第三十七卷(2008)

台灣杜洛克新品種選育：雜交一代繁殖性能

日期2009/1/9 10:47:09

41.台灣杜洛克新品種選育：雜交一代繁殖性能

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杜洛克猪繁殖性能低落，平均每胎產仔猪頭數只有8.7頭。因養猪產業多以杜洛克種猪為終端公猪，因此杜洛克之繁殖性能亟待提升。本試驗目的為培育繁殖性能優良的新品種，具杜洛克外觀，且兼具多產與產精效率高等特色，期望育成台灣高繁殖性能的紅色杜洛克品種。本試驗收集及整理2007年自7家優良杜洛克種猪場購入之33頭女猪與配高雄種畜繁殖場K6代具ESR MM基因型高畜黑猪公猪雜交所生25胎繁殖與生長資料，結果顯示杜洛克雜交一代出生總仔數8.4±2.97、出生活頭數7.64±2.98、出生重1.81±0.41、21日齡體重6.52±1.23、左乳頭數6.57±0.62、右乳頭數6.63±0.66、總乳頭數13.08±1.68。

關鍵語：杜洛克、選育、雜交

SELECTION FOR NEW BREED OF TAIWAN DUROC PIGS: REPRODUCTION PERFORMANCE OF F1 HYBRID

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Duroc pig is a low reproductive performance breed, the average litter size was 8.7 at birth. The Duroc was preferably used to be terminal sire in pig industry. For this reason, a selection for increasing the reproductive performance in Duroc was carried out. The purpose of this study was to foster new excellent breed with appearance of Duroc, high reproductive performance and high production of seminal fluid. We hope that a high reproductive performance with red color of Taiwan Duroc can be obtained. Thirty-three gilts collected from 7 breeding farms were hybridized with black boars derived from Kaohsiung Animal Propagation Station. The genotype of ESR gene was MM type in the boars. The data of growth and reproductive records of offspring were collected from 25 pregnancies and birth s for the evaluation. The results showed that the total number of piglets born (TNB), total number of piglets born alive (NBA), birth weight (BW), weight

at 21 days (W21), number of teats at left, number of teats at right, total number of teats were 8.4±2.97, 7.64±2.98, 1.81±0.41, 6.52±1.23, 6.57±0.62, 6.63±0.66 and 13.08±1.68, respectively.

Key Words: Duroc, Selection, Hybrid

降溫速度對8種畜產植物超低溫凍存的影響

57.降溫速度對8種畜產植物超低溫凍存的影響

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為瞭解畜產植物-牧草種子對於超低溫保存的耐受性及逐步降溫是否可以改善超低溫保存後的發芽率，選擇8種牧草(青割玉米 forage corn、綠肥大豆台南4號 Green manure in soybean crops of Tainan No.4.、綠肥大豆台南7號 Green manure in soybean crops of Tainan No.7.、苕子 Hairy vetch、田菁 sesbania、泰樂豆 stylo、中東苜蓿 Far east Alafa、澳洲大豆 Australian soybean)各分成4組，探討牧草種子可否經由控制降溫速度改善超低溫凍存後的發芽率。試驗材料以50顆種子為單位，先以錫箔紙包裝，減少空氣直接接觸，再置於密封的塑膠袋內，每一處理中每一個物種計有2重複，合計3200棵種子(50棵*2重複*8物種*4處理)，A組與B組利用微電腦程式降溫儀分別以每分鐘0.5 ℃與1 ℃逐步降溫，從室溫降到 －40℃後，再快速置入液態氮桶；C組為直接快速置入液態氮桶中。D組為對照組是以非超低溫的傳統 4℃冰箱保存。A、B及C組之種子於超低溫凍存21天後，以40℃溫水浸泡10分鐘進行解凍，比較各組種子發芽試驗結果顯示，除苕子及玉米在沒有超低溫凍存的對照組最好(P
關鍵語：超低溫凍存、畜產植物、種子

EFFECT OF FREEZING RATES ON CRYOPRESERVATION OF EIGHT LIVESTOCK FORAGES

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To explore whether the freezing rate was the critical success factor for forage seed cryopreservation, eight species livestock forage seeds, forage corn, Green manure in soybean crops of Tainan No.4., Green manure in soybean crops of Tainan No.7., Hairy vetch, sesbania, stylo, Far east Alafa, Australian soybean, were stored into liquid nitrogen(LN) by different freezing rates. Each species had four treatments, two repeats and 50 seeds per repeat. Total was 3200 seeds (50 seeds *2 repeats *4 treatments *8 species). Seeds were sealed by aluminum foil first and then zipped in zipper plastic bag. Before putting into LN tank, treatment A and treatment B were chilled by 0.5 ℃ per minute and 1 ℃ per minute freezing rates to -40 ℃ by a programmable cryopreser, respectively. Treatment C was direct plunging sample into liquid nitrogen vapor and treatment D was stored in a 4 ℃ refrigerator. After 21 days storage in LN, treatment A, B and C were thawed at 40℃water for 10 minutes. Germination rate was the cumulated three days counts in percentage for all treatments. Difference of germination rate was not detected for three treatments, A, B and C. However, treatment D, non-cryopreserved group, was better than others' for hairy vetch and forage corn. Eight forage seeds in

all four treatments had seeds Germinated. Species effect was significant for the germination rates(P
Key words: Cryopreservation, Livestock forage, Seed

畜產種原庫之自動冷凍記錄平台建置

64.畜產種原庫之自動冷凍記錄平台建置

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台灣畜產種原中心於2004年建好，座落於台南新化，建築物主要包括生殖細胞冷凍保存庫、DNA冷凍保存庫與種原資訊庫等三部份。國家級設備完善的超低溫冷凍保存種原庫，需具有自動化低溫監控設備，經由儀器操控，在儲藏庫外面便能輕易進行遠端種源品項的保存歷程記錄，以維持遺傳物質長期冷凍品質。本研究整合畜產種原庫超低溫冷凍保存用的18個大型液氮儲存槽之電子控制器，在不影響原有操作狀態均連線到中央監控室的電腦成遠端電腦控制記錄系統，使電腦上可同步顯示每個液氮儲存槽液位高低值、溫度值，建立遺傳物質冷凍品質之自動監控標準操作及遠端預警系統。並可由電腦端即時下載儲存槽控制器內的溫度記錄、液位高低值成格式檔供彙整進入畜產種原資訊資料庫，2008年5月至10月間共記錄72,260筆紀錄，11筆系統異常警示紀錄，桶槽最高溫度與最低溫度在-172℃與-182℃，正常液位最低3英吋，最高5英吋，不正常液位7筆皆為電磁閥故障造成液氮過度充填。結果顯示，自動化低溫監控記錄系統可用於冷凍保存品質的提昇，而長程種原遺傳物質的妥善保存即是保護國家最珍貴的天然寶藏。

關鍵語：液氮、冷凍系統、種原

A TRAIL OF AUTO-RECORDING SYSTEM FOR LIQUID NITROGEN CRYOSYSTEM OF ANIMAL GENETIC RESOURCES

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Construction of Taiwan Animal Germplasm Center was completed in 2004 at Hsinhua, Tainan and three main sections of the center are germ cell bank, DNA bank and data bank of genetic resources. For quality control, remote monitoring system was essential for the long term cryopreservation. This trail set up an integrated electronic monitoring system for 18 large liquid nitrogen(LN2) tank, including temperature and liquid position of LN2 recording, and remote auto-alarming. The monitoring data have been cumulated into animal genetic resource databank for study. From May to Oct. 2008, databank added into 72,260 records. The range of maximum and minimum temperature was from -172°C to -182°C. The range of liquid position of LN2 was from three to five inches. There were 11 alarming messages received. Seven records of abnormal liquid positions of tank were due to solenoid valve errors, which caused LN2 overfilling in. Results showed auto-recording system can be used for improve cryopreservation quality and the success of long-term genetic resources conservation program will protect the most valuable nature treasure of Taiwan.

Key words: Liquid nitrogen, Cryosystem, Genetic resource

桃園豬體型性狀

68.桃園豬體型性狀

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民國六十幾年，隨著三品種肉豬興起，桃園種豬在我國豬隻改良所扮演的角色逐漸沒落，而純種桃園種豬已不復多見。畜產試驗所自76年開始進行國家級保種計畫，對具本土特色之桃園豬進行各項試驗研究，有助於增加台灣本地畜產種原資料庫的多樣性。本試驗收集90至97年桃園豬180日齡體型性狀，量測項目共十項，結果分別為體高45.53 ± 3.75 cm、十字部高50.51 ± 4.13 cm、體長79.63 ± 8.67 cm、胸圍74.63 ± 8.32 cm、管圍15.38 ± 1.66 cm、尾徑11.40 ± 1.56 cm、後幅20.77 ± 5.94 cm、胸幅18.52 ± 2.87 cm、前幅20.67 ± 3.12 與胸深24.36 ± 2.85 cm。體型量測有助於了解保種族群體型變化，並且收集資料有助增進對該品種了解，選擇最適合的飼養方式。

關鍵語：體型性狀、桃園豬

THE BODY CONFORMATION OF TAOYUAN PIGS

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As follow by LYD hybrid become major market pig, the Taoyuan pigs were almost out of pig improving selection in Taiwan from 1970. So far, the native Taoyuan pigs were nearly disappeared. Therefore, the livestock research institute began to carry out conservation project from 1987; more investigations associated with Taoyuan pigs were performed. Total of 10 measures of body conformation record from 180 days old pigs of Taoyuan were collected in 2001 to 2008. The results revealed that withers height, plus point height, body length, chest girth, shank circumference, tail circumference, hind width, chest width, shoulder width and chest depth of Taoyuan pigs were 45.53 ± 3.75, 50.51 ± 4.13, 79.63 ± 8.67, 74.63 ± 8.32, 15.38 ± 1.66, 11.40 ± 1.56, 20.77 ± 5.94, 18.52 ± 2.87, 20.67 ± 3.12 and 24.36 ± 2.85, respectively. These results may help us to understand the change of body conformation in conserved population, and to choices more better feeding manners based on our study results.

Key Words: Body conformation, Taoyuan pig

賓朗豬與藍瑞斯豬雜交F1產仔性狀與F2生長性狀

69.賓朗豬與藍瑞斯豬雜交F1產仔性狀與F2生長性狀

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本試驗的目的是調查賓朗豬（U）與藍瑞斯豬(L)一代雜交種(LU與UL)自交的產仔性狀與其後裔之生長性狀。試驗收集LU母豬23頭與配2頭LU公豬共33胎與UL母豬3頭與配2頭UL公豬共3胎之產仔性狀，亦收集LU×LU組之後裔（LULU）女豬25頭生長性能資料及UL×UL組之後裔（ULUL）9閹公10母的70日齡體重。LU母豬與UL母豬分娩總仔數、分娩活仔數、三週活仔數、仔豬出生重及三週重分別為8.6與9.0頭、7.5與7.0頭、7.4與7.0頭、1.49與1.38 kg及5.52與 5.40 kg。LULU仔豬與 ULUL仔豬70日齡體重分別為22.1±0.9 kg與16.8±1.1 kg，LULU女豬150日齡重、日增重、背脂厚度及飼料效率分別為60.4 kg、0.48 kg、1.75 cm及2.87±0.48 (範圍為1.93~3.78)，初步結果顯示LULU 70日齡重較ULUL者顯著地重。

關鍵語：遺傳標記、產仔性狀、生長性狀

F1 REPRODUCTIVE AND F2 GROWTH PERFORMANCE OF LANDRACE × PEINAN RESOURCE POPULATION.

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The purpose of this study was to investigate the reproductive performance of LU sow and UL sow (F1 of L, Landrace and U, Peinan breed) which were mated with LU boar and UL boar in a crossbreeding resource population. A total of 23 LU sows and 2 LU boars were used to produce 33 LULU litters, and 3 UL sows and 2 UL boars were used to produce 3 ULUL litters. Reproductive performance had 36 litter F1 records. The growth performance data included on farm test performance of 25 LULU gilts and ULUL body weight at 70 days old of 9 young barrows and 10 gilts. The results as following: The total litter size at birth, live litter size at birth, live piglets at 3 weeks, average piglet weight at birth and average piglet weight at 3 weeks for LU sows were 8.6, 7.5, 7.4, 1.49 kg and 5.52 kg, respectively, but for UL sows were 9.0, 7.0, 7.0, 1.38 kg and 5.40 kg, respectively. The body weight at 70 days old of LULU and ULUL piglets were 22.1±0.9 kg and 16.8±1.1 kg, respectively. The body weight at 150 days old, average daily gain from 70 days to 150 days(ADG), average backfat (BF) and feed efficiency (FE) for LULU female offspring were 60.4 kg, 0.48 kg, 1.75 cm and 2.87±0.48 (range is 1.93~3.78), respectively. The preliminary results showed that body weight at 70 days old of LULU piglet was significantly heavier than ULUL piglet.

Key words: Genetic marker, Reproductive performance, Growth trait.

台灣水牛微衛星遺傳標記多樣性分析

73.台灣水牛微衛星遺傳標記多樣性分析

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台灣水牛是台灣重要的本土畜產動物，自1987年起設立國家保種場於行政院農業委員會畜產試驗所花蓮種畜繁殖場，至今台灣水牛遺傳多樣性資料仍然有限。本試驗利用FAO(2004)建議使用的水牛微衛星標記組，以其中12組水牛微衛星標記分析行政院農業委員會畜產試驗所花蓮種畜繁殖場台灣水牛保種族群40頭台灣水牛個體之DNA，其中除CSSM045微衛星標記所檢測的基因型在所有檢測個體皆為單型外，其它11組微衛星標記皆有多態型的基因型。具多態型的微衛星標記組共檢測到45個alleles，平均每個基因座具有4.1個對偶基因(2~7個alleles)，其觀測異質度介於0.150到0.750，平均為0.561 ± 0.173，期望異質度介於0.180到0.750，平均為0.570 ± 0.156，而多態性訊息含量平均為0.506 ± 0.148。在本試驗選用的12組微衛星標記組中有6組呈現非高多態性資訊(PIC
關鍵語：台灣水牛、遺傳多樣性、微衞星標記

GENETIC DIVERSITY ANALYSIS OF TAIWAN WATER BUFFALO BY MICROSATELLITE MARKERS

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Taiwan water buffalo is an important native farm animal in Formosa Island. The conservation population was in Hualien Animal Propagation Station of LRI since 1987. However, the information of genetic diversity of Taiwan water buffalo was very limited. To study the genetic diversity, a set of 12 microsatellite markers recommended for water buffalo in FAO's DADIS MoDAD programme were utilized. The study was carried out on 40 animals to generate genotype data. Except CSSM045, all the microsatellites were polymorphic with average allelic number 4.1, ranged from 2 to7 per locus. There were 45 alleles detected in total. The observed heterozygosity of the population ranged from 0.150 to 0.750, and the average observed heterozygosity was 0.561±0.173(mean±SD). The expected heterozygosity ranged from 0.180 to 0.750, and the average expected heterozygosity was 0.570±0.156. The estimated polymorphic information content (PIC) was 0.506± 0148. In 12 markers, six markers were not highly informative with PIC less than 0.5 and one marker CSSM045 had only one allele detected. Therefore, geneticist should be aware of genetic diversity of Taiwan water buffalo.

Key Words: Taiwan water buffalo, Genetic diversity, Microsatellite marker

CVM基因雜合型乳牛之夏季泌乳性能表現

75.CVM基因雜合型乳牛之夏季泌乳性能表現

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脊椎畸形複合症（Complex Vertebral Malformation, CVM）基因型分為三型，正常型(TV)、雜合型(CV)及有病型(CVM)。有病型是一種致死遺傳，除了外觀上體型較小，可發現脊椎發育不全、脊椎變形、融合等各式各樣的病變，同時前肢及後肢腳趾骨明顯的向後翻轉彎曲，早產或是死產而造成酪農經濟損失，但雜合型是否會影響耐熱性與泌乳性能仍有待進一步研究。為瞭解CVM基因雜合型乳牛之夏季泌乳性能表現，檢測2008年17場參與中華民國乳業協會牧場，1756頭母牛，檢測結果除兩娟姍牛場，計120頭牛全為正常型外，共有186頭雜合型分佈於15個牧場，每場至少有兩頭以上的雜合型，比例為11.4%。由近5年DHI資料分析，雜合型305天體成熟乳量平均為8266kg與正常型8403kg差異不顯著。而雜合型夏季乳量平均為25.4與正常型25.6kg差異亦不顯著。但乳糖率正常型略高於雜合型(4.87% > 4.84%)，而雜合型之乳蛋質率與尿素氮則略高於正常型(3.32% > 3.28%, 11.3%>11.0%)，其餘的泌乳性能如總固型物、乳脂率、檸檬酸、體細胞數、蛋白質脂肪比，夏季產乳指數等，正常型與雜合型間差異均不顯著。整體而言，雖然CVM雜合型母牛夏季乳量略低，但差異很小，不需急於淘汰，但需留意公牛或精液的選擇，以逐步降低不良基因頻率。

關鍵語：脊椎畸形複合症、荷蘭牛、夏季

milk production PERFORMANCE of CVM GENE CARRIERS IN SUMMER

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Complex Vertebral Malformation, CVM, has three genotypes, normal(TV), carrier(CV) and defected(CVM). CVM is a lethal genetic defect and refers to a combination of symptoms that include fused vertebrae, contracted joints in the front and rear legs, reduced body size and etc. Major economic losses of CVM includes stillbirth and abortion. But, the information of milk production performance of carrier was limited, especially in tropical summer. From 17 dairy herds of dairy association, ROC, 1756 cows were genotyped for CVM in 2008. Two herds, 120 cows, with all Jerseys are free of CVM. There were 186 carriers, 11.4%, in 15 herds and each herd had at least 2 carriers. By analysis of recent 5-year DHI data, 305-2X-ME and total milk of carrier(CV) and normal(TV) were 8266 kg vs. 8403 kg and 25.4 kg vs. 25.6 kg. The differences were not significant. Similar results were found for total solids, milk fat %, milk citric acid %, somatic cell counts, fat-protein ratio and Summer Milk Index(P>0.05). Although, the milk protein and urea nitrogen % of carriers were slightly higher than normal cows' (3.32% >3.28%, 11.3% >11.0%), and lactose % was reverse, normal cow's higher than carriers' (4.87% >4.84%). In conclusion, the carrier cows produced near the same milk as normal cows in summer. Culling carrier cows could not improve summer production efficiency. The pace of culling carrier cows need not speed up. But, farmer need be aware of bull or semen selection to reduce the defect gene frequency gradually.

Key words: Complex vertebral malformation, Holstein, Summer

褐色菜鴨BAC 基因庫之建構

76.褐色菜鴨BAC 基因庫之建構

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本研究目的在以大片段DNA 方式建構基因庫，除可保存珍貴基因外，並可提供後續基因體學研究之用。本研究已初步建立褐色菜鴨大分子量DNA 分離與大片段部分分切DNA 分離和純化技術平台，並建立以BAC 建構基因庫的核心技術，累計兩次所建構之基因庫，平均插入片段大小分別為34.0 kb 與48.9 kb，而所保存的總株系數目約達11 萬個，其基因體覆蓋率為3.69 倍。

關鍵語：褐色菜鴨、BAC 基因庫、覆蓋率

CONSTRUCTION OF BAC LIBRARY OF BROWN TSAIYA

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The purpose of this study is to construct large-insert libraries to preserve valuable genes and to provide for the future genomic studies. In this study, the plateform of large-insert DNA separation and separation and purification of large partially digested DNA from Brown Tsaiya was primarily established. At the same time, the core technology of BAC library construction was set up. The average insert sizes were 34.0 and 48.9 kb, respectively, for two constructed genomic libraries. The total number of preserved clones reached to 110,000 and the genome coverage of the entire library was 3.69-fold.

Keywords: Brown Tsaiya, BAC Library, Coverage

山羊DQA2 胺基酸序列之變異

77.山羊DQA2 胺基酸序列之變異

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由15隻分屬五種山羊品種（阿爾拜因2頭；波爾5頭；努比亞4頭；吐根堡2頭；撒能2頭）之山羊樣品，進行DQA2 基因之選殖研究，結果共選殖出46個株系。經DNA 定序與胺基酸序列之分析後，此46 個株系可區分出24種不同之交替基因，並產生20種不同之胺基酸序列。由相同山羊樣品產生之不同株系之DNA 序列分析可得知，一個山羊樣品最多含有四種交替基因，因此在山羊之基因組中可能含有兩個DQA2 基因座。在DQA2 α1 domain 胺基酸序列的分析中得知，48.8% (40/82) 的胺基酸是具有多態性的，同時，在預測的抗原結合區中，73.7% (14/19) 的胺基酸具多態性。最具多態性的的位置分別為α14 (N, D, T, E, V)，α34 (R, E, L, M)，α53 (E, Q, R, H)，α55 (R, T, I, A)，α79 (R, L, C, H, W)，除α34外，其他位點都包含於預測的抗原結合區中。因DQA2 為動物的免疫基因，因此序列具有ਢ度的多態性，此種多態性與疾病的抗性是否有關，則需進一步研究。

關鍵語：DQA2 基因、選殖、多態性

AMINO ACID SEQUENCE VARIATION OF DQA2 IN GOATS

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The DQA2 genes were cloned from 15 goats which belonged to 5 breeds including Alpine (2), Boer (5), Nubian (4), Toggenburg (2), and Saanen (2). A total of 46 cloneswere obtained from cloning procedure. According to the analyses of DNA sequencingand amino acid sequences of DQA2, 24 allele were discriminated from 46 clones and 20 kinds of amino sequences were deduced. There were at most 4 allele in one goat sampleafter the DNA sequence analyses from several clones. Therefore, there might be 2 DQA2 loci within the goat genome. In the amino acid sequence analysis of DQA2 α1 domain, 48.8% (40/82) of the sites were polymorphic; besides, 73.7% (14/19) of amino acids in the putative antigen-binding region were polymorphic. The most polymorphic sites were observed at α14 (N, D, T, E, V), α34 (R, E, L, M), α53 (E, Q, R, H), α 55 (R, T, I, A), and α79 (R, L, C, H, W), which are all included in the putative antigen-binding region except α34. Because DQA2 genes are responsible for immune reaction in animals, they possess highly polymorphisms. Whether or not the polymorphisms relate to disease resistance, the study needs to be conducted in the future.

Key Words: DQA2 gene, Cloning, Polymorphism

以四種遺傳標記OPN、GPI、PGD 與 HAL1843探討種母豬使用年限

78.以四種遺傳標記OPN、GPI、PGD 與 HAL1843探討種母豬使用年限

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以179頭出生於1993年至1999年同一家牧場的種母豬進行本研究，母豬的使用期限定義為出生至離場止的在場日數(除以 365則為年限)，四種遺傳標記包括OPN微衛星(9個交替基因，29種基因型)GPI,PGD(各3種基因型)及緊迫基因Hal-1843(2種基因型，CC及CT)。經過刪去12個OPN基因型只有1或2筆的資料存在，共剩146筆資料可供四種遺傳標記分析。統計模式包含品種、年代、OPN基因型、GPI、PGD及Hal-1843等固定效應，分析結果僅年度及品種效應顯著(PP>0.01)，且僅[TG] 19 [TG] 21效應檢出可能與種母豬使用年限有關，因此並不推薦以此四項遺傳標記(OPN、GPI、PGD及Hal-1843)直接應用於種母豬使用年限的選拔。

關鍵語：遺傳標記、微衛星標記、種母豬使用年限

MARKER EFFECTS OF OPN, GPI, PGD AND HAL1843 ON SOW LONGEVITY

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There were 179 sows born in the same herd between 1993 and 1999 for marker effects on sow longevity study. Sow longevity was defined as days of age from birth to culling. Four genetic marker, microsatellite markers of Osteopontin (OPN, 29 genotypes by 9 alleles)

gene, glucose-phosphate isomerase (GPI, 3 genotypes), phosphogluconate dehydrogenase (PGD, 3 genotypes) and porcine calcium release channel gene (Hal-1843, 2 genotypes, CC and CT), were genotyped for all sows. Because sample size of 12 set OPN genotypes was smaller than 3, only 146 records with 17 set OPN genotypes were analyzed in the first data set by a statistic model with breed, year, OPN, GPI, PGD and Hal-1843 genotype effects. Results showed only breed and year effects were significant for sow longevity. Further analysis of average daily gain, days at 90kg and adjusted back fat by the same model, genetic marker effect was not detected also (P>0.05). The second data set re-defined OPN effects as consisting of different number of [TG] dinucleotide repeats in the promoter region of OPN gene, and there were 9 allele effects, [TG]8, [TG]13, [TG]14, [TG]19, [TG]21, [TG]23, [TG]24, [TG]25 and [TG]26. After omitting the allele effects with less than two sows in Landrance, [TG]8, [TG]13, [TG]25 and [TG]26 , the second data set had 164 sows with GPI, PGD, Hal-1843, five OPN markers and longevity data. The results showed, in addition of breed and year effect, the [TG]19 and [TG]21 alleles were significant for sow longevity(P 0.01, and, only [TG]19 and [TG]21 might relate to sow longevity. The results did not support for applying OPN, GPI, PGD and HAL-1843 markers to select sow longevity directly.

Key words: Genetic marker, Microsatellite marker, Sow longevity

不同來源油脂對肥皂物化特性之影響

82.不同來源油脂對肥皂物化特性之影響

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油脂依其來源可分為動物性油脂與植物性油脂，油脂皂化價受油脂脂肪酸碳鏈長度影響，因此油脂種類決定皂化產物之特性與質感，不同的油脂達成皂化反應所需時間也各有差異。本試驗之目的係研究不同來源油脂對於皂化作用之影響以及皂化產物之物化特性變化；本試驗分別選用常見於畜牧產品之動物性油脂：乳脂、豬脂及雞脂；以及飼糧常用添加之大豆油作為原料。油脂經加熱處理之後添加適當比例氫氧化鈉溶液誘發皂化作用之進行，待長時間皂化反應完全後，分別針對皂化產物之溶解度、酸鹼值、起泡能力、油滴分解率以及耗費之價格成本進行分析。初步結果得知乳脂、豬脂、雞脂與大豆油之皂化能力並無顯著差異，乳脂組之皂化產物質地堅硬而厚實、產生之泡沫溫和而穩定，豬油組質地較乳脂組軟且在冷水條件下洗滌效果不佳，而大豆油組泡沫持久。

關鍵語：皂化價、脂肪酸

THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF SOAPS MADE OF DIFFERNET LIPID

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The lipid may divide into the animal fat and the vegetable oil according to its origin, and the saponification value affected by the carbon chain length of fatty acids. The

types of lipid determine the properties of saponification products. Besides, it takes different time to accomplish the reactions of saponification by the different lipid. The objective of this study was to research the effect of the saponification and the physical and chemical variations of saponification products from different lipid. We selected butter, lard and chicken fat, which are the common animal fat in the livestock, and soybean oil, commonly used in feedstuff. After the heating process, added the appropriate proportion of sodium dioxide solution to induce saponification. After the reaction of saponification completed for a long time, we analyzed the solubility, pH value, frothing ability, the oil dripping rate of dissociation and cost of saponification products. The preliminary result showed that there was no significant difference on the time to accomplish the saponification among butter, lard, chicken fat and soybean oil. The properties of saponification products of butter group were hard and thick, and the froth was mild and stable. The lard group was softer than butter group, and it was not fine to use under cold water. The froth of soybean oil group was lasting.

Key words: Saponification value, Fatty acid

畜試土雞微衛星遺傳標記多樣性分析

96.畜試土雞微衛星遺傳標記多樣性分析

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為建立台灣土雞遺傳標記與基因條碼資訊。本試驗利用10組雞微衞星標記組，分析行政院農業委員會畜產試驗所畜試土雞96隻種雞個體DNA，所有微衞星標記皆有多態型的基因型。共檢測到76個alleles，平均每個基因座具有7.6個對偶基因(6~9個alleles)，其觀測異質度介於0.302到0.990，平均為0.653 ± 0.236，期望異質度介於0.360到0.849，平均為0.716 ± 0.157，而多態性訊息含量介於0.339到0.828，平均為0.684 ± 0.162。有7組雞微衞星標記組(70%)具高多態性訊息含量(PIC>0.5)，而其餘3組(30%)為合理的多態性訊息含量(0.5>PIC>0.25)，顯示本試驗選用之微衞星標記組具豐富的多態性訊息，可作為土雞遺傳多樣性監控與個體基因條碼識別之遺傳標記。

關鍵語：土雞、遺傳多樣性、微衞星標記

GENETIC DIVERSITY ANALYSIS OF NATIVE CHICKEN BY MICROSATELLITE MARKERS

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In order to establish chicken genetic marker and DNA barcode information, ten microsatellite markers were utilized for generating microsatellite genotyping data in a panel of 96 breeding native chicken of Livestock Research Institute(LRI). All the microsatellites were highly polymorphic, with mean (± SD) allelic number of 7.6 ± 1.22 and ranged from 6 to 9 alleles per locus. The average observed heterozygosity in the

population ranged between 0.302 and 0.990, with mean (± SD) of 0.653 ± 0.236. The expected heterozygosity ranged between 0.360 and 0.849, with mean (± SD) of 0.716 ± 0.157. The polymorphic information content (PIC) was estimated with mean (± SD) of 0.684 ± 0.162 and ranged between 0.339 and 0.828. Seven microsatellite markers(70%) were highly informative (PIC>0.5) and the other three markers(30%) were reasonably informative (0.5>PIC>0.25). The result indicated these ten markers could be used for monitoring genetic diversity and making the DNA barcodes for LRI native chicken.

Key Words: Chicken, Genetic diversity, Microsatellite marker