

臺灣糖業研究所

TAIWAN
SUGAR
RESEARCH
INSTITUTE



行政大樓
Administration Building

沿革與任務

台灣糖業之試驗研究，開始於民國前11年，最初在台南縣麻豆鎮設立甘蔗試作場，民國二十一年擴大規模，改稱為台灣糖業試驗所，並移設於台南市現址。民國三十四年台灣光復後初隸屬於台灣省政府，民國三十七年交由台灣糖業公司接辦。民國六十二年五月改稱為台灣糖業研究所。

本所為發展台灣糖業，負有下列各項任務：（一）育成甘蔗新品種，提高單位面積產糖量，（二）縮短甘蔗生育期，改善蔗園間作經營，（三）提高台糖公司自營農場土地生產力，（四）提高糖廠製糖效率，改進砂糖品質，（五）研究副產利用，發展多角經營。

HISTORY

The Taiwan Sugar Research Institute (formerly known as the Taiwan Sugar Experiment Station) has a comparatively long history. It was established in 1901 during the Japanese occupation of Taiwan. After the restoration of Taiwan to the Republic of China in 1945, this Institute came under the jurisdiction of the Taiwan Provincial Government. It was incorporated into the Taiwan Sugar Corporation in 1948.

The basic objective of the Taiwan Sugar Research Institute is to promote the Taiwan sugar industry. The research program of this institute is designed to meet the increasing needs of the expanding sugar industry and has its emphasis focused on the following: breeding new cane varieties with higher sugar yield per hectare, shortening the growing period of sugarcane by improving cultivation techniques, improving intercropping techniques for intensive utilization of land, increasing the productivity of TSC plantations, increasing the efficiency of sugar processing, improving the quality of the sugar produced, utilizing by-products and developing diversifications of the industry.



研究大樓
Research Building

組 織 ORGANIZATION

台灣糖業
研究所
TAIWAN
SUGAR
RESEARCH
INSTITUTE

研 究

Research

育 種 系

Department of Sugarcane Breeding

農 藝 系

Department of Agronomy

植 物 營 養 系

Department of Plant Nutrition

植 物 保 護 系

Department of Plant Protection

製 糖 化 學 系

Department of Sugar Technology

副 產 發 展 系

Department of By-product Utilization

地 下 水 研 究 中 心

Ground Water Resources Research Center

技術服務

Technical
Service

科 學 資 料 中 心

Data Processing & Publication Center

推 廣 講 習 中 心

Extension & Training Center

農 場 管 理 中 心

Farm Management Center

儀 器 服 務 中 心

Instrument Service Center

化 驗 服 務 中 心

Chemical Analysis Center

高 雄 公 證 處

Kaohsiung Inspection Center

實 驗 場

Experiment
Station

虎 尾 蔗 作 實 驗 場

Huwei Sugarcane Experiment Station

新 營 蔗 作 實 驗 場

Hsinying Sugarcane Experiment Station

屏 東 蔗 作 實 驗 場

Pingtung Sugarcane Experiment Station

管 理

Management

總 務 課

General Business Office

工 業 關 係 課

Personnel Office

會 計 課

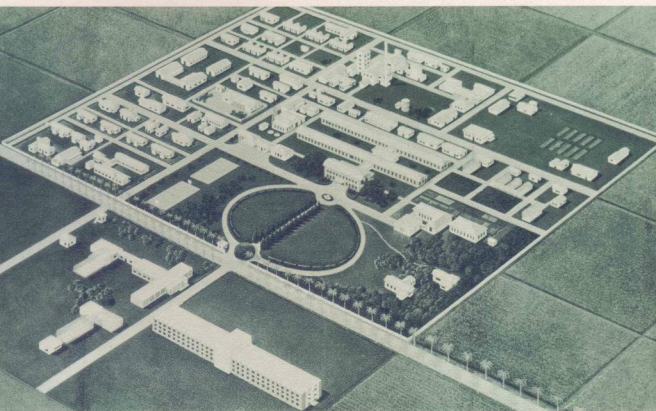
Accounting Office

人 員

本所現有人員計 412 名，其中包括研究人員 145 名，技術人員 200 名，及管理人員 67 名。

STAFF

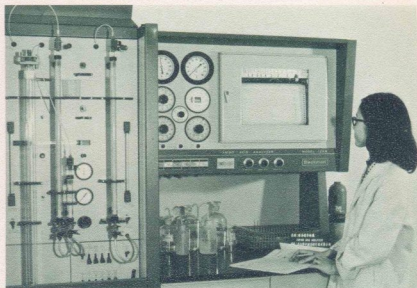
This institute has a total staff of 412 including 145 degree-holding researchers, 200 technicians, and 67 managerial personnel.



本所全景圖
A panorama of TSRI.

用胺基酸分析儀檢定蛋白質之
胺基酸組成。

Determining amino acids of protein
with Amino Acid Analyzer.



用紅外線分光光譜儀檢定化合
物之結構。

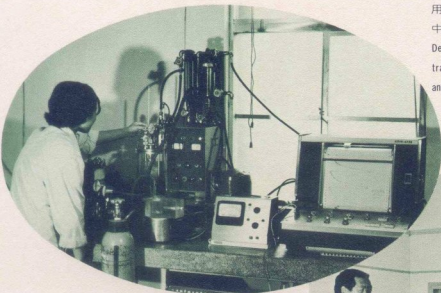
Investigating the chemical structure
of compounds with infrared spectro-
photometer.

設 備

本所各項設備，在歷年不斷增加或更新下，更顯充實，並已甚具規模。各項建築物面積共計37,299平方公尺，規劃整齊之試驗農場計約430公頃。圖書館藏書達四萬餘冊；經常訂閱之中外科學雜誌，共計332種。現代化科學研究儀器，共計2,488件，其中不乏珍貴之精密儀器，茲舉其重要者如下：自動分光比色儀，原子吸光分光儀，自動分析儀，自動糖度旋光儀，分子量測定儀，氣體分析儀，氨基酸分析儀，液體閃爍分光儀，X光繞射儀，螢光測定儀，示波儀，冷凍乾燥機，低溫高速離心機，超顯像顯微鏡，位相差顯微鏡。

FACILITIES

Through years of continual expansion the Taiwan Sugar Research Institute has multiplied in size. The buildings of this institute encompass approximately 37,299 square meters. This institute also owns 430 hectares of experimental farms with roads, irrigation ditches and pump stations systematically arranged. In order to provide the researchers with up to date scientific information, this institute has a library which contains more than 40,000 scientific reference books and 332 different regularly subscribed periodicals from the world over. The implements of research are an integral part of research and every effort has been made to obtain the finest instruments and equipment needed. Therefore, this institute has a very adequate supply of modern scientific implements. Among the more sophisticated are: automatic ultraviolet spectrophotometer, atomic absorption spectrophotometer, continuous auto-analyzer, automatic sugar polarimeter molecular weight apparatus, gas analyzer, amino acid analyzer, liquid scintillation spectrometer, X-ray diffractometer, electronic photofluorometer, oscilloscope, freezing dryer, refrigerated ultra-centrifuge, ultra-photo microscope, phase contrast microscope, etc. Although the Taiwan Sugar Research Institute is growing in many ways, this growth is carefully controlled and guided by the precept of quality as distinguished from sheer quantity.



用精密醱酵槽及溶氧儀測定工業膠溶液中之氧吸着率。

Determination of the coefficient of oxygen transfer in gum solution with jar fermenter and oxygen monitor.

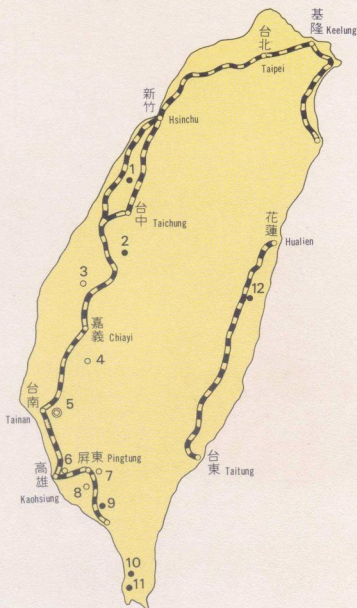


用X光繞射儀鑑定土壤粘土礦物。

Identification of soil clay minerals with X-ray diffractometer.

本所及附屬機構分佈圖

LOCATION OF BRANCH UNITS OF TSRI



- | | |
|---|---|
| 1. 后里甘蔗育種站 Houli Sugarcane Field Station | 7. 屏東蔗作實驗場 Pingtung Sugarcane Experiment Station |
| 2. 南投甘蔗露菌病測定園 Nantou Sugarcane Downy Mildew Testing Nursery | 8. 萬丹甘蔗育種場 Wantan Sugarcane Breeding Station |
| 3. 虎尾蔗作實驗場 Huwei Sugarcane Experiment Station | 9. 昌隆甘蔗育種場 Changlung Sugarcane Field Station |
| 4. 新營蔗作實驗場 Hsiuying Sugarcane Experiment Station | 10. 四重溪甘蔗交配園 Szuchungchi Sugarcane Crossing Nursery |
| 5. 台灣糖業研究所 Taiwan Sugar Research Institute | 11. 恒春甘蔗交配園 Hengchun Sugarcane Crossing Nursery |
| 6. 高雄公證處 Kaohsiung Inspection Center. | 12. 花蓮甘蔗育種站 Hualien Sugarcane Field Station |

出 版 物

(一)台灣糖業研究所研究彙報：

本所各項試驗研究之正式報告，於本所研究彙報刊佈，每年出版四期，以供台糖公司各生產單位參考應用，並與國內外各學術研究機構交換。

(二)台灣糖業研究所年報：

報導本所一年內主要研究成果及技術服務概況，以英文刊行。

(三)海外糖業文摘選擇：

國外最近發表有關糖業研究文獻摘要譯成中文，每月出版一期，單月工務，雙月農務，以供台糖公司各生產單位參考。

(四)技術專刊：

有關甘蔗農業及製糖工業之研究與調查結果，作一系列之專題介紹，依其性質分刊於技術專刊，以供現場人員參考。

PUBLICATIONS

1. Report of the Taiwan Sugar Research Institute.

This is an official publication of all the research conducted at this institute, published in Chinese with English translated abstracts. Four issues are published in a year.

2. Annual Report of the Taiwan Sugar Research Institute.

The annual report is published in English relating some of the more significant research conducted and achievements of the year.

3. Selected Translations of Foreign Sugar Research Papers.

This publication contains the Chinese translations of some of the more important foreign research papers in the sugar sciences. It is published monthly and is distributed to all of the plantations and sugar mills of the Taiwan Sugar Corporation for references.

4. Monographs.

This publication on special subjects in the sugar sciences is published whenever deemed necessary.

研 究 發 展

主要研究成果：

1. 光復以來育成甘蔗新品種41個(F135-F175)目前“F”品種佔台灣甘蔗總栽培面積之95%。
2. 研究甘蔗組織及細胞培養，輔助新品種之育成。
3. 建立宿根栽培制度，減低甘蔗生產成本，增加土地利用率。
4. 倡導甘蔗間作栽培，增加農民收益。
5. 完成台糖公司45,000公頃自營農場土壤調查，歸納成104個土壤管理組。
6. 在砂礫地蔗田於地下50公分處全面鋪設一層約10公分厚之粘土層，保水保肥有顯著增產效果。
7. 應用甘蔗葉片分析，調整蔗田氮肥合理施用量。
8. 進行甘蔗新品種抗病測定，有效控制露菌病、白葉病、黑穗病、嵌紋病等重要病害。
9. 以赤眼卵寄生蜂防除甘蔗螟蟲，效果優異，已推廣應用。
10. 以寄生菌防治草蟬若蟲為害蔗根，已獲成功。



甘蔗新品種F173,強抗葉枯病，宜於花蓮地區栽培。

A new sugarcane variety F173 immune to leaf blight disease, has been released for general planting in Hualien district.



甘蔗紫螟之新天敵棘矩小蜂。

The fact that parasitic *Tetrastichus inferens* oviposits on the pink cane borers is utilized for biological control.

RESEARCH AND DEVELOPMENT

Some Research Achievements.

1. A total of 41 varieties (F135 to F175) have been named into the F series since the restoration of Taiwan to the Republic of China in 1945. Currently, the F series varieties possess 95% of the total sugarcane planting acreage in Taiwan.
2. Establishing tissue and cell culture of sugarcane as a new approach in sugarcane breeding.
3. Establishing ratooning methods after new planting to form an integral cultivation system that has greatly contributed to lowering the costs in the production of sugarcane.
4. Establishing intercropping for greater utilization of land.
5. The mapping and grouping of the 45,000 hectares of TSC plantations into 104 soil management groups based on their soil properties.
6. The development of a technique to increase the productivity of sandy soil by transferring a 10 cm thick layer of clay soil to a depth of 50 cm under the sandy field, to serve as an impermeable layer in order to retain the water after rainfall or irrigation.



由甘蔗分生組織培育幼苗。
Sugarcane seedlings raised from
tissue culture.

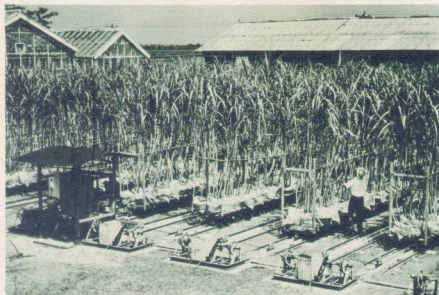


為害甘蔗之五種野鼠。

The five species of wild rats found menacing in Taiwan
sugarcane fields.

7. Establishing the sugarcane leaf analysis as a guide to determine the amount of nitrogen fertilizers to be applied on TSC plantations.
8. Effective control of downy mildew, white leaf, smut, and mosaic diseases by determining the disease resistance of all new sugarcane varieties to be released.
9. Commercial release of *Trichogramma australicum* for control of sugarcane borers in Taiwan.
10. Effective control of the insect pests *Mogannia hebes* whose nymphs attack sugarcane roots by a parasitic fungus, *Isaria* species.

11. 以磷化鋅毒餌防除蔗園野鼠效果甚優，成本低廉。
12. 應用藥劑控制蔗園雜草，節省勞力。
13. 降低砂糖灰份，改善品質，並試製無硫特砂成功。



利用光期室縮短日照促進甘蔗開花，以作雜交親本。

Inducement of sugarcane flowering for crossing program by aid of the photoperiodic house.

草蟬寄生菌



培養寄生菌防治草蟬若蟲。

Preparation of the fungal parasites for the control of nymphs of *Magannia hebes*.

14. 碳酸法糖廠飽和操作由間歇式發展為連續式，已完成中間型試驗可增進作業穩定，沉澱迅速，及節省人工。
15. 利用酚樹脂作粘合劑改進塑合板品質。
16. 完成蔗渣濕法散堆貯存試驗，保持蔗渣供製紙漿品質。
17. 以砂糖研製工業膠成功。
18. 選獲耐高溫酵母菌種，節省工場冷卻用電。
19. 以酒精廢醪製造酵母成功。
20. 酵母廢水以嫌氣釀酵及活性污泥處理，降低其BOD至放水標準以下。

11. Commercial release of zinc phosphide for control of wild rats in sugarcane fields.
12. The application of new herbicides for control of weeds in sugarcane plantations.
13. The quality of cane sugar has been greatly improved by reducing the ash contents; a process was developed to manufacture plantation white sugar without sulfur.
14. The development of a continuous carbonation process which is superior than the batch carbonation process formerly used in cane sugar manufacture. The new process has the advantages of being more stable, simpler in operation, and requiring less skilled operators.
15. The utilization of phenol-resorcinal-formaldehyde resin as an adhesive material for the production of bagasse particle boards.
16. The method of wet bagasse storage has been employed; the quality of the resulting bagasse is retained or improved for pulping.
17. The production of industrial gum from sucrose by fermentation has been developed.
18. A mutant yeast strain tolerant to high temperature was produced by gamma irradiation. This brought subsequent savings in electricity normally needed for cooling.
19. The liquid waste produced during the alcohol fermentation is utilized in manufacturing yeast.
20. The disposability of fodder yeast waste was made possible with the lowered BOD content after anaerobic fermentation and filtration through activated silt.

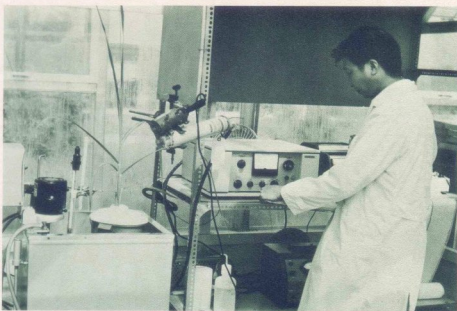


灌溉水質與土壤塩化及鹼化試驗所用之簡易滲漏計。

An array of lysimeters used to study irrigation water quality in relation to soil salinization and alkalization.

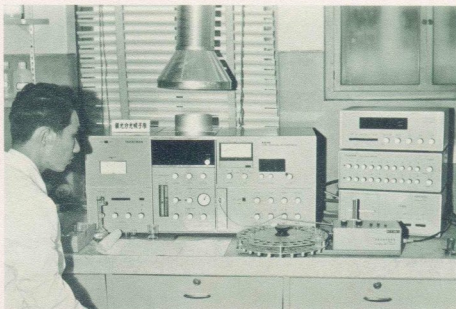
今後研究重點：

1. 推行甘蔗分區選種制度，育成適合不同風土區栽培之優良品種。
2. 蔗田機械化一貫作業之研究。
3. 研究肥料最適之施用時期，施用方法及施用量。
4. 地下水源之開發及經濟利用。
5. 建立合理灌溉系統。
6. 加強防除蔗園病蟲，鼠害，減少原料損失。
7. 加強藥劑除草研究。
8. 改進製糖程序及製糖操作系統自動化之發展。
9. 發展砂糖下游產品。
10. 副產品（糖蜜、蔗渣）之有效利用。
11. 配合政府政策，協助其他農作物之研究。
12. 加強國際科學合作研究。



應用自動測定儀及放射性同位素技術研究磷鋅之拮抗作用。

Tracer techniques are employed to study the antagonism of P and Zn in sugarcane plants.



用原子吸光分光儀測定土壤，灌溉水，植體，蔗汁及砂糖中各種陽離子成分。
Atomic absorption spectrophotometer used for quantitative analyses of cation components in soils, irrigation water, plant tissues, cane juice, sugar, etc.

Research Programs to Be Emphasized.

1. Regional selection of cane varieties based on their adaptability to different soil and climatic conditions.
2. Study on the complete mechanization of sugarcane cultivation.
3. Study on the optimal fertilization of sugarcane.
4. Developing and utilizing ground water resources.
5. Establishing an irrigation system for TSC plantations.
6. Control of sugarcane diseases, insect pests, and field rats.
7. Chemical weed control.
8. Improving and automatizing the sugar manufacturing process.
9. Developing down-stream products from sucrose.
10. Utilizing by-products (i.e., molasses, bagasse).
11. In compliance with the government's request for fuller utilization of the institute's facilities, research on other farm crops will be conducted.
12. International cooperation in either agricultural or sugar technological researches.

技 術 服 務

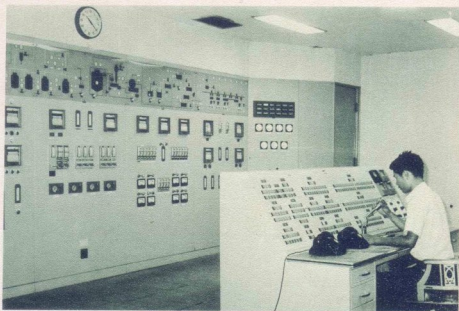
1. 研究資料之蒐集，分析與整理；研究刊物之編輯，出版與分發；圖書雜誌之訂購，管理與借閱；研究題材之攝影服務。
2. 台糖公司各生產單位儀器檢修服務；本所研究用儀器之訂購與維護。
3. 研究成果之推廣示範；辦理各項技術訓練與實習指導。
4. 製糖原料，產副品，土壤，植體，水質等之化驗與分析。
5. 試驗農場之規劃與管理；優良豬種之繁殖與分配。
6. 辦理台糖公司外銷產副品及進口大宗物料之公證業務。



圖書館
The Library

由儀器中心主持設計安裝在高雄總廠之製糖中央自動管制系統。

This central control system for automatizing sugar-manufacturing process was designed and installed by the Instrument Service Center of TSRI at the Kaohsiung Sugar Factory.



TECHNICAL SERVICES

1. The Data Processing and Publication Center is responsible for the collection, classification, storage, and analysis of research data; the editing, publication, and distribution of research papers; and the management of the institute's technical library and the photograph processing laboratory.
2. The Instrument Service Center is responsible for the purchase, maintenance, and repair of all the instruments of the Taiwan Sugar Corporation.
3. The Extension and Training Center is responsible for the extension of the products of our research and the training of technicians.
4. The Chemical Analysis Center is responsible for the analyses of any material concerned with the sugar industry.
5. The Farm Management Center is responsible for the management of the institute's experimental farms including a hog ranch and the beautification of the institute's grounds.
6. The Kaohsiung Inspection Center is responsible for the inspection of the ordered imported materials and the products of the Taiwan Sugar Corporation to be exported.



越南糖業技術人員接受本所專家指導田間實習情形。

Vietnamese students being trained in sugarcane technology.



高雄公證處辦理外銷砂糖公證業務。

Products of TSC to be exported are inspected by the Kaohsiung Inspection center of TSRI.

實 驗 場

本所於虎尾、新營、屏東三地各設置蔗作實驗場，分別負責其所在地區糖廠有關品種、農藝、植物保護等研究成果之示範，宣導與推廣；各項區域性試驗之執行；新品種蔗苗之繁殖與檢疫；氣象觀測與資料整理；特殊區域性問題之研究。

EXPERIMENT STATIONS

This institute has three experiment stations located in the districts of Huwei, Hsinying, and Pingtung. These stations are responsible for the extension, demonstration, training, the multiplication of newly released sugarcane varieties, and the collection of local climatic data in their respective district. Some researches are also conducted to solve local problems.



同位素館

Radioisotope Laboratory



本所庭園

A scenic spot at TSR1.

The sugar crystal is a symbol of
our sugar industry.

台灣糖業研究所

台灣省台南市生產路54號

中華民國六十三年

TAIWAN SUGAR RESEARCH INSTITUTE

TAINAN, TAIWAN, REPUBLIC OF CHINA

1974