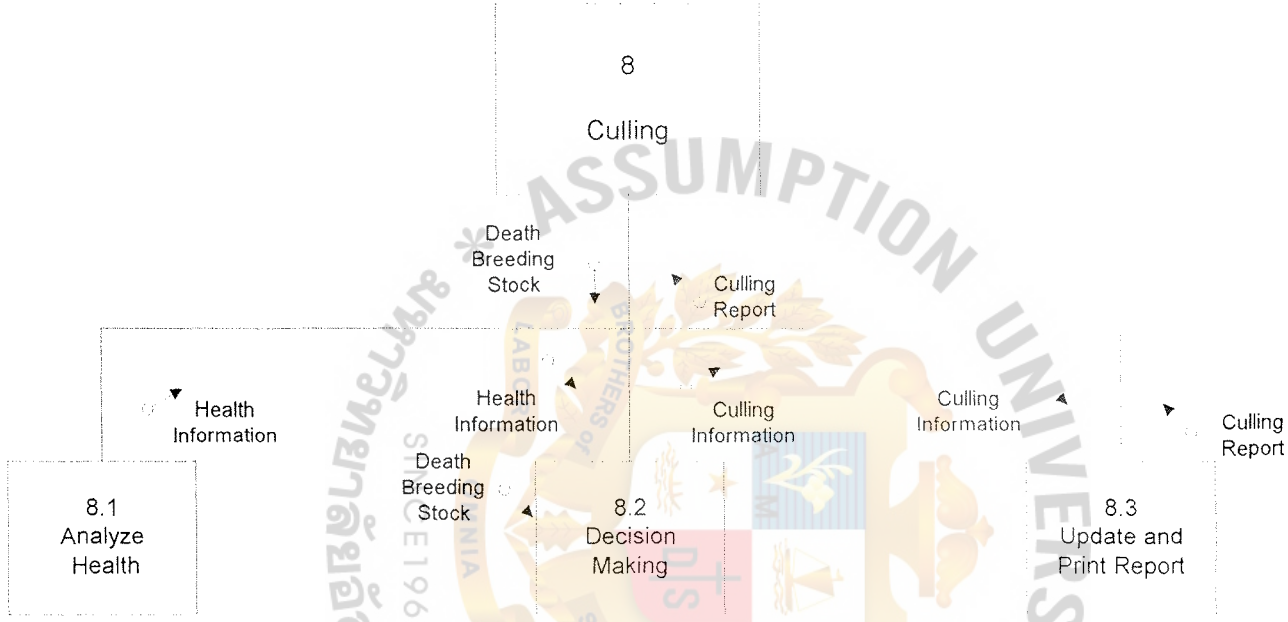

Figure C.8. Process 8: (Culling)

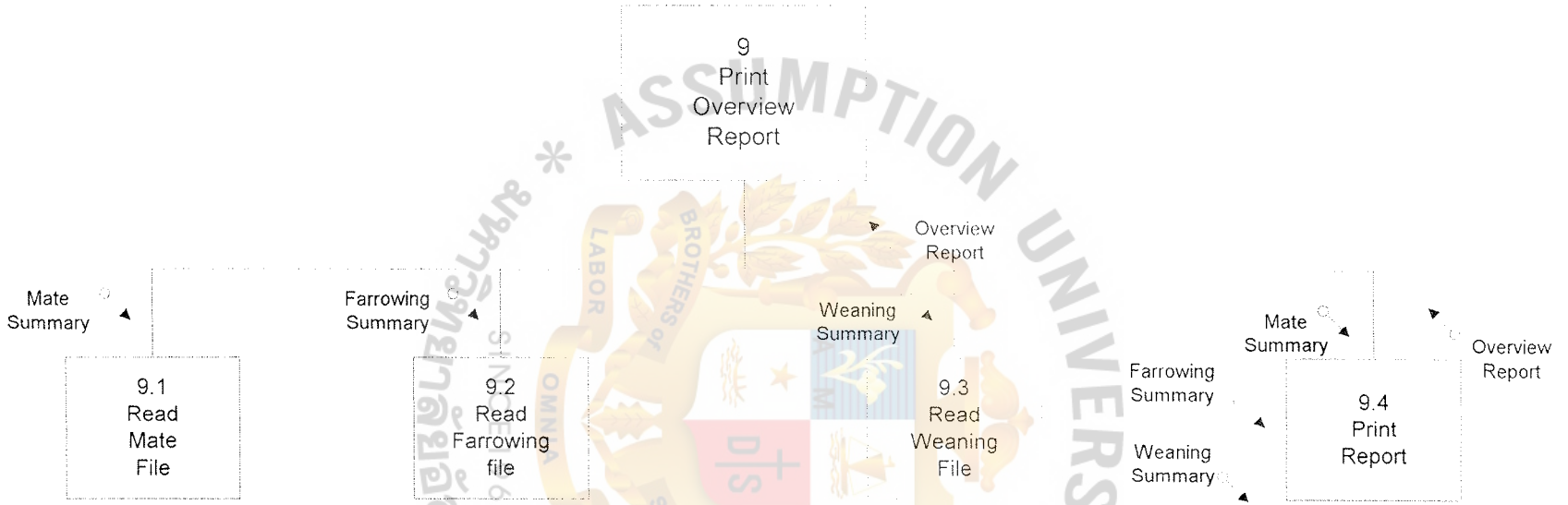

Figure C.9. Process 9: (Print Overview Report)

APPENDIX D

Process Specification

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PROCESS SPECIFICATION

Process 1.1 : Inspect Boar

```
BEGIN
        DO WHILE Boar is selected
                GET Boar_Id
                GET boar utilization
                VERIFY Boar
                MOVE Boar to sperm list
        ENDDO
END
```

Process 1.2 : Get sperm

```
BEGIN
        DO WHILE Finish Inspect Boar
                GET Sperm list
                IF Get sperm THEN
                        ADD Sperm Information to Sperm list
                ELSE
                        Remove Boar from Sperm List
                ENDIF
        ENDDO
END
```

Process 1.3 : Sperm Analysis

```
BEGIN
        GET Sperm List
                SET Ranking Score = Variables
                        var1 = Color
                        var2 = Living
                        var3 = Movement
                        var4 = Density
                        var5 = Healthy
                        var6 = Infect
                ADD Variables to Sperm List
                INPUT Sperm List to Sperm Record
                UTILIZATION = UTILIZATION +1
        END
END
```

Process 1.4 : Print Sperm Report

```
BEGIN
        GET Sperm Record
        SELECT BOAR_ID
        PRINT Sperm Report
END
```

Process 2.1 : Check Sow Performance

```
BEGIN
        DO WHILE Sow is Heated
                GET SOW_ID
                GET Remate Sow
                GET Farrow Information
                MOVE Sow to Heated Sow List
        ENDDO
END
```

Process 2.2 : Check Health Record

```
BEGIN
        DO WHILE Finish Check Sow Performance
                GET Heated sow list
                GET Health Record
                IF Health Record is Acceptable THEN
                        MAINTAIN Heated Sow List
                        REMOVE Sow from Heated Sow List ELSE
                ENDIF
        ENDDO
END
```

Process 2.3 : Count Heated Hour

```
BEGIN
        DO GET Found Heated Hour
                Heated Hour = Found Heated Hour + 10
        ENDDO
END
```

Process 3.1 : Mate

```
BEGIN
        DO WHILE Heated Hour = found Heated Hour + 10
                GET Dissolve Sperm
                GET Heated Sow
                DO Mating
                ADD Mate Record
                Mate Time = Mate_Time + 1
        ENDDO
END
```

Process 3.3 : Update Mate File

```
BEGIN
        DO WHILE Gestation
                GET Mate information
                GET Gestation Check information
                UPDATE Gestation AND Not Gestation to Mate Record
                Mate Time = Mate Time + 1
        ENDDO
END
```

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Process 4.1 : Check not Gestation Case

```
BEGIN
        DO WHILE Sow is not Gestated
                VERIFY Not Gestation Case
        ENDDO
END
```

Process 4.2 : Update File

```
BEGIN
        DO WHILE Cases are verified
                ADD Cases to Mate Record
        ENDDO
END
```

Process 4.3 : Print Report

```
BEGIN
        DO GET Case Information from Mate Record
                PRINT Not Gestation Report
                PRINT Dry Sow Report
                PRINT Abort Report
        ENDDO
END
```

Process 5.1 : Farrow

```
BEGIN
        DO WHILE Sow is Gestated
                ADD Gestation Information to Farrow Record
                Gestation Number = Gestation Number + 1
        ENDDO
END
```

Process 5.2 : Count Number of Lactation Date

```
BEGIN
        DO WHILE is Farrowing
                Number of Lactation Date = Present Date – Farrow Date
        ENDDO
END
```

Process 5.3 : Check Weaning Sow

```
BEGIN
        DO WHILE Number of Lactation date is greater than 28 days
                CHECK Weaning Sow
        ENDDO
END
```

Process 5.4 : Select Weaning Sow

```
BEGIN
        IF Weaning THEN
                ADD Weaning Information to Weaning Record
        ELSE
                CHECK Weaning at next time
        ENDIF
END
```

Process 6.1 : Get New Breeding Stock

```
BEGIN
        DO WHILE Purchase New Breeding Stock
                GET Supplier Name
                ADD Quantity of Breeding Stock to Qty Record
        ENDDO
END
```

Process 6.2 : Add New Supplier

```
BEGIN
        DO WHILE Supplier not found
                ADD New Supplier
        ENDDO
END
```

Process 6.3 : Set Code

```
BEGIN
        DO WHILE Receive New Breeding Stock
                SET Code to Good Breeding Stock
                MOVE poor Breeding Stock to Claim
        ENDDO
END
```

Process 6.4 : Claim

```
BEGIN
        DO WHILE FOUND Poor Breeding Stock
                ADD to Claim Record
        ENDDO
END
```

Process 6.5 : Update and print Report

```
BEGIN
        GET Claim Information
        GET Supplier Information
        UPDATE Claim Record
        END
END
```

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Process 7.1 : Select Health Scheme

```
BEGIN
        CHECK Health Control Schedule
END
```

Process 7.2 : Diagnosis

```
BEGIN
        GET Vaccine Schedule
        GET Symptom Detail
END
```

Process 7.3 : Treatment

```
        BEGIN
                IF Vaccine THEN
                        INJECT Vaccine
                        ADD to vaccine record
                ELSE
                        GIVE Treatment
                        ADD to Disease Record
                END
        END
```

Process 7.4 : Print Report

```
        BEGIN
                GET Vaccine Information
                PRINT Vaccine Report
        END
```

Process 8.1 : Analyze Health

```
        BEGIN
                GET Health Information form Disease
                GET Death Breeding Stock
        END
```

Process 8.2 : Decision Making

```
        BEGIN
                MAKE CULLING DECISION
        END
```

Process 8.3 : Update and Print Report

```
        BEGIN
                GET Culling Information
                UPDATE to Culling Record
                PRINT Culling Report
        END
```

Process 9.1 : Read Make File

```
        BEGIN
                GET Mate Summary
        END
```

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Process 9.2 : Read Farrowing File

```
BEGIN
        GET Farrowing Summary
END
```

Process 9.3 : Read Weaning File

```
BEGIN
        GET Weaning Summary
END
```

Process 9.4 : Print Report

```
BEGIN
        MOVE Mate Summary to Overview Report
        MOVE Farrowing Summary to Overview Report
        MOVE Weaning Summary to Overview Report
        PRINT Overview Report
END
```

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APPENDIX E

Screen of PBSIS

ASSUMPTION UNIVERSITY OF THAILAND
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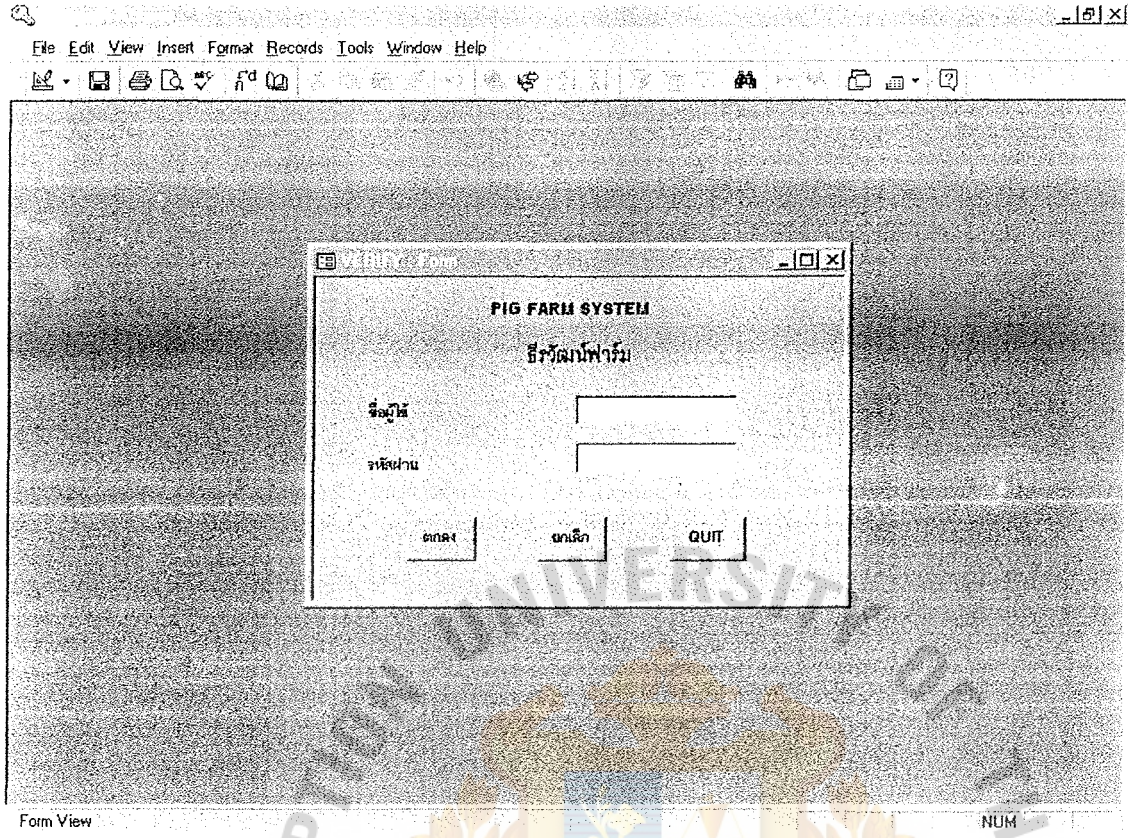

Figure E.1. Verify user name and password screen

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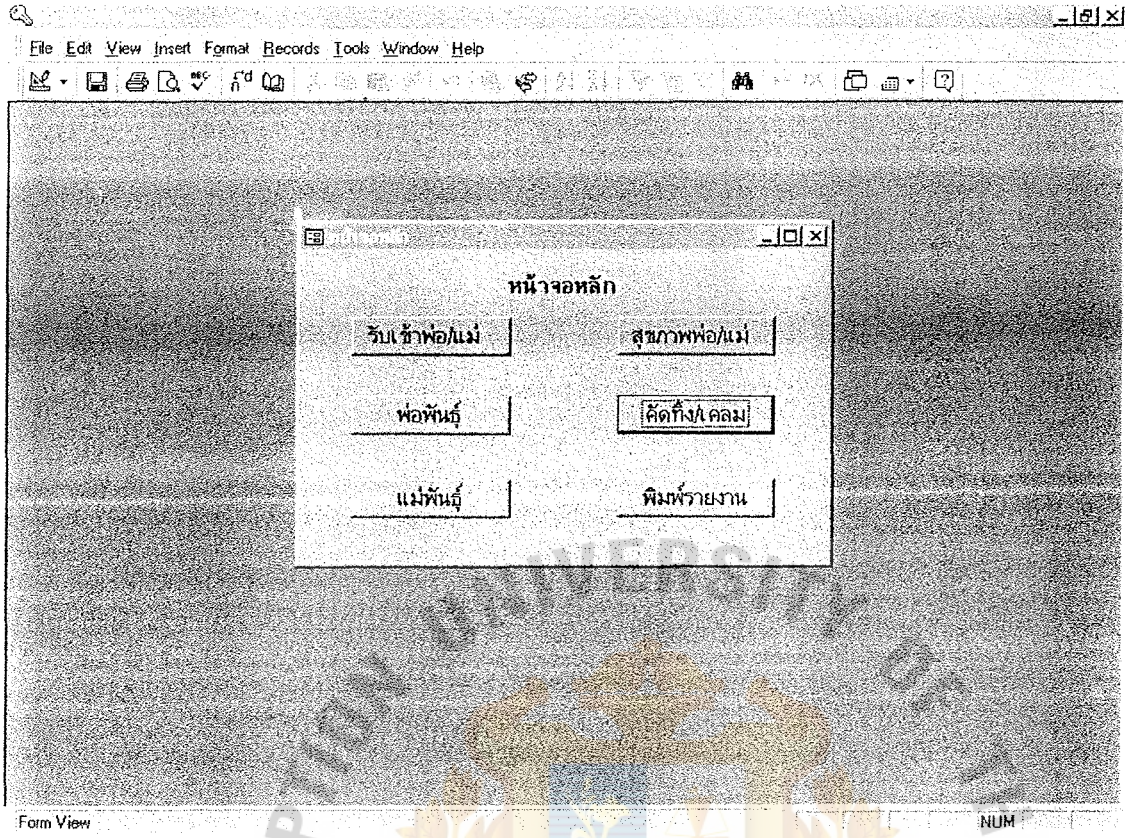

Figure E.2. Main Menu Screen

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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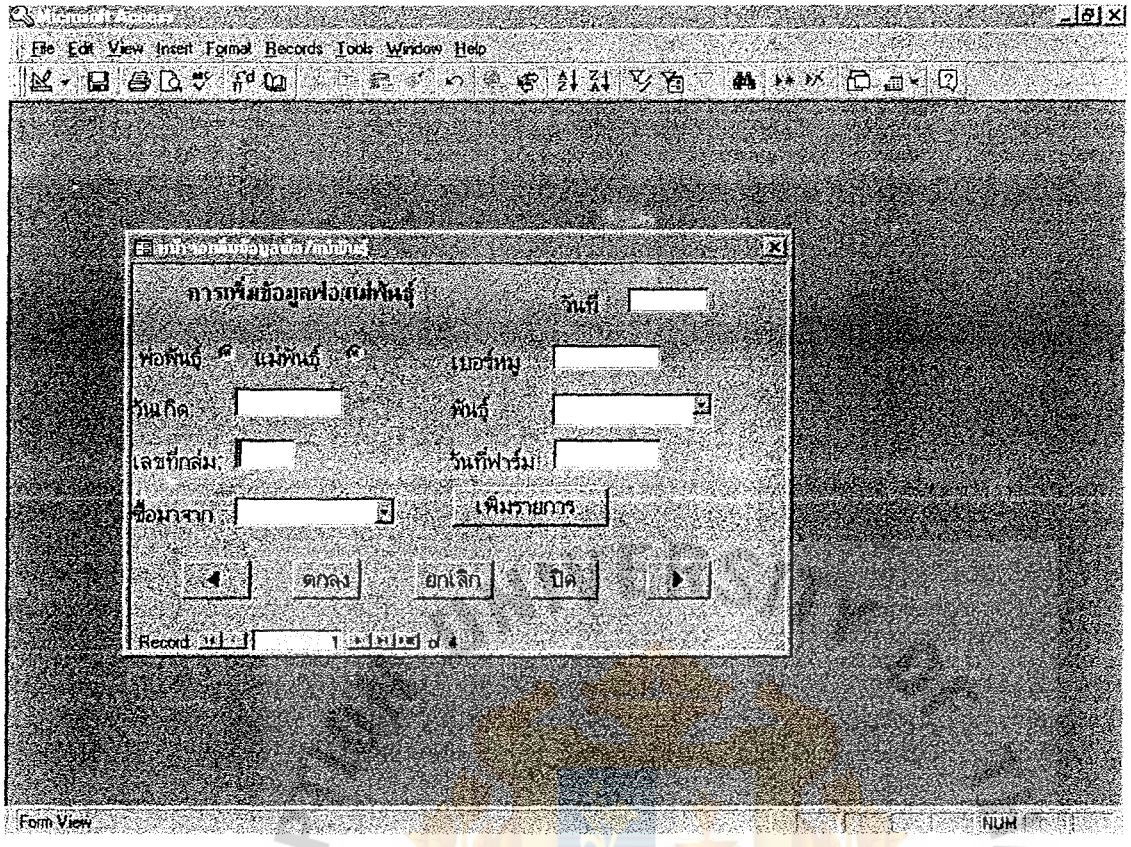

Figure E.3. Add Boar and Sow Screen

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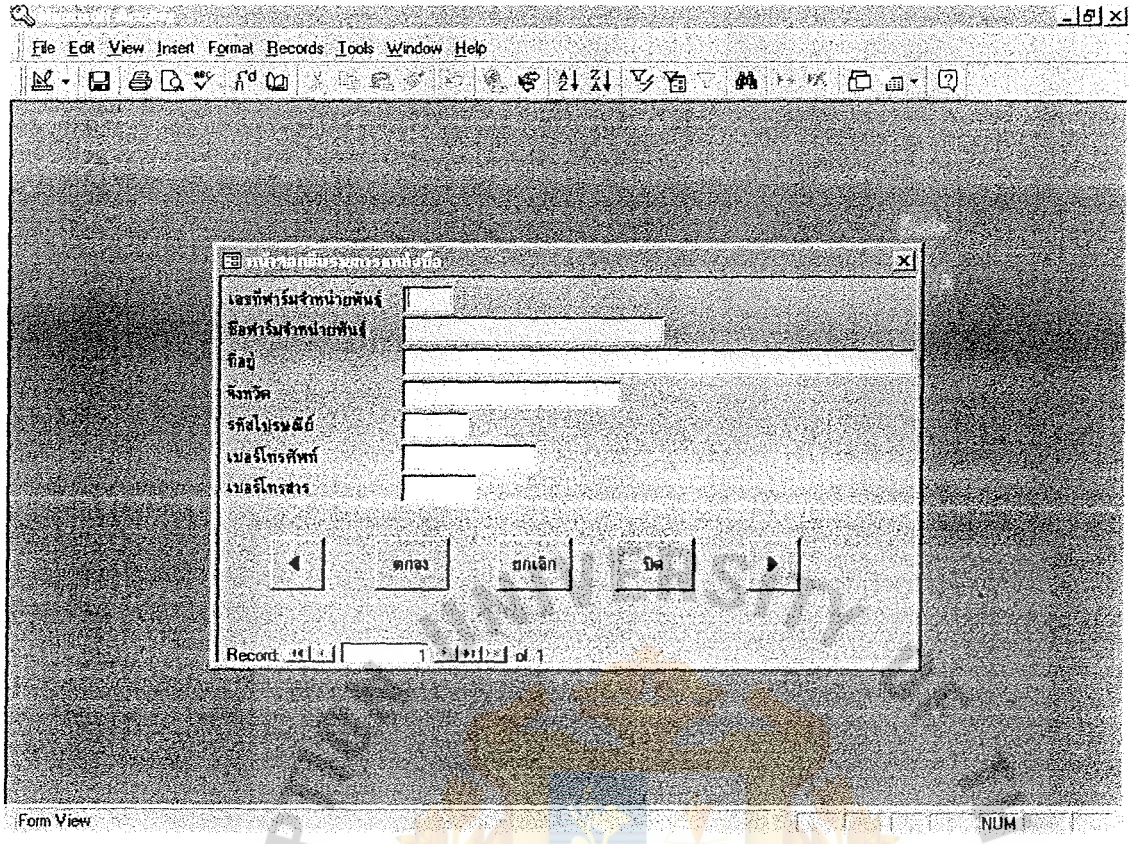

Figure E.4. Add Supplier Screen

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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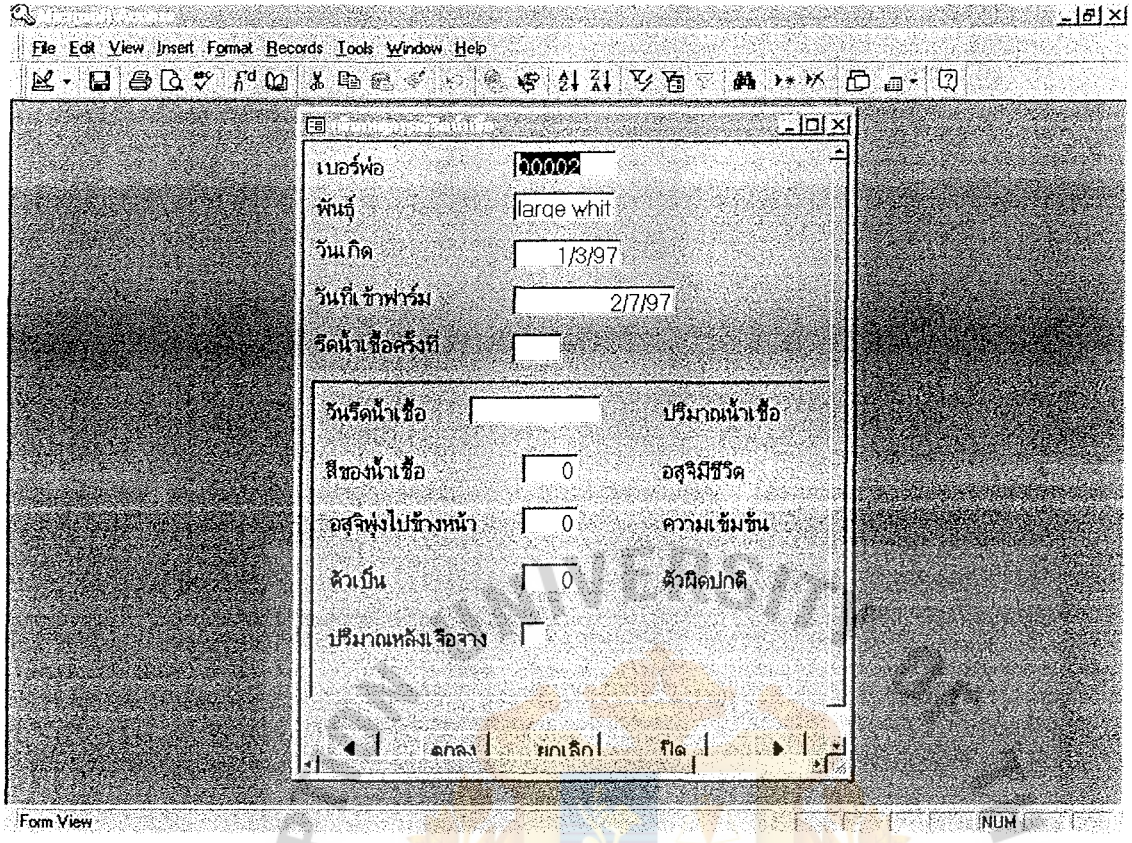

Figure E.5. Sperm Event Screen

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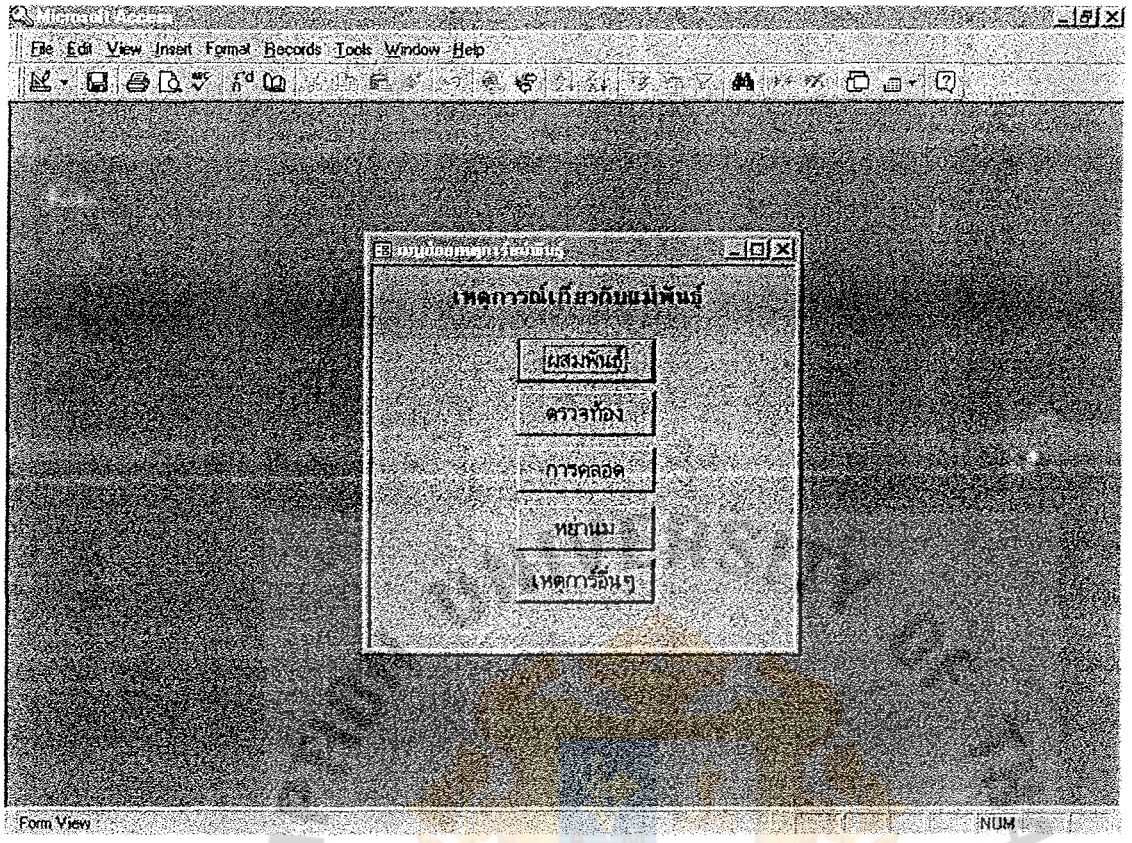

Figure E.6. Sow Menu

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BROTHERS OF ST GABRIEL
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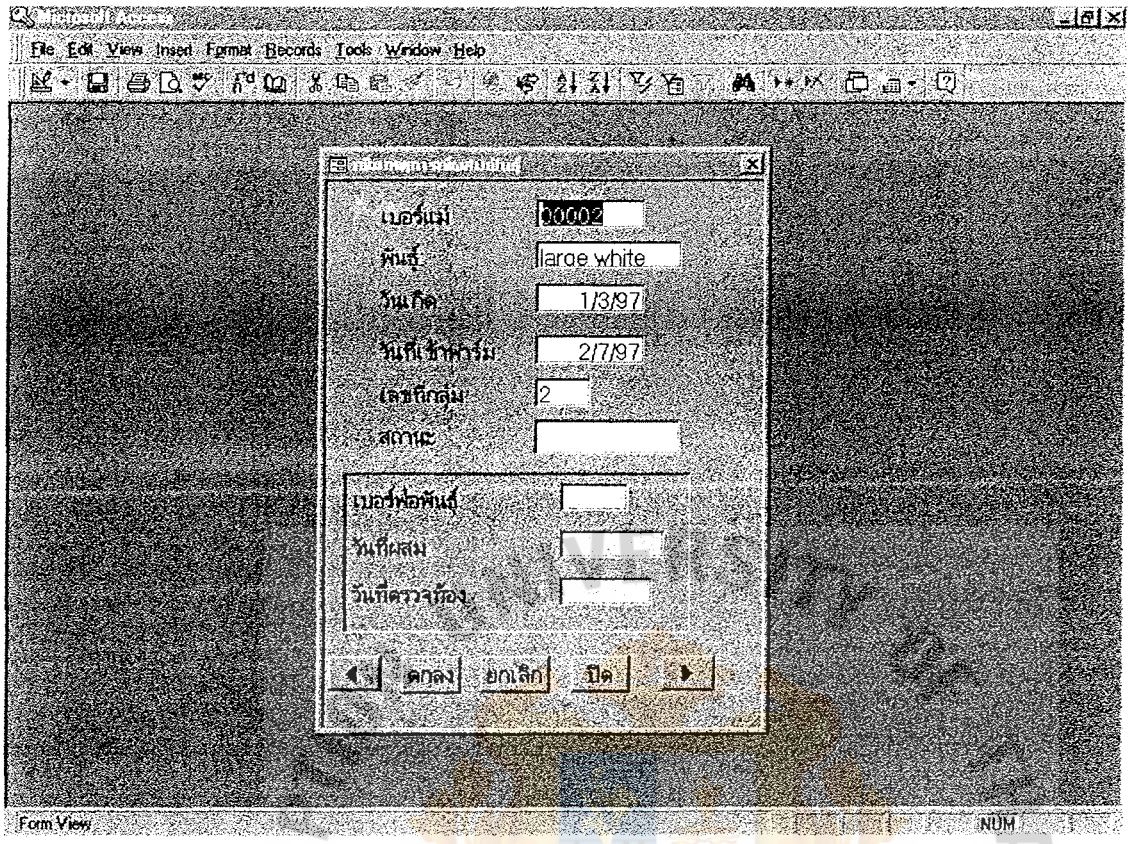

Figure E.7. Mate Event Screen

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BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
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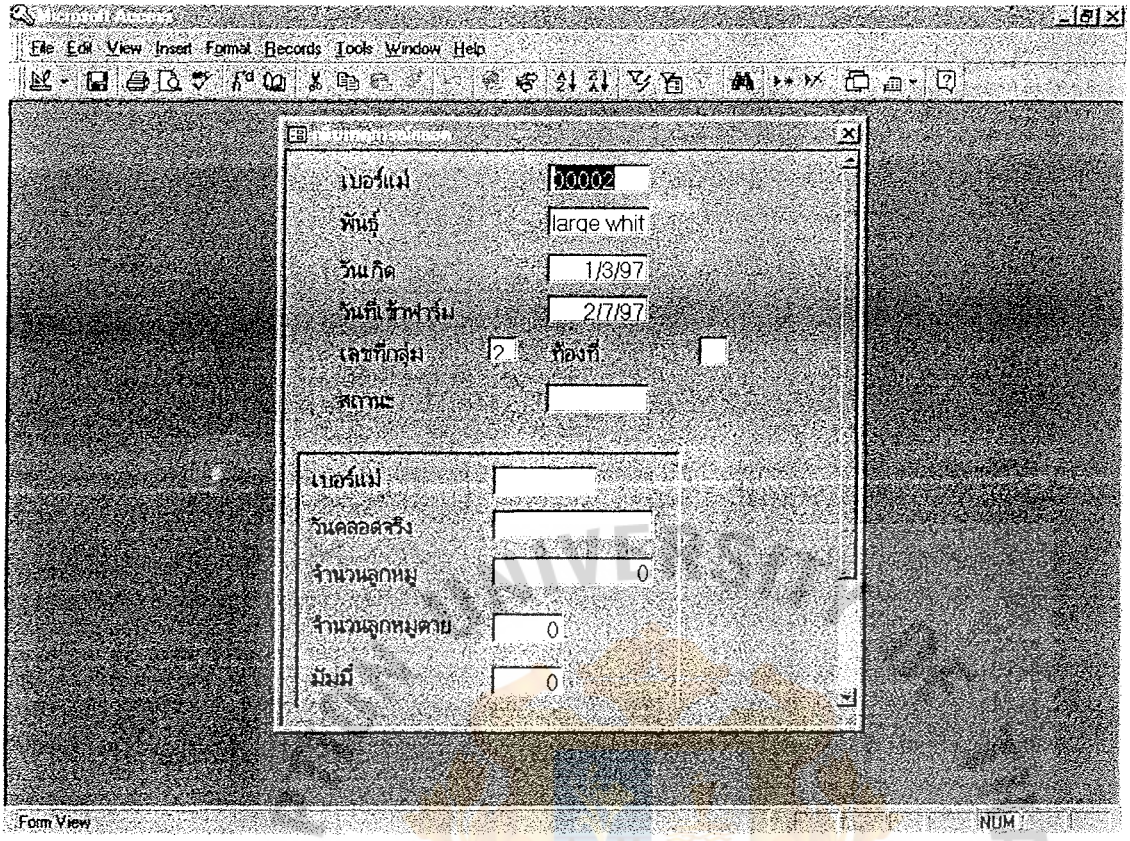

Figure E.8. Farrow Event Screen

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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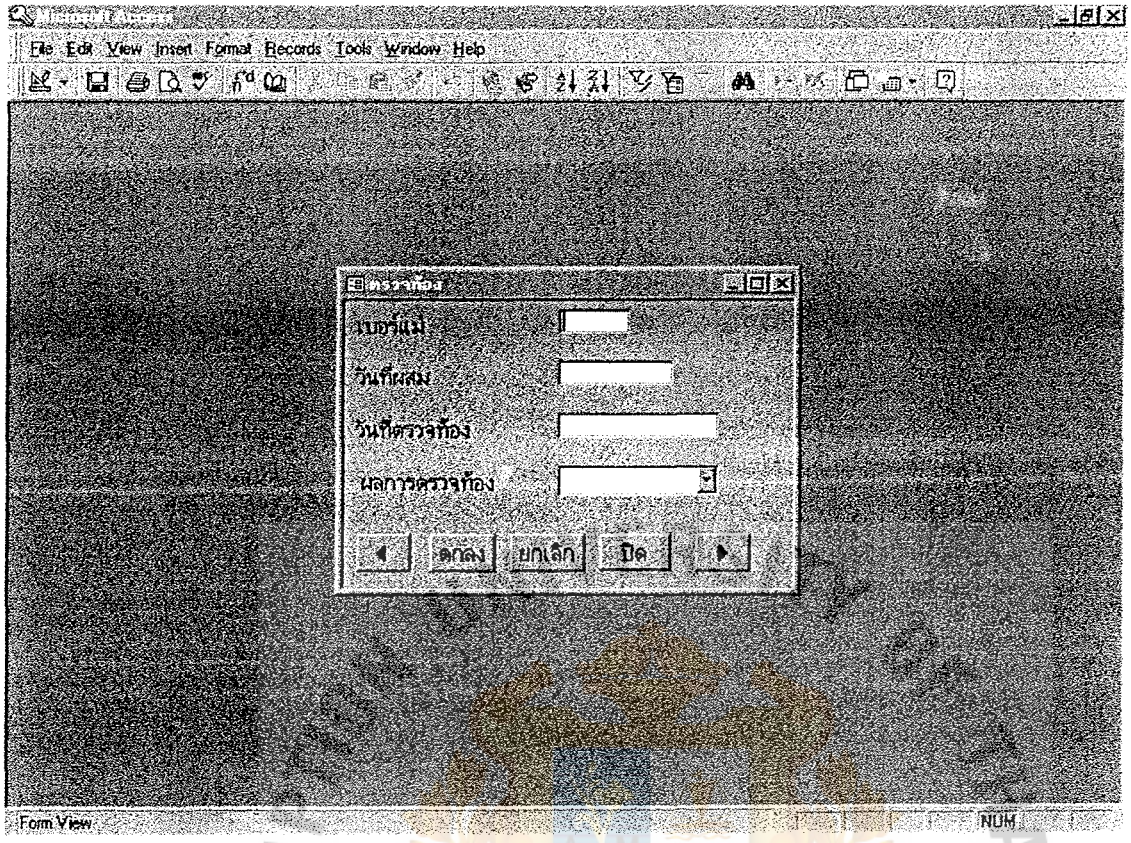

Figure E.9. Pregnant Check Screen

ASSUMPTION UNIVERSITY OF THAILAND
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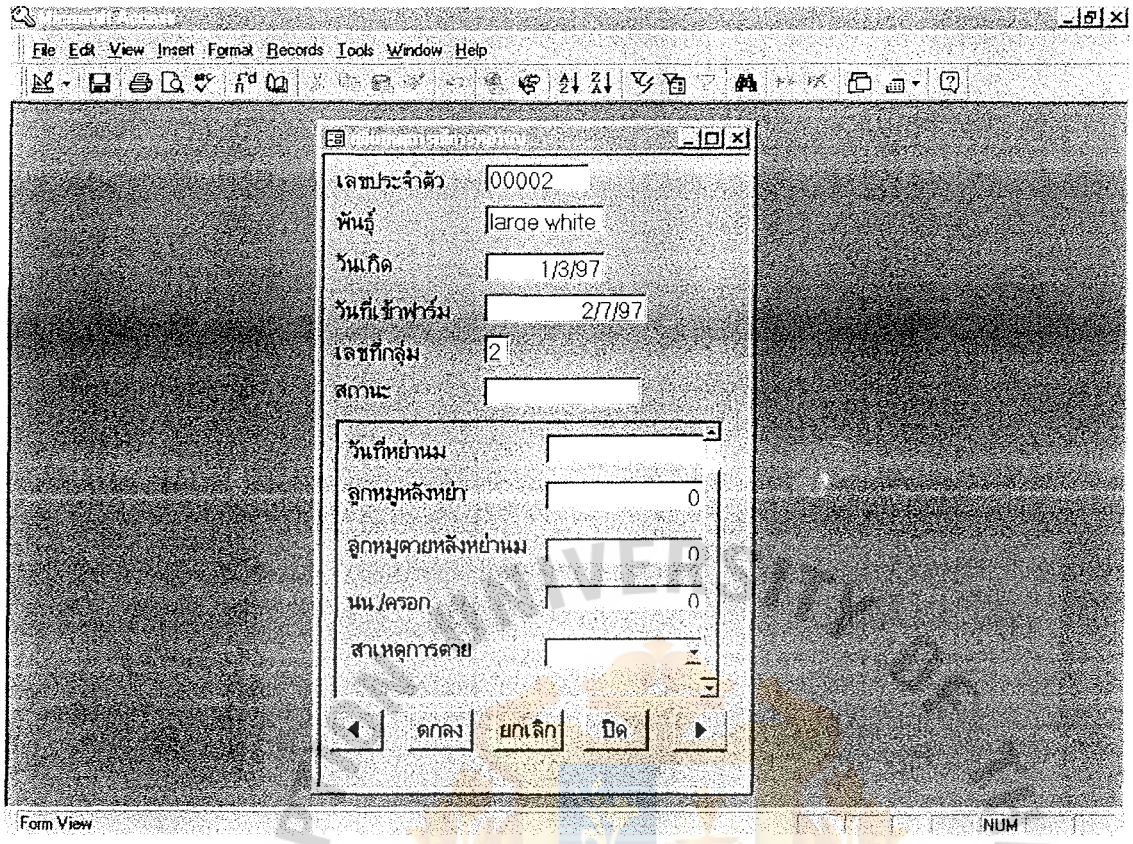

Figure E.10. Weaning Event Screen

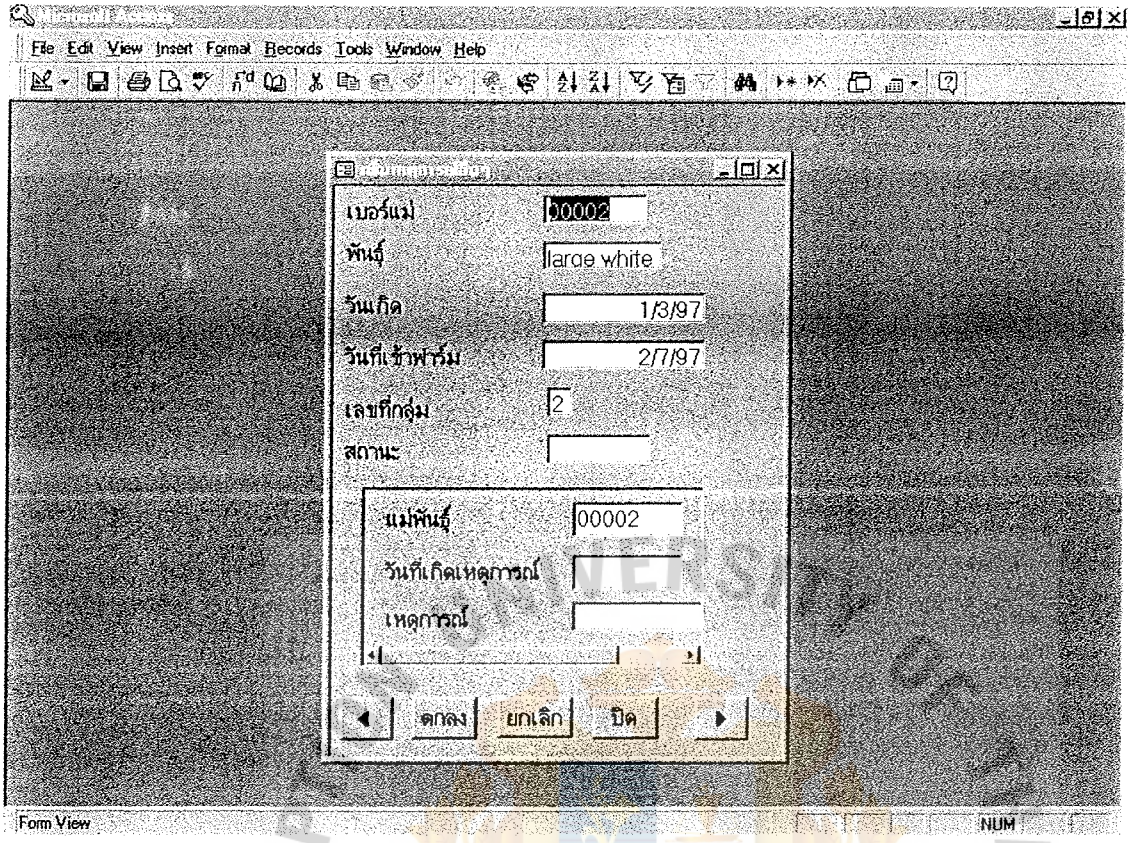

Figure E.11. Other Event Screen

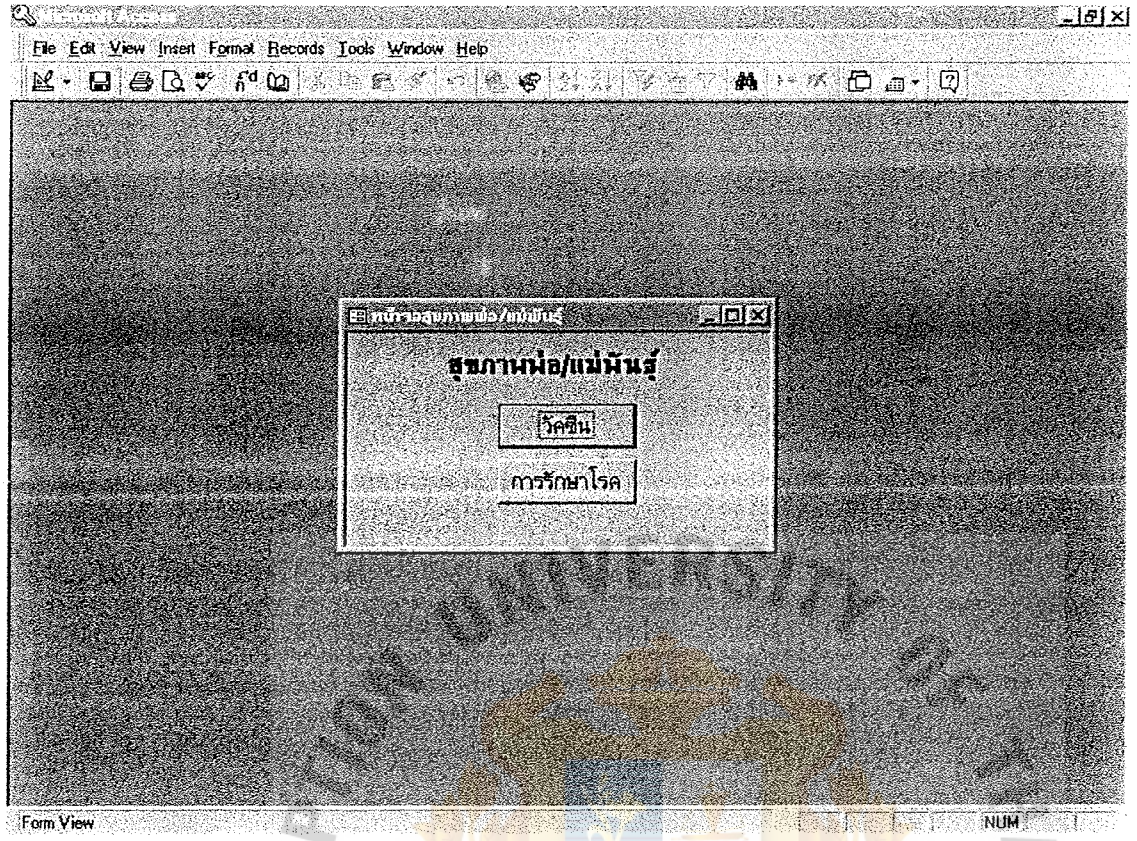

Figure E.12. Boar/Sow Health Menu

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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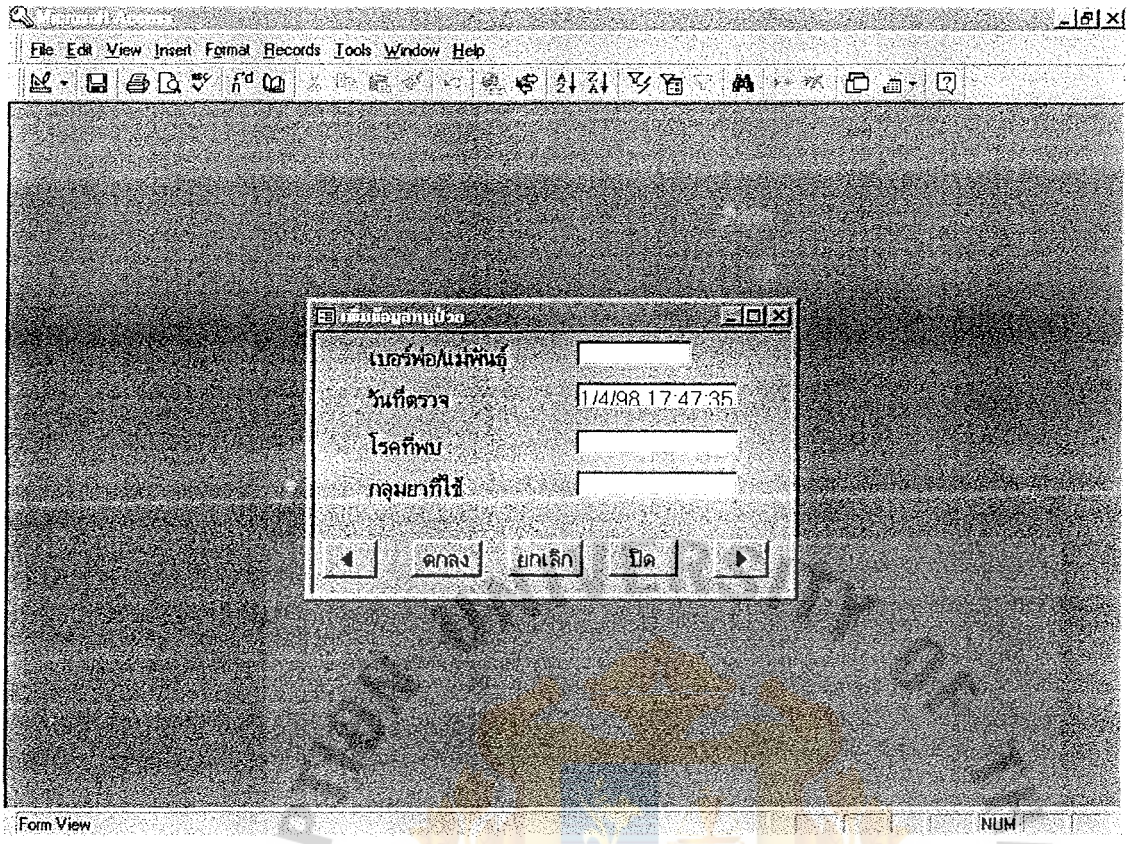

Figure E.13. Vaccine Event

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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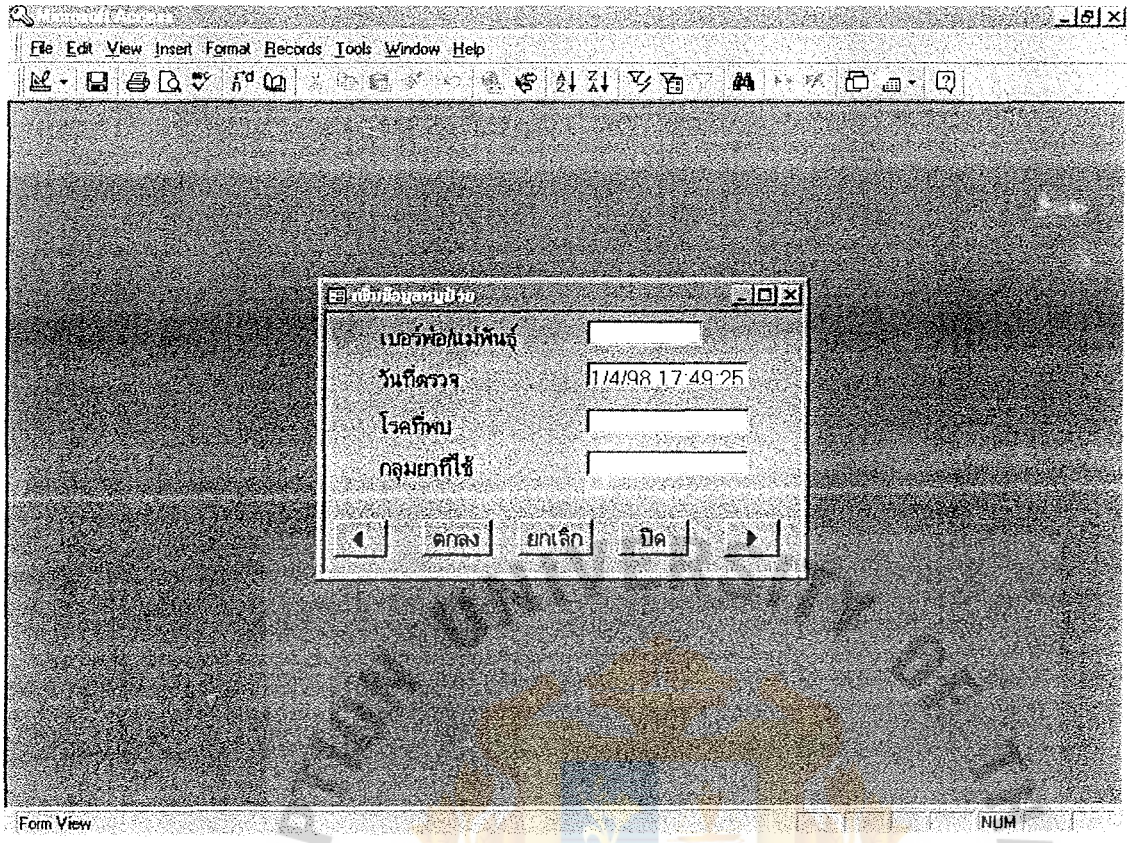

Figure E.14. Disease Event

ASSUMPTION UNIVERSITY OF THAILAND
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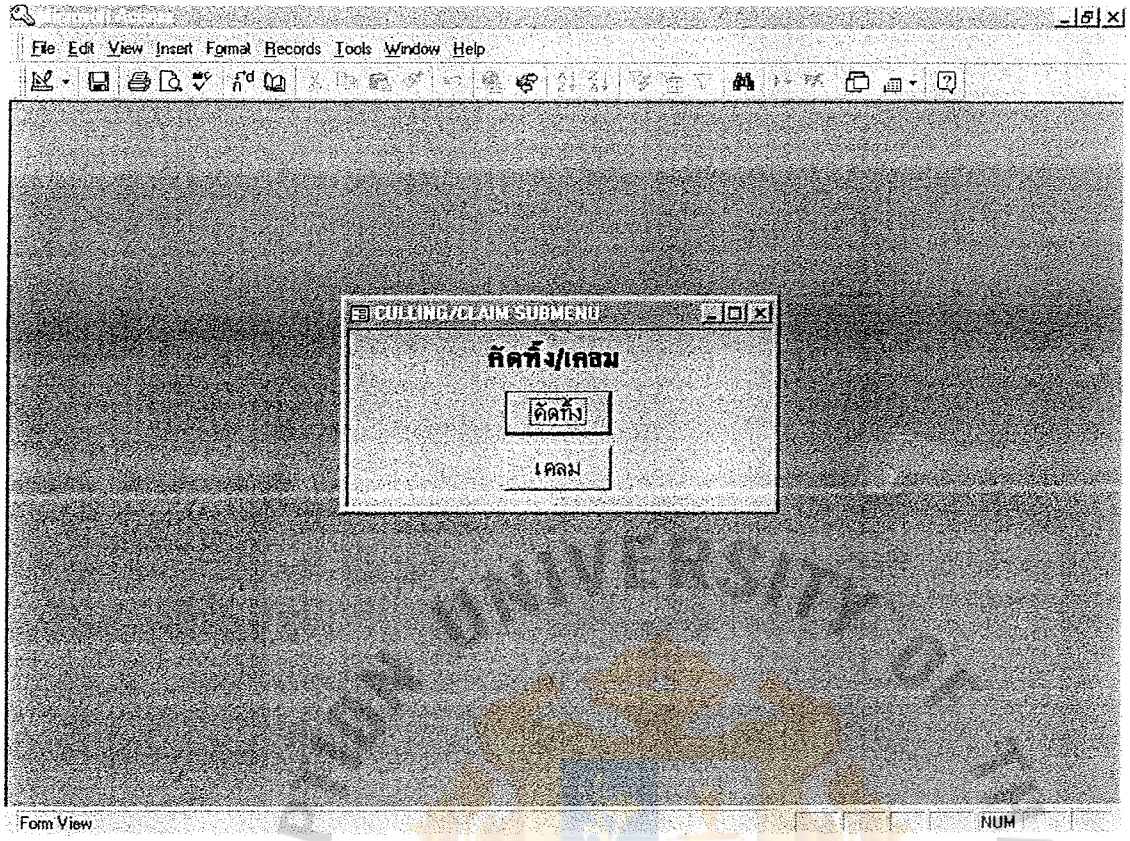

Figure E.15. Claim and Culling Menu

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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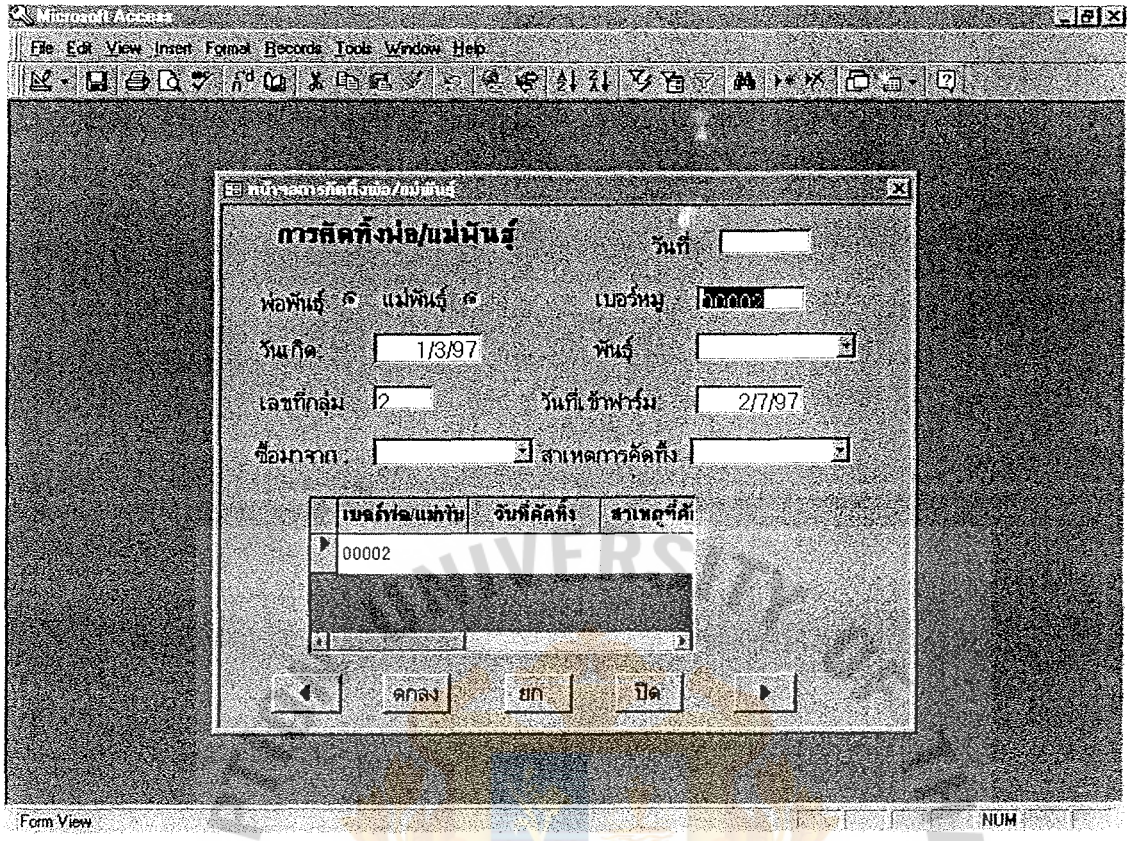

Figure E.16. Culling Event Screen

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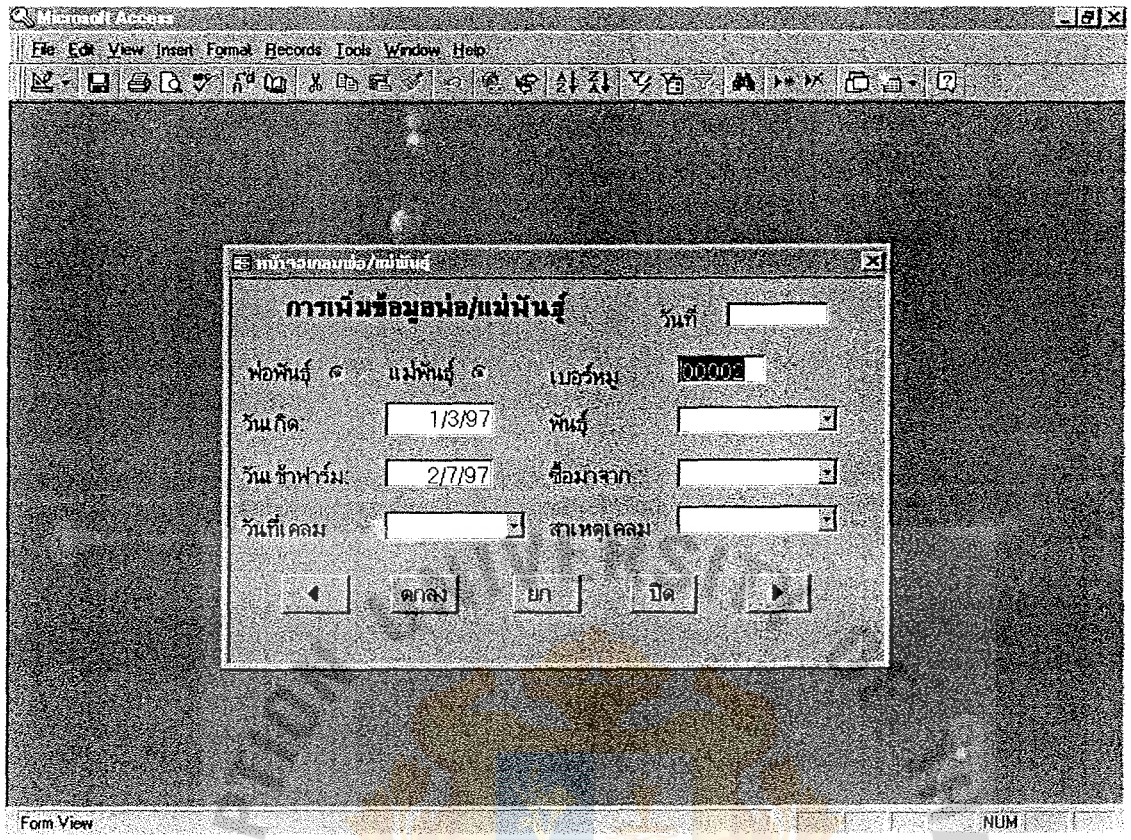

Figure E.17. Claim Event Screen

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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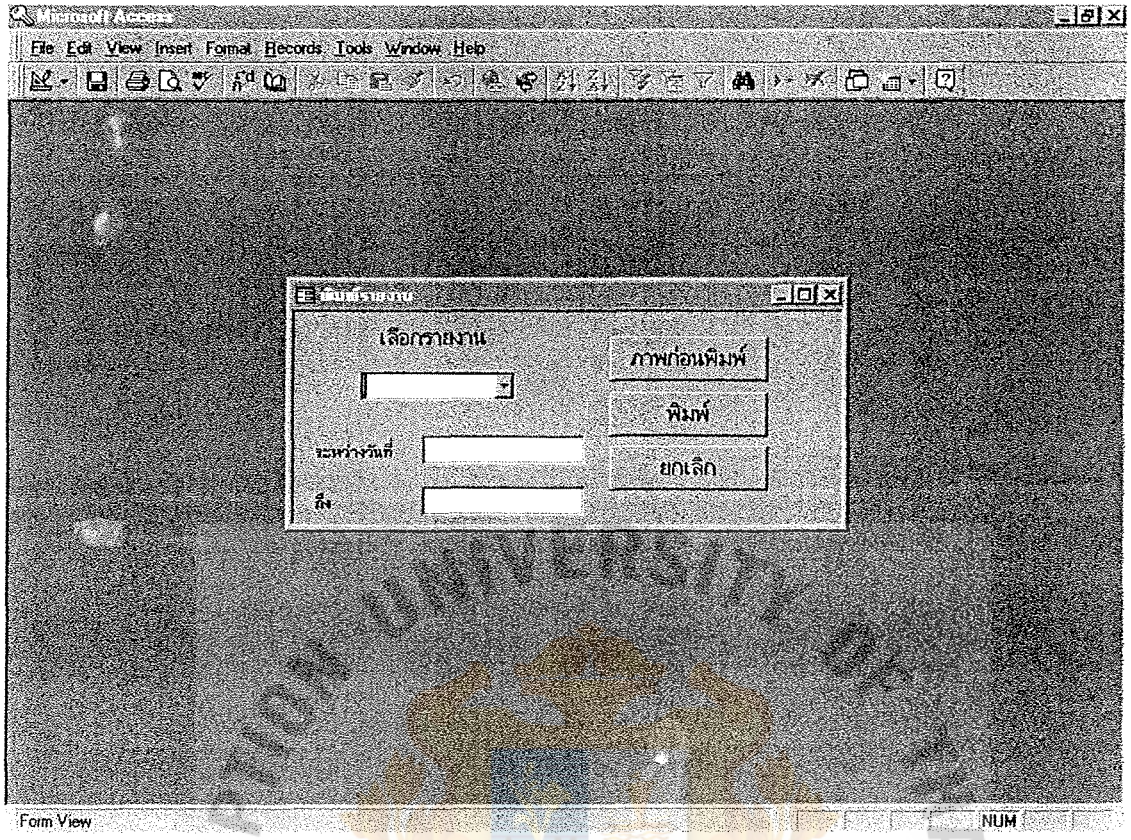

Figure E.18. Print Report Screen

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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APPENDIX F

Report and Form of PBSIS

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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ธีรวัฒน์ฟาร์ม

รายงาน : ประวัติแม่พันธุ์ วันที่พิมพ์ 99/99/99

เบอร์แม่ : xxxxx ท้องที่ : 9 สถานภาพ : xxxxxxx พันธุ์ :xxxxxxxxxxx

ท้องที่	วันที่	เหตุการณ์	รายละเอียด
1	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
2	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
3	99/99/99	xxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Figure F.1. Sow Report

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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ธีรวัฒน์ฟาร์ม

รายงาน : ประวัติพ่อพันธุ์ วันที่พิมพ์ 99/99/99

เบอร์พ่อ : xxxxx รีดน้ำเชื้อครั้งที่ : 9 พันธุ์ :xxxxxxxxxxx

วันที่	เหตุการณ์	รายละเอียด
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
99/99/99	xxxxxxxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Figure F.2. Boar Report

ASSUMPTION UNIVERSITY OF THAILAND
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ธีรวัฒน์ฟาร์ม

รายงาน : หมูนางที่ยังไม่หย่านม ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันคลอด	จำนวนวันที่ให้นม
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99

รวมทั้งสิ้น 99 ตัว

Figure F.3. Lactation Sow

ASSUMPTION UNIVERSITY OF THAILAND
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ธีรวัฒน์ฟาร์ม

รายงาน : รายละเอียดสเปิรม์ ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์พ่อ	วันที่เก็บน้ำเชื้อ	ปริมาตร	สี	อสุจิมีชีวิต	อสุจิพุ่งไปข้างหน้า	ความเข้มข้น	ตัวเป็น	ตัวผิดปกติ	การเจือจาง	โด๊ส	เก็บน้ำเชื้อครั้งที่
xxxxx	99/99/99	999	9.9	9.9	9.9	9.9	9.9	9.9	xxx	xxx	999
xxxxx	99/99/99	999	9.9	9.9	9.9	9.9	9.9	9.9	xxx	xxx	999
xxxxx	99/99/99	999	9.9	9.9	9.9	9.9	9.9	9.9	xxx	xxx	999
xxxxx	99/99/99	999	9.9	9.9	9.9	9.9	9.9	9.9	xxx	xxx	999
xxxxx	99/99/99	999	9.9	9.9	9.9	9.9	9.9	9.9	xxx	xxx	999

จำนวนทั้งสิ้น 99 ตัว

Figure F.4. Sperm Report

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รายงาน : การคัดทิ้ง ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่/พ่อ	วันที่คัดทิ้ง	สาเหตุการคัดทิ้ง
xxxxx	99/99/99	xxxxxxxxxxxxxxxxxxxxx
xxxxx	99/99/99	xxxxxxxxxxxxxxxxxxxxx
xxxxx	99/99/99	xxxxxxxxxxxxxxxxxxxxx
xxxxx	99/99/99	xxxxxxxxxxxxxxxxxxxxx
xxxxx	99/99/99	xxxxxxxxxxxxxxxxxxxxx

รวมทั้งสิ้น 99 ตัว

Figure F.5. Culling

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รายงาน : การส่งคืนพ่อและแม่พันธ์ ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่/พ่อ	วันที่ส่งคืน	วันที่อยู่ในฟาร์ม	สาเหตุการคัดทิ้ง
xxxxx	99/99/99	999	xxxxxxxxxxxxxxxxx
xxxxx	99/99/99	999	xxxxxxxxxxxxxxxxx
xxxxx	99/99/99	999	xxxxxxxxxxxxxxxxx
xxxxx	99/99/99	999	xxxxxxxxxxxxxxxxx
xxxxx	99/99/99	999	xxxxxxxxxxxxxxxxx

รวมทั้งสิ้น 99 ตัว

Figure F.6. Claim Report

ASSUMPTION UNIVERSITY OF THAILAND
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รายงาน : หมูสาวยังไม่ผสม ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันเข้าฝูง	จำนวนวันท้องว่าง
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99

รวมทั้งสิ้น 99 ตัว

Figure F.7. Dry Sow

ASSUMPTION UNIVERSITY OF THAILAND
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ธีรวัฒน์ฟาร์ม

รายงาน : การแท้ง ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันที่พบว่าแท้ง	แท้งมา (วัน)	แท้งเมื่อตั้งท้องได้	ลำดับท้อง
xxxxx	99/99/99	99	999	99
xxxxx	99/99/99	99	999	99
xxxxx	99/99/99	99	999	99
xxxxx	99/99/99	99	999	99

รวมทั้งสิ้น 99 ตัว

Figure F.8. Abort

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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มหาวิทยาลัยอัสสัมชัญ

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รายงาน : แม่ท้องลม ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันที่พบท้องลม	พบมาแล้ว (วัน)
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99
xxxxx	99/99/99	99

รวมทั้งสิ้น 99 ตัว

Figure F.9. Not Pregnant

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
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รายงาน : แม่ที่ตรวจพบว่าไม่ท้องในวันตรวจท้อง ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่พบว่าไม่ท้อง
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.10. Not Found Pregnant At Pregnant Date

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ธีรวัฒน์ฟาร์ม

รายงาน หมูนางผสมแล้ว รอตรวจสัด/ตรวจท้อง ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	จำนวนครั้งที่ผสม	ครบ 21 วัน	ครบ 35 วัน
xxxxx	99/99/99	9	99/99/99	99/99/99
xxxxx	99/99/99	9	99/99/99	99/99/99
xxxxx	99/99/99	9	99/99/99	99/99/99
xxxxx	99/99/99	9	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.11. Check Mated Sow

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ธีรวัฒน์ฟาร์ม

รายงาน : กำหนดเข้าคลอด กำหนดคลอดในช่วง 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	กำหนดคลอด	เกินกำหนดคลอด
xxxxx	99/99/99	99/99/99	99
xxxxx	99/99/99	99/99/99	99
xxxxx	99/99/99	99/99/99	99
xxxxx	99/99/99	99/99/99	99
xxxxx	99/99/99	99/99/99	99

รวมทั้งสิ้น 99 ตัว

Figure F.12. Farrowing

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ธีรวัฒน์ฟาร์ม

รายงาน : แม่พันธุ์ที่ต้องทำวัคซีนสุนัขบ้าเชื้อตาย 4 สัปดาห์ก่อนคลอด

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่ควรทำวัคซีน	กำหนดคลอด
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.13. Pseudorabies Vaccine For Sow

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รายงาน : แม่พันธุ์ที่ต้องทำวัคซีนมัยโคพลาสม่า 2 สัปดาห์ก่อนคลอด

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่ควรทำวัคซีน	กำหนดคลอด
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.14. Mycopasama Vaccine For Sow

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ธีรวัฒน์ฟาร์ม

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ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่ควรทำวัคซีน	กำหนดคลอด
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.15. Swine Fever Vaccine For Sow

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รายงาน : แม่พันธุ์ที่ต้องทำวัคซีนพาโว 2 สัปดาห์หลังคลอด

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่ควรทำวัคซีน	กำหนดคลอด
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.16 Parvorirus Vaccine For Sow

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ธีรวัฒน์ฟาร์ม

รายงาน : แม่พันธุ์ที่ต้องทำวัคซีนถ่ายพยาธิ 2 สัปดาห์ก่อนคลอด

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์แม่	วันผสม	วันที่ควรทำวัคซีน	กำหนดคลอด
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.17. Worm Control Vaccine For Sow

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ธีรวัฒน์ฟาร์ม

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ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์พ่อ	วันที่ทำวัคซีนครั้งที่แล้ว	วันที่ควรทำวัคซีน
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.18. Swine Fever Vaccine For Boar

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รายงาน : พ่อพันธุ์ที่ต้องทำวัคซีนปากเปื่อยเท้าเปื่อย

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์พ่อ	วันที่ทำวัคซีนครั้งที่แล้ว	วันที่ควรทำวัคซีน
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.19. Foot And Mouth Vaccine For Boar

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ธีรวัฒน์ฟาร์ม

รายงาน : พ่อพันธุ์ที่ต้องทำวัคซีน PSEUDORABIES

ระหว่างวันที่ 99/99/99 ถึง 99/99/99

วันที่พิมพ์ 99/99/99

เบอร์พ่อ	วันที่ทำวัคซีนครั้งที่แล้ว	วันที่ควรทำวัคซีน
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99
xxxxx	99/99/99	99/99/99

รวมทั้งสิ้น 99 ตัว

Figure F.20. Pseudorabies For Boar

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ธีรวัฒน์ฟาร์ม

รายงาน : ผลการดำเนินงาน ระหว่างวันที่ 99/99/99 ถึง 99/99/99 วันที่พิมพ์ 99/99/99

การผสม	มค 40	กพ 40	มีค 40	เมย 40	พค 40	มิย 40	กค 40	สค 40	กย 40	ตค 40	พย 40	ธค 40	มค 40 ธค 40
ผสมทั้งสิ้น	999	999	999	999	999	999	999	999	999	999	999	999	9999
ผสมครั้งที่ 1	999	999	999	999	999	999	999	999	999	999	999	999	9999
ผสมมากกว่า 1 ครั้ง	99	99	99	99	99	99	99	99	99	99	99	99	999
% ผสมซ้ำ	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ช่วงหย่านมถึงผสมครั้งแรก	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
%หมูนางผสมใน 7 วันหลังหย่านม	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
การเข้าคลอด													
จำนวนแม่เข้าคลอดจริง	999	999	999	999	999	999	999	999	999	999	999	999	9999
จำนวนท้องเฉลี่ยแม่ที่เข้าคลอด	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
ลูกคลอดมีชีวิตทั้งหมด	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	99999
จำนวนลูกทั้งหมดเฉลี่ย/ครอก	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ลูกคลอดมีชีวิตเฉลี่ย/ครอก	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ลูกตายคลอดเฉลี่ย/ครอก	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	99.9
% ตายคลอด	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
% มัมมี่	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
ครอกลูกมีชีวิต < 7 ตัว	99	99	99	99	99	99	99	99	99	99	99	99	999
% ครอกลูกมีชีวิต < 7 ตัว	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
น้ำหนักแรกคลอดเฉลี่ย	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
อัตราเข้าคลอด	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ระยะอุ้มท้องเฉลี่ย	999	999	999	999	999	999	999	999	999	999	999	999	999
จำนวนครอก/แม่/ปีเฉลี่ย	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
การหย่านม													
ครอกหย่านมทั้งหมด	999	999	999	999	999	999	999	999	999	999	999	999	9999
ลูกหย่านมทั้งหมด	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	99999
เฉลี่ยลูกหย่านม/ครอก	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
ลูกหย่านม/แม่/ครอกเฉลี่ย	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
% ลูกตายก่อนหย่านม	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
น้ำหนักหย่านมเฉลี่ย	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
ระยะเลี้ยงลูกเฉลี่ย	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ลูกหย่านม/แม่ทับ/ปีเฉลี่ย	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
ลูกหมูเป็นฐานคิดอัตราการตาย	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	99999

Figure F.21. Overview Report

บันทึกการตรวจคุณภาพน้ำเชื้อสุกร										
พันธุ์.....เบอร์.....										
วัน เดือน ปี	ปริมาตร	สี	อสุจิมีชีวิต	อสุจิพุ่งไปข้างหน้า	ความเข้มข้น	ตัวเป็น	ตัวผิดปกติ	อัตราการเจือจาง	จำนวนโดส	หมายเหตุ

Figure F.22. Sperm Form

บันทึกประวัติหมูพันธุ์

พ่อ

เบอร์หู

แม่

ทะเบียนประจำฟาร์ม.....พันธุ์.....ที่มา.....วันเกิด.....จำนวนเต้านม.....คู่

ครอกที่	การผสม		รายงานการคลอด								การหย่านม				หมายเหตุ
	วันผสม	เบอร์พ่อ	กำหนดการคลอด	วันคลอดจริง	แรกคลอด	ตาย	มัมมี่	พิการ	เหลือ	น.น. เฉ	วันหย่านม	ผู้	เมีย	น.น. เฉลี่ย	(ตาย,คัดทิ้ง,ฝาก,ย้าย,อื่นๆ)
1															
2															
3															
4															

Figure F.23. Sow Card

รายการวัคซีน

☐ พ่อพันธุ์ กลุ่มที่.....วันที่ทำวัคซีน.....

☐ แม่พันธุ์ ชื่อวัคซีน.....

เบอร์หมู	เบอร์คอก	หมายเหตุ

Figure F.24. Vaccine Form

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บันทึกเหตุการณ์อื่น ๆ

วันที่เกิดเหตุการณ์.....

เบอร์หมู	พ่อพันธุ์	แม่พันธุ์	เบอร์คอก	เหตุการณ์	หมายเหตุ

ASSUMPTION UNIVERSITY OF THAILAND
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Figure F.25. Other Events Form

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APPENDIX G

Conceptual Schema and Tables

ASSUMPTION UNIVERSITY OF THAILAND
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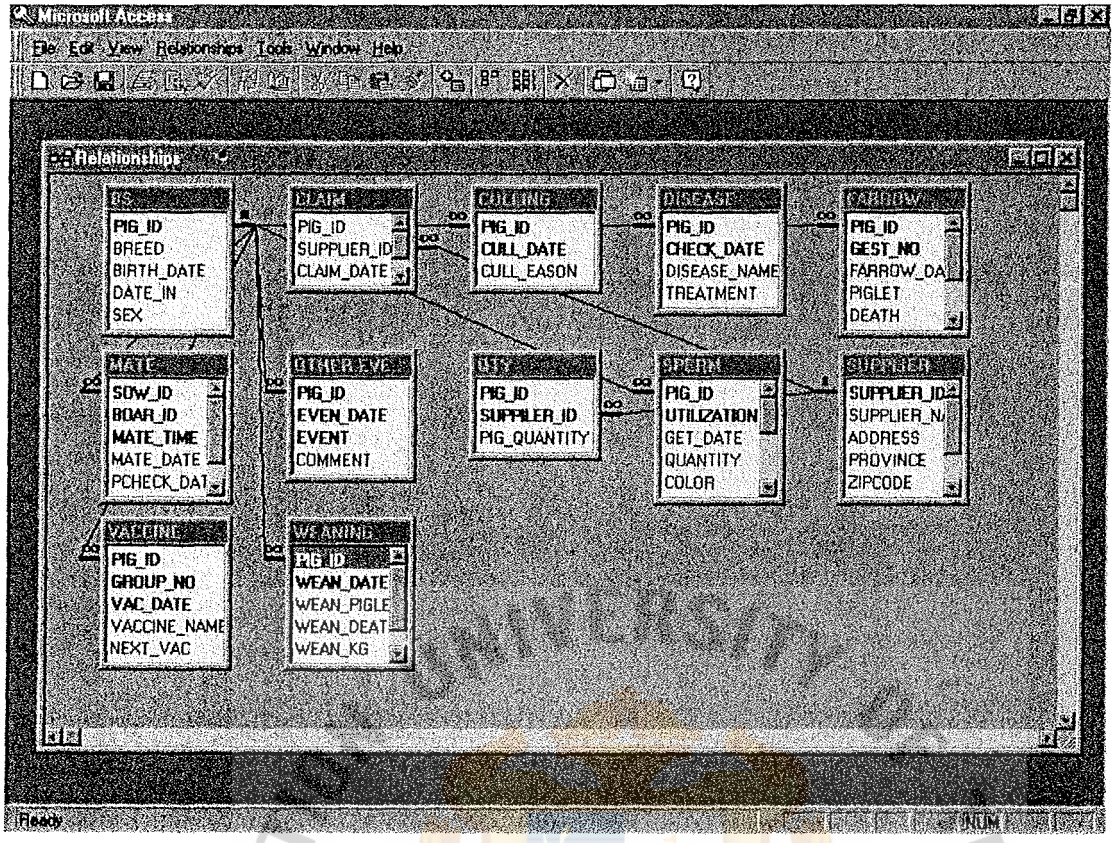

Figure G.1. Table Conceptual Schema

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
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มหาวิทยาลัยอัสสัมชัญ

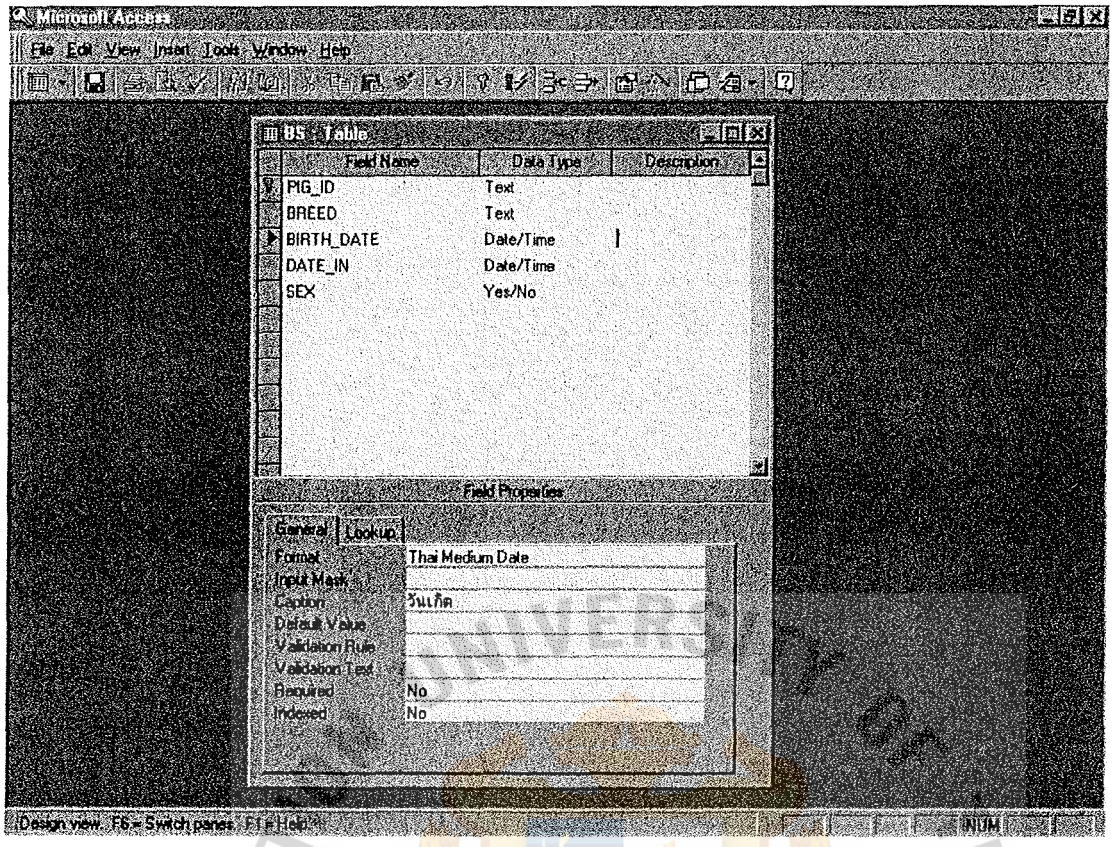

Figure G.2. Table BS

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

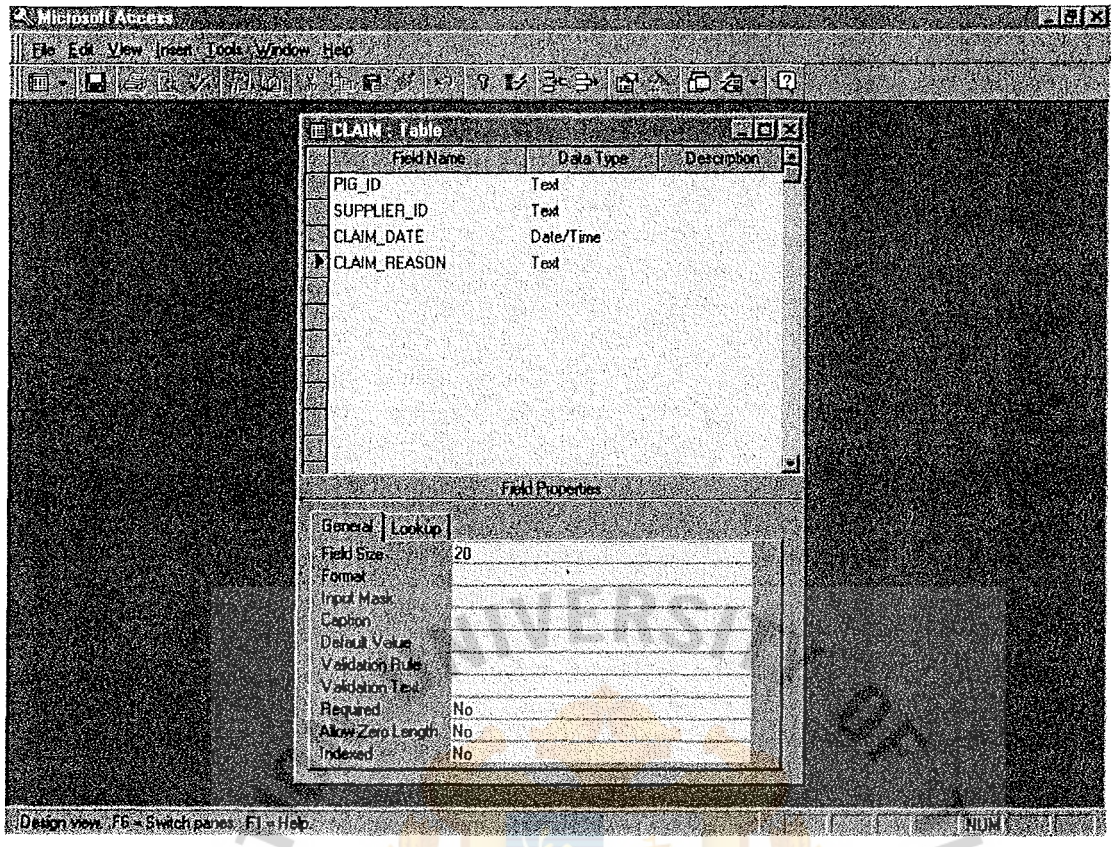

Figure G.3. Table CLAIM

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

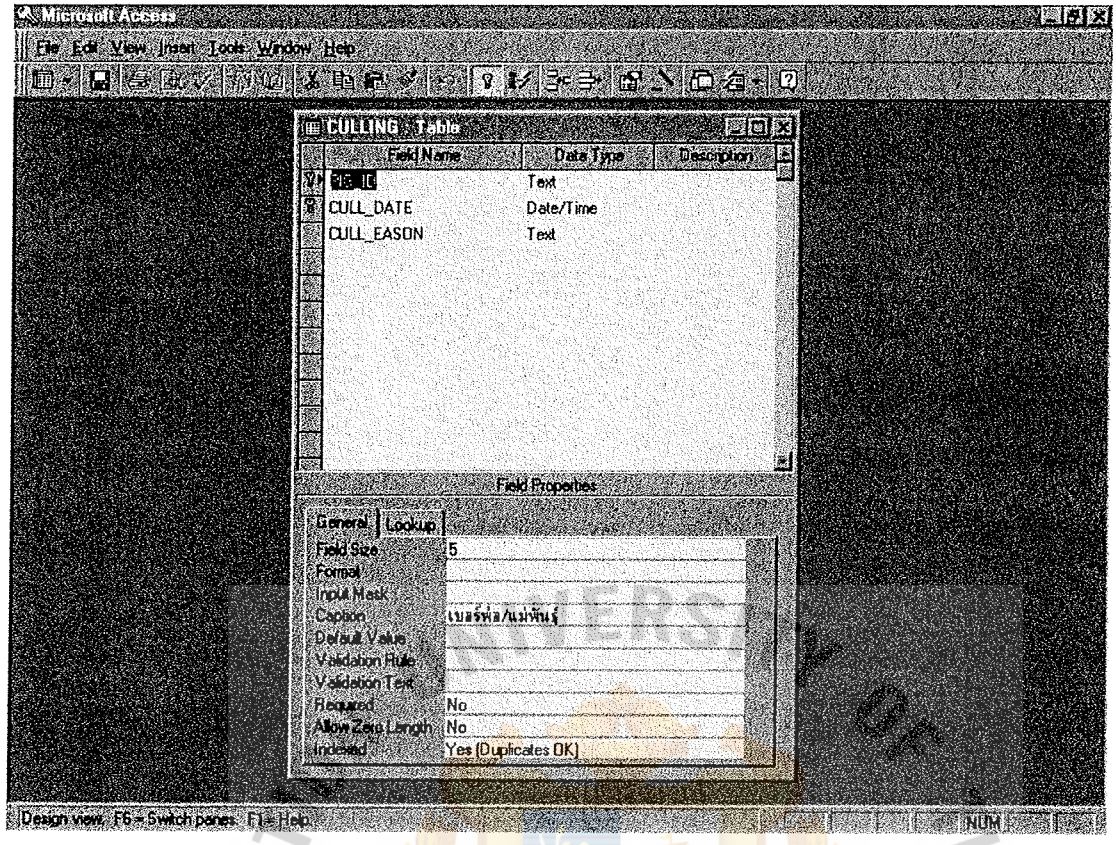

Figure G.4. Table CULLING

ASSUMPTION UNIVERSITY OF THAILAND
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มหาวิทยาลัยอัสสัมชัญ

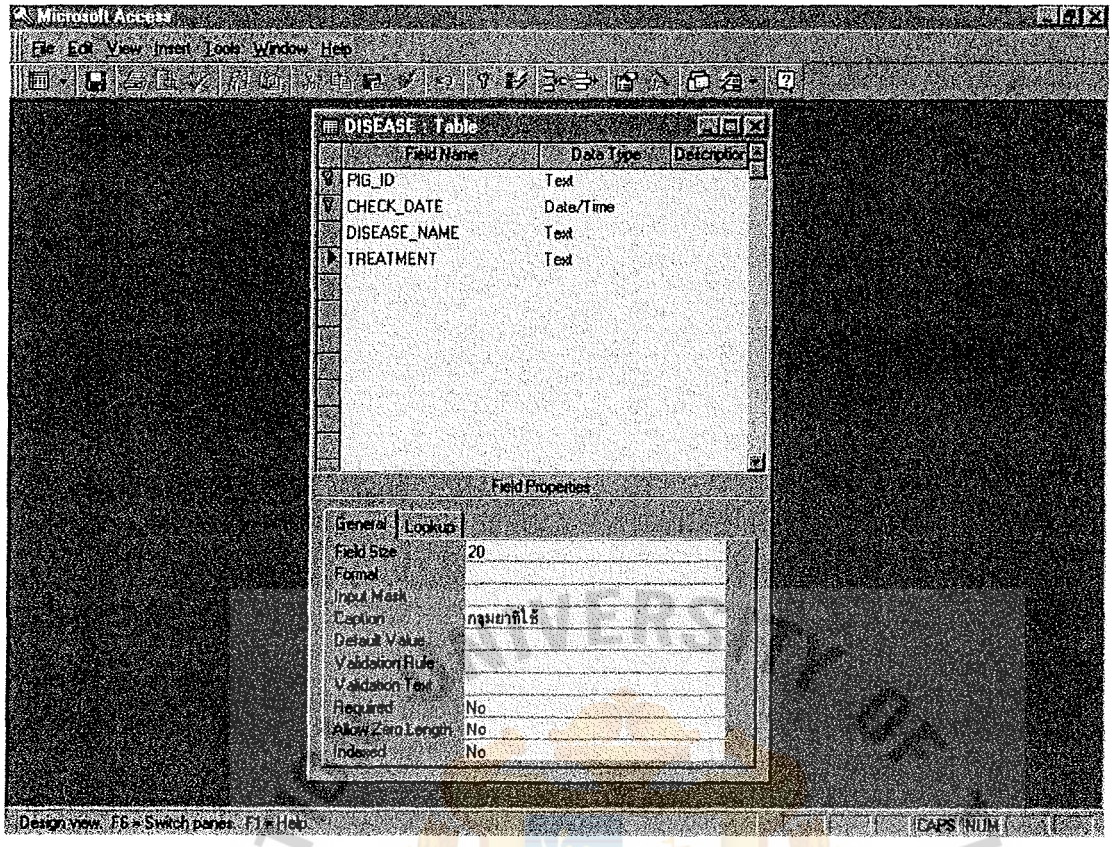

Figure G.5. Table DISEASE

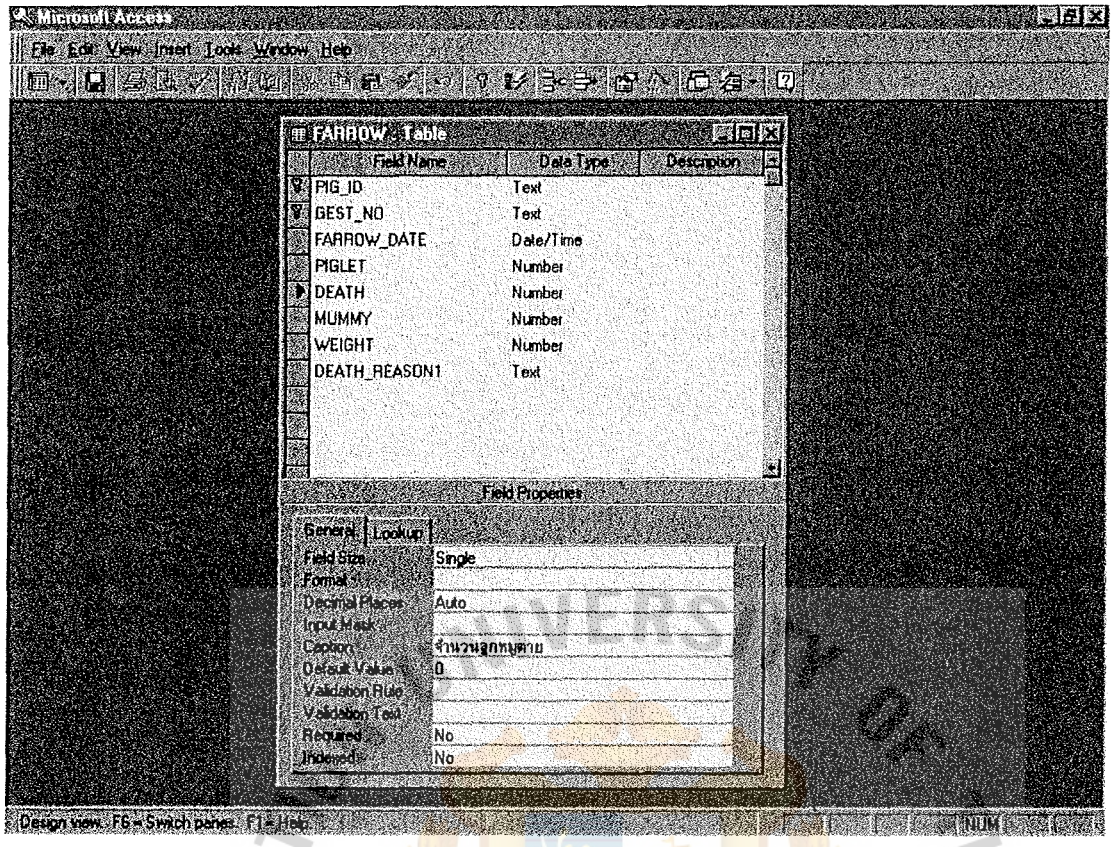

Figure G.6. Table FARROW

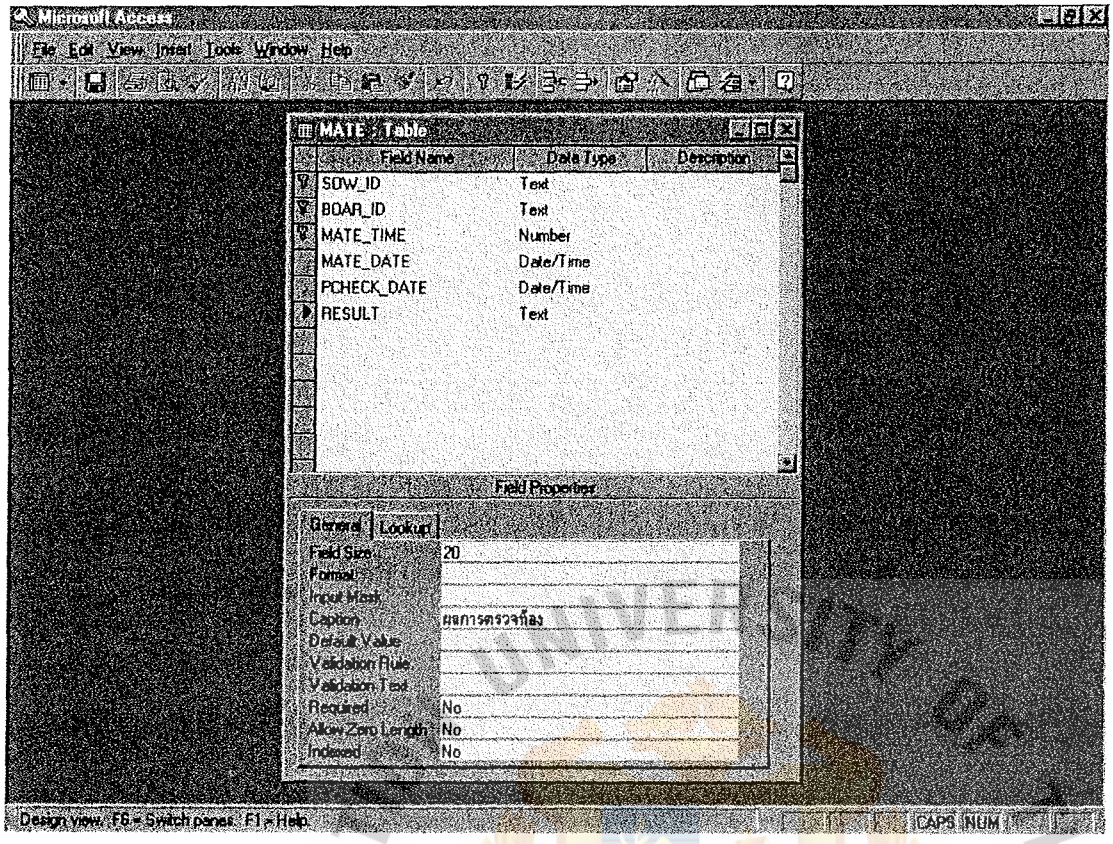

Figure G.7. Table MATE

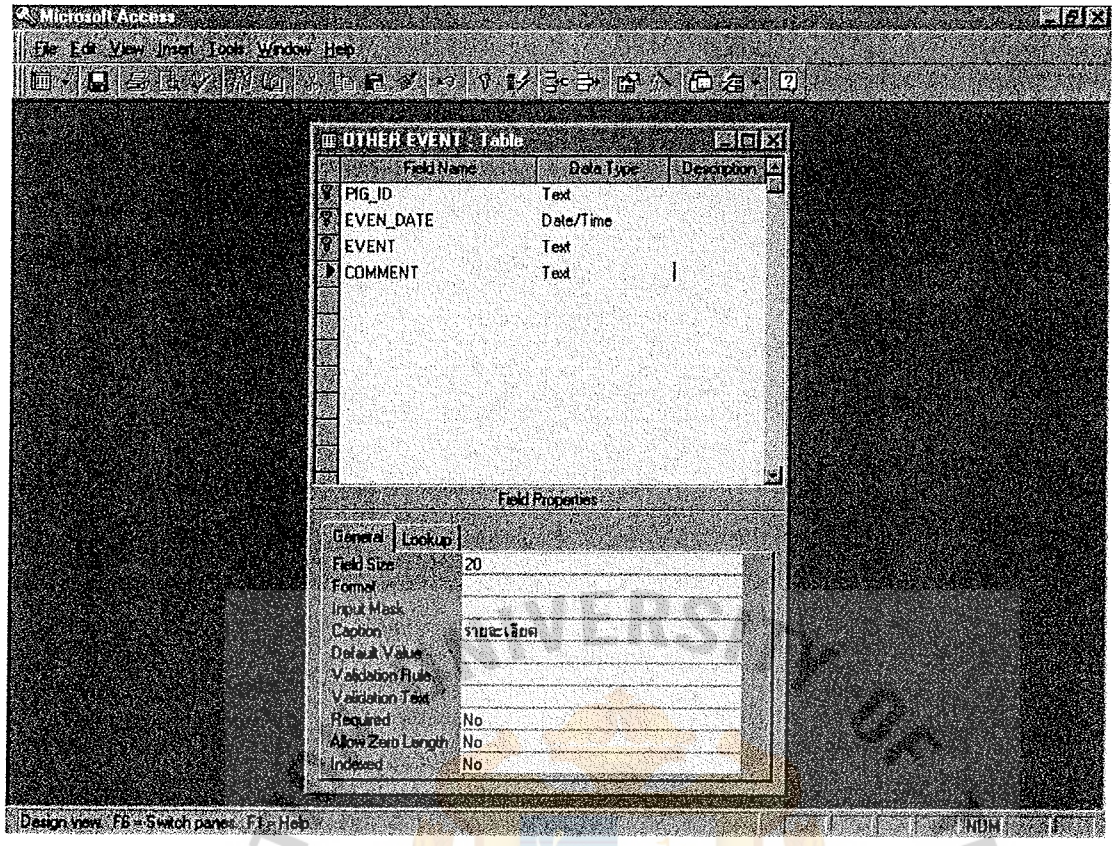

Figure G.8. Table OTHER EVENT

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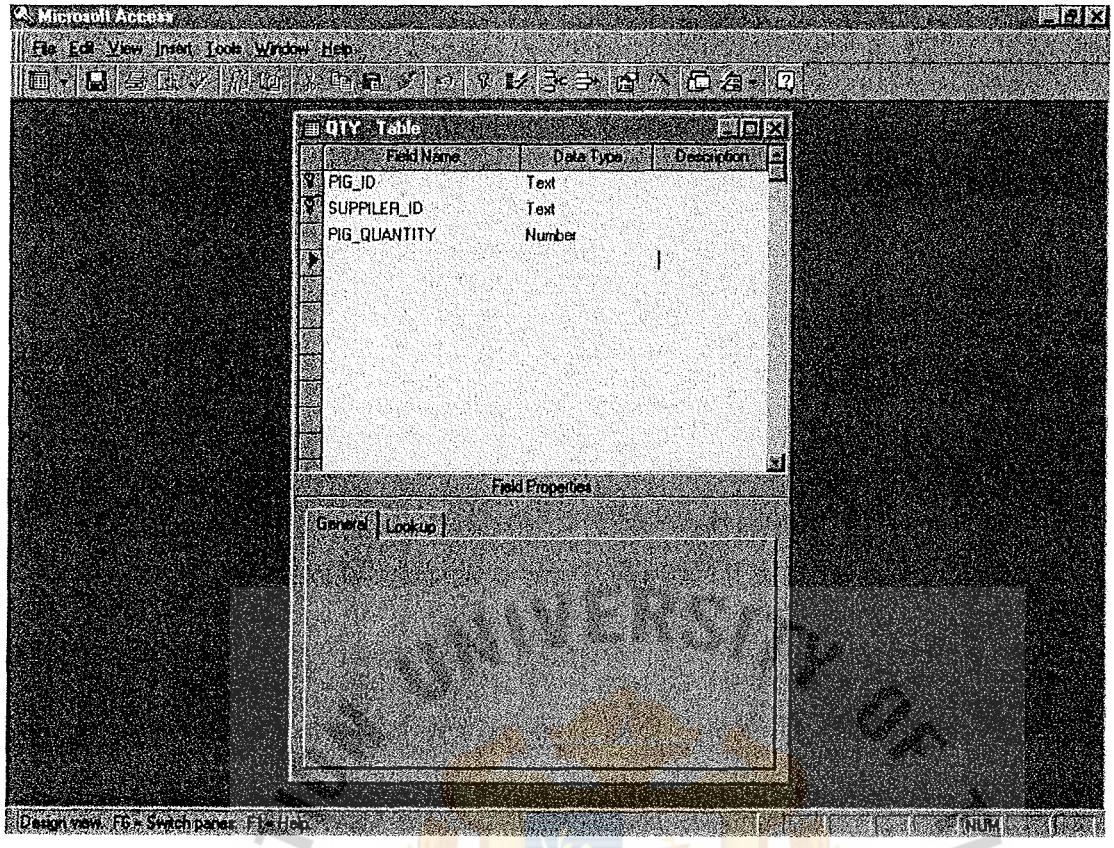

Figure G.9. Table QTY

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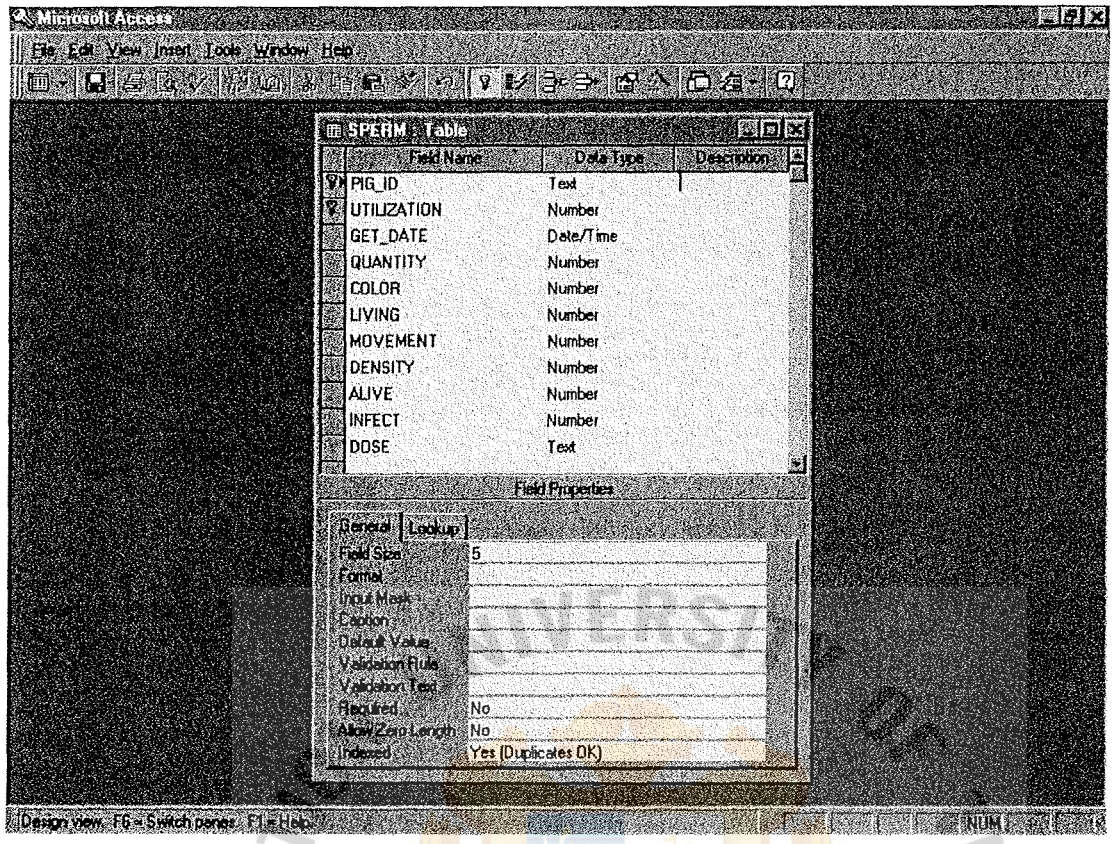

Figure G.10. Table SPERM

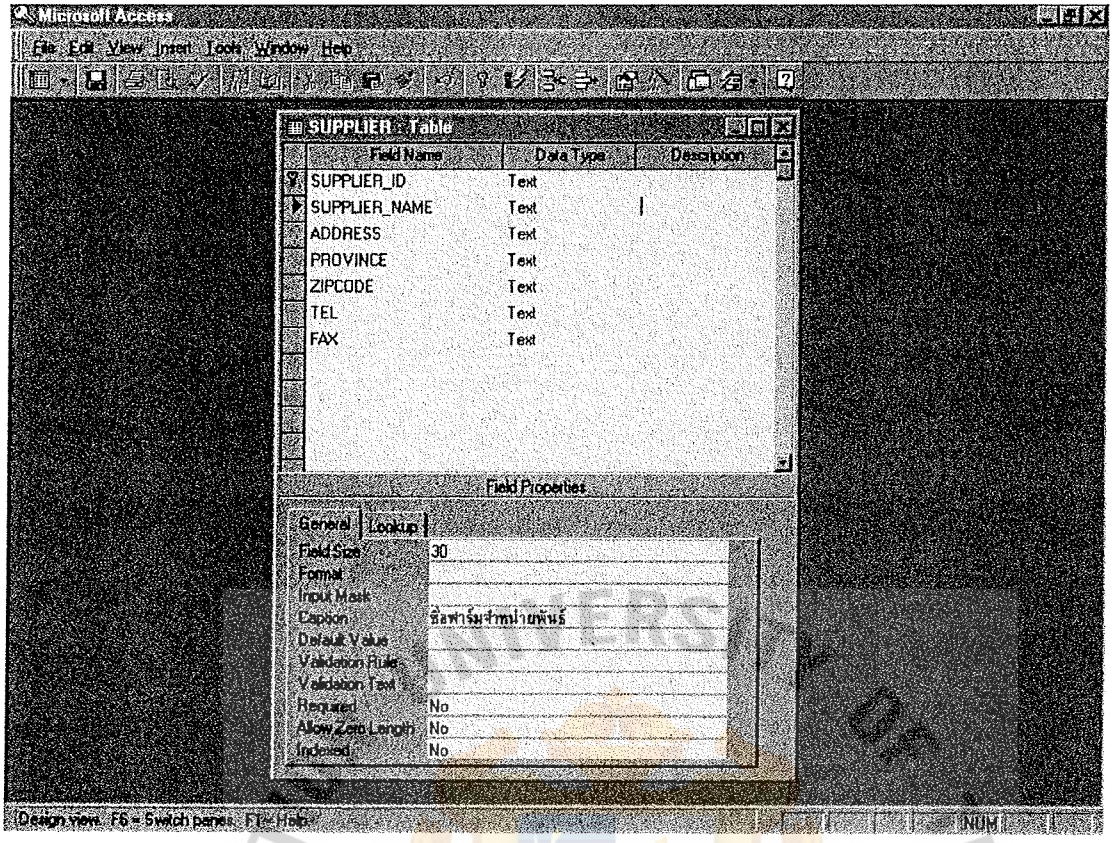

Figure G.11. Table SUPPLIER

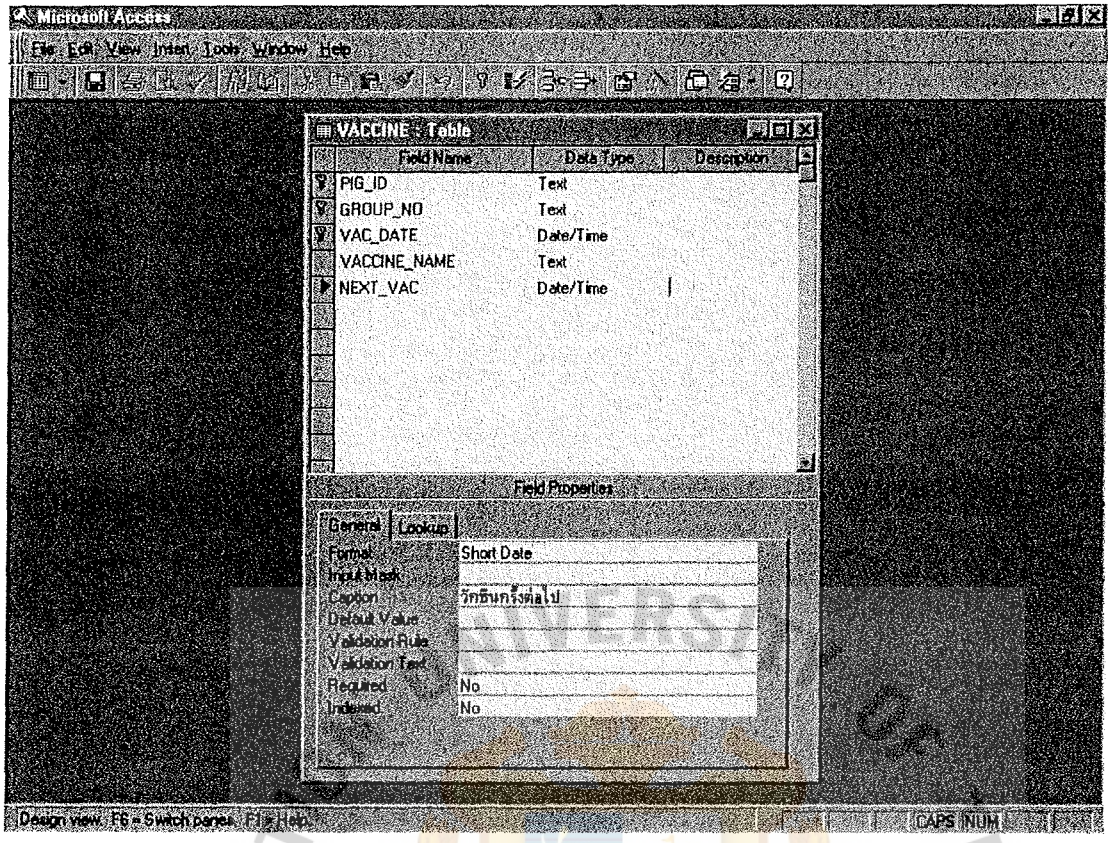

Figure G.12. Table VACCINE

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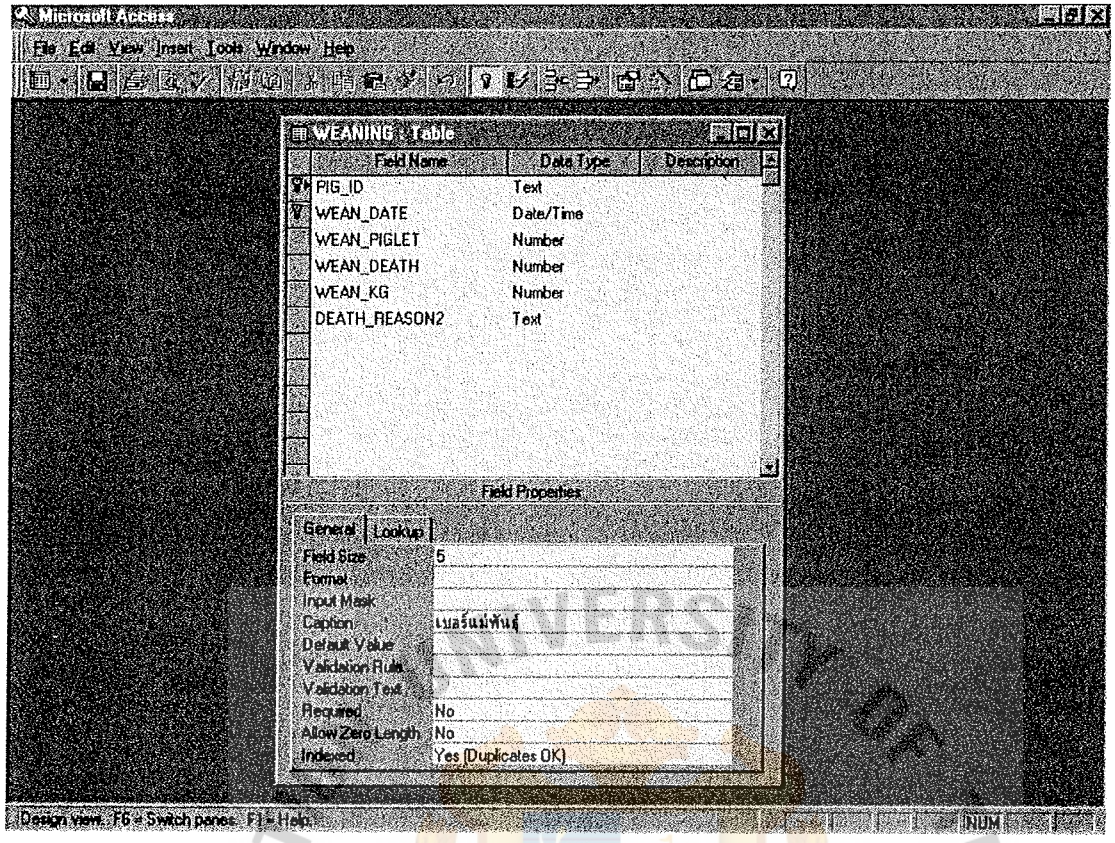

Figure G.13. Table WEANING

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