

ISOWEAN TECHNOLOGY

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PIC HAS DEVELOPED A NEW TECHNOLOGY IN HEALTH CONTROL WHICH HAS BEEN GIVEN A REGISTERED SERVICE MARK, "ISOWEAN". ISOWEAN REFERS TO THE USE OF MULTIPLE ISOLATED SITES FOR THE PRODUCTION OF HIGH HEALTH STATUS PIGS WITH MAXIMUM PERFORMANCE.

IN PRESENT DAY PRODUCTION SYSTEMS, PIGS ARE TYPICALLY PRODUCED EITHER ON ONE LOCATION FARROW TO FINISH, OR ON TWO DIFFERENT LOCATIONS (FEEDER PIGS ARE MOVED FROM NURSERY TO GROWER AT 20 TO 30 KILOGRAMS).

IT IS OFTEN NOTED THAT ONCE A HERD IS ESTABLISHED, THE HEALTH STATUS WILL DETERIORATE OR DECREASE OVER TIME. WE BELIEVE HEALTH STATUS AND PERFORMANCE ARE CORRELATED; THEREFORE, EVEN IF YOU START A HERD BY SURGICAL DERIVATION, CERTAIN DISEASES WILL COME INTO THE HERD WHICH MAY INFLUENCE PROFITABILITY THROUGH DECREASED PERFORMANCE. IN ADDITION, THE RATE OF THE DECLINE MAY BE DETERMINED BY THE LOCATION OF THE HERD, THE VARIOUS BARRIERS TO DISEASE INTRODUCTION, OR EVEN THE DRUGS AND VACCINES UTILIZED.

HISTORICALLY, VETERINARIANS AROUND THE WORLD HAVE USED A VARIETY OF METHODS TO IMPROVE THE HEALTH STATUS OF PIGS. IN THE 1960's DR. GEORGE YOUNG OF THE UNIVERSITY OF MINNESOTA ORIGINATED THE CONCEPT OF SPECIFIC PATHOGEN FREE (SPF) PIGS. TO PROCURE SPF PIGS HE DEVELOPED SURGICAL DERIVATION OR HYSTERECTOMY TECHNIQUES. IN THE ORIGINAL SPF PROCEDURES, PIGS WERE SURGICALLY DERIVED AND REARED IN ISOLATORS ON MILK REPLACER TO ESTABLISH PIGS FREE OF INFECTIOUS DISEASES. ABOUT 10 YEARS LATER, DR. JIM LECCE OF NORTH CAROLINA STATE UNIVERSITY, DEVELOPED A "PIG MOMMA" (AN ARTIFICIAL MILK REARING DEVICE FOR YOUNG PIGLETS). HE FOUND THAT BY REMOVING THE PIGS FROM THE SOW AFTER TWO DAYS OF NURSING AND PLACING THEM IN THE ARTIFICIAL MOMMA, THESE PIGS WERE VERY FREE OF DISEASE IN SOME CASES VERY COMPARABLE TO SURGICALLY DERIVED PIGS. IN THE

EARLY 1980's, DR. TOM ALEXANDER (A LECTURER AT CAMBRIDGE UNIVERSITY WHO HAS BEEN A CONSULTANT TO PIC FOR MANY YEARS) FORMULATED THE PROCEDURE OF MEDICATED EARLY WEANING (MEW). IN THE 1990's, DR. HANK HARRIS HAS MODIFIED THE CONCEPT OF MEW INTO ISOWEAN

IN MEW, SOWS ARE REMOVED FROM THE INFECTED PREMISE TO AN INSOLATED FARROWING FACILITY. THE SOWS AND PIGLETS ARE HEAVILY MEDICATED. AT FIVE DAYS OF AGE THE PIGLETS ARE MOVED TO AN INSOLATED NURSERY SEPARATE FROM THE SOWS, AND REARED THERE UNTIL 20-30 KG. IF THE PIGLETS THEN PASS CERTAIN TESTING PROCEDURES, THEY ARE MOVED TO AN ISOLATED GROWOUT OR TO A NEW FARM. DR. ALEXANDER FIRST REPORTED THIS IN THE VETERINARY RECORD, AND SUCCESSFULLY ELIMINATED MYCOPLASMA HYOPNEUMONIAE FROM A PIC HERD IN ENGLAND IN 1979.

MEW PROCEDURES HAVE BEEN UTILIZED AROUND THE WORLD. IN MOST CASES, IT HAS BEEN WITHIN PIC COMPANIES. THERE WAS ONE REPORT IN HUNGARY WHICH APPEARED IN THE VETERINARY RECORD (1986) WHICH REPEATED THE WORK OF DR. ALEXANDER SHOWING THAT SEVERAL AGENTS COULD BE ELIMINATED WITH MEW PROCEDURES.

THE LIST OF PATHOGENS WHICH CAN BE ELIMINATED BY MEW INCLUDES MYCOPLASMA HYOPNEUMONIAE, ACTINOBACILLUS PLEUROPNEUMONIAE, TREPTOCOCCAL SPS, TREPONEMA HYODYSENTARIAE, HAEMOPHILUS PARASUIS, ASTEURELLA MULTOCIDA, BORDATELLA BRONCHISEPTICA, AND AUJESZKY'S IRUS.

PIC MANAGEMENT BECAME INTERESTED IN THE MID 1980's IN THE POSSIBILITY THAT MEW COULD BE USED IN OTHER WAYS; NOT ONLY IN THE ELIMINATION OF AGENTS, BUT ALSO IN IMPROVING PERFORMANCE.

RESULTS OF THE PERFORMANCE TESTS STIMULATED THE UPPER MANAGEMENT OF PIC WORLD WIDE TO CONSIDER FURTHER RESEARCH IN THIS AREA. WAS IT POSSIBLE TO FARROW THE SOWS IN THE SOURCE HERD AND THUS AVOID UNNECESSARY MOVEMENT? QUESTIONS WERE ALSO RAISED ABOUT THE AGE OF WEANING AND WHAT DRUGS TO USE IN PIGLETS.

THE NEW TERM, ISOWEAN, IS USED SYNONYMOUSLY WITH MODIFIED MEW. WITH ISOWEAN, SOWS REMAIN ON THE SOURCE FARM AND PIGLETS ARE WEANED AT VARYING AGES INTO AN ISOLATED NURSERY. THE AGE OF WEANING IS DEPENDENT ON THE PURPOSE OF THE PROCEDURE.

ISOWEAN IS A REGISTERED SERVICE MARK OF THE PIG IMPROVEMENT COMPANY AND IS USED TO DENOTE THE UTILIZATION OF MEW PROCEDURES FOR THE PRODUCTION OF PIGS. ONE IMPORTANT REASON FOR THE NAME CHANGE IS THAT MEDICATIONS AND EARLY WEANING ARE NOT ALWAYS REQUIRED TO PRODUCE HIGH HEALTH STATUS PIGS.

THIS PRESENTATION WILL DEAL WITH THREE ASPECTS OF ISOWEAN:

- THE ELIMINATION OF CERTAIN INFECTIOUS AGENTS
- THE DOCUMENTATION OF IMPROVED PERFORMANCE UNDER EXPERIMENTAL CONTROLLED CONDITIONS
- OBSERVATION OF THE IMMUNE SYSTEM OF THE PIG AS IT RELATES TO THE SIZE OF THE THYMUS GLAND.

THE ELIMINATION OF TWO INFECTIOUS AGENTS, PASTURELLA MULTOCIDA AND MYCOPLASMA HYOPNEUMONIAE, HAVE BEEN STUDIED IN DETAIL. DURING THE PRESENTATION, SPECIFIC DETAILS WILL BE PROVIDED.

DIFFERENCES WERE NOTED IN PERFORMANCE BETWEEN PIGLETS WEANED BY ISOWEAN AT 10 DAYS OF AGE, THOSE WEANED BY ISOWEAN AT 21 DAYS, AND CONTROLS. NO SIGNIFICANT DIFFERENCE IN INITIAL WEIGHTS AT 10 DAYS OF AGE. BY 35 DAYS, SIGNIFICANT DIFFERENCES BETWEEN THE ISOWEAN GROUPS VERSUS THE CONTROL GROUP BEGIN TO APPEAR. THIS SAME SIGNIFICANT DIFFERENCE IN MEAN PIG WEIGHTS CARRIES THROUGH TO THE TERMINATION OF THIS STUDY AT 63 DAYS.

AN INTERESTING OBSERVATION THAT HAS BEEN MADE IS THE FACT THAT THE THYMUS GLANDS ON ISOWEAN PIGS ARE VERY LARGE. THE BODY: THYMUS WEIGHT RATIOS ARE ALSO SIGNIFICANTLY DIFFERENT BETWEEN ISOWEAN PIGS AND CONTROLS WHICH MEANS THAT THIS IS NOT SIMPLY DETERMINED BY BODY WEIGHT. ALTHOUGH THESE RESULTS ARE NOT COMPLETELY UNDERSTOOD, IT IS AN INDICATION THAT POSSIBLY THERE HAS BEEN LESS ANTIGENIC EXPOSURE TO THE ISOWEAN PIGS THAN TO THE CONTROLS.

MEW AND ISOWEAN TECHNIQUES HAVE BEEN USED FOR POPULATING UNITS THAT HAVE BEEN DEPOPULATED. ISOWEAN HAS ALSO BEEN USED FOR PRODUCING REPLACEMENT PIGS FROM NUCLEUS HERDS FOR DAUGHTER NUCLEUS AND MULTIPLIER FARMS. THIS PROCEDURE HAS NOW BEEN USED EXTENSIVELY TO UPGRADE THE HEALTH STATUS OF EXISTING HERDS.

NEW FARMS ARE NOW BEING CONSTRUCTED IN THE U.S. WITH 3 SITE -
METHODOLOGY AND CO-MINGLING OF YOUNG PIGS FROM MULTIPLE SOURCES -
BY THIS PROCEDURE.

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