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WELCOME ADDRESS

Dr. Antonio Sotomayor-Ríos

President CFCS, 1989-90, and  
Director  
USDA-ARS, Tropical Agriculture Research Station  
Mayaguez, Puerto Rico

Master of Ceremonies and Vice-Chairman of the Caribbean Food Crops Society, Dr. Miguel A. Lugo López; Hon. Benjamín Cole, Mayor of the City of Mayaguez; Hon. Alfonso Dávila, Secretary of Agriculture of the Commonwealth of Puerto Rico; Dr. Darshan Padda, Chairman of the Board of Directors of the Caribbean Food Crops Society; other members of the head table; delegates and visitors, ladies and gentlemen:

On behalf of the Organizing Committee of the 26th Annual Meeting of the Caribbean Food Crops Society (CFCS), I wish to welcome you to Puerto Rico and particularly to Mayaguez. It would be impossible to mention the names of all the persons who have contributed towards organizing and ensuring the success of this meeting; but, without the generous help of the Mayor of Mayaguez, we would not have been able to assemble today in this attractive setting. Thank you again, Mayor Cole for the cooperation that you and your staff have given us. Some of you are visiting Mayaguez for the first time. We trust that your stay here is enjoyable and that, when you leave Mayaguez, you will take along very pleasant memories of the 26th Annual Meeting and the hospitality of the people of this beautiful city.

During this week, diverse speakers will cover many aspects of the agriculture of the Caribbean Basin; 11 specialists will discuss the use and potential of forage legumes for the tropics in a special workshop; and in four plenary sessions, 10 speakers will talk about past, present, and future research involving genes, the essence of life. We will learn how plant genetic transformations will not only revolutionize agriculture but will have a profound effect on our lives as well. All of the presentations will be in the Proceedings, which I promise will be ready for distribution within the next 12 months.

In April throughout the world, we had a big celebration, EARTH DAY, to alert humanity of the need of protecting our environment. This year's Earth Day was celebrated with numerous activities, which were covered by newspapers, radio and television. Earth Day should serve as a constant reminder of the problems our fragile planet faces in the future. As we approach the year 2000, we should ask ourselves if we are doing what must be done in order to meet the probable demands of the years ahead.

According to recent estimates, it is expected that the present world population of about 5 billion, will be doubled by the year 2,040. If these predictions come true, we will be feeding twice the number of people which we now have in 1990. New technology must be developed or existing technology streamlined to produce our food more efficiently. The productivity of the arable land of the world must be maintained and marginal or less productive soils revitalized. Crop losses need to be minimized, and insects and diseases controlled more efficiently. Better and more innovative machinery for handling specific crops needs to be developed. As our interest in our world increases, there will be a greater demand for better water quality, for more nutritious and safer crops, and for more control of the environment.

All of us who are involved in aspects of food production need to be aware that, if proper measures are not taken, hunger and deprivation can occur throughout the world. On the other hand, the many new developments in the area of biotechnology which will be discussed at this meeting will, if properly applied, bring a new era of prosperity for the generations to come.

Whatever course of action we may take to improve and expand the field of agriculture, we must remember that we are only temporary guardians of the earth, holding it in trust for those who will follow in our footsteps.

We are grateful for this opportunity to come together and are united by our common interest in the future of agriculture in the Caribbean. I hope that we will meet again next year and for many years thereafter.



## KEYNOTE ADDRESS

Hon. Alfonso L. Dávila

Secretary of Agriculture  
Commonwealth of Puerto Rico

Antes que nada, deseo felicitar a los organizadores de esta Asamblea Anual de la Caribbean Food Crops Society (CFCS), además, felicitar a TARS (USDA - Tropical Agriculture Research Station) y a su Director, Dr. Antonio Sotomayor Ríos, en la celebración del 90<sup>mo</sup>. Aniversario de esta entidad.

El tema para la Asamblea Anual de la CFCS, "Germoplasma y Biotecnología en el Mejoramiento de Cultivos Alimenticios" es uno apropiado y de actualidad. Estamos en la era de la Biotecnología. Esta, al igual que las otras eras: la mecánica, la química y la de la revolución verde, ayudará grandemente a nuestra sociedad, especialmente, en la producción agrícola. El impacto de la biotecnología se ha notado primero en la producción animal. A través de la transferencia de embriones, inserción de genes, hormonas de crecimiento y otras técnicas de ingeniería genética, las vacas producirán más leche y el ganado dé ceba, cerdos, ovejas y pollos producirán más carne por libra de alimento consumida. El impacto en la producción vegetal se notará más lento pero los avances técnicos permitirán que las principales cosechas sean alteradas genéticamente para desarrollar resistencia contra enfermedades e insectos, producción más alta en proteínas y la propia producción por parte de las plantas de fertilizantes y yerbicidas.

Los productos finales de la biotecnología, desde experimentación hasta la introducción comercial del producto, tomarán su tiempo pero llegarán para beneficio de todos los sectores económicos de la sociedad.

Entre ellos podemos mencionar la producción masiva en microorganismos de fármacos proteínáceos, incluyendo un número de hormonas, enzimas, aminoácidos; suplementos para la detención, prevención y tratamiento de enfermedades infecciosas y genéticas; y otras que podrán ser usadas para aumentar la eficiencia productiva.

La aplicación de la biotecnología en plantas podrá modificar los cultivos de manera que puedan hacer proteínas más nutritivas, resistir insectos y enfermedades, crecer en ambientes poco apropiados y proveer su propio fertilizante nitrogenado. Mientras los impactos inmediatos de la biotecnología serán mayores para animales de la finca, los impactos a largo plazo pueden ser sustancialmente mayores para plantas.

Deseo traer a su atención la percepción pública negativa en cuanto a las consecuencias que pudiese ocasionar un organismo alterado genéticamente al introducirse en el ambiente.

Posiblemente esta situación es por falta de información de las personas versadas en la materia hacia el público en general. Conferencias como éstas deben de servir de medio de orientación para demostrar la utilidad de esta ciencia. No hay evidencia de que existan peligros únicos ni en el uso de las técnicas de recombinación del DNA ni en la transferencia de genes entre organismos no relacionados; los riesgos asociados con la introducción de organismos alterados mediante el r-DNA son los mismos en clase que aquellos asociados con la introducción en el ambiente de organismos no modificados y organismos por otras técnicas genéticas.

Entendemos además, que los científicos que realizan la experimentación están conscientes de tener bajo control estricto las medidas necesarias para evitar riesgos en su experimento. Sin embargo, las Agencias Federales (USDA-APHIS-PPQ, EPA y FDA) han realizado una evaluación de su legislación y reglamentación y concluyen que tienen los mecanismos adecuados para regular tanto la experimentación a nivel de campo, como la introducción con el ambiente del producto final de la biotecnología. Además, están dialogando a nivel internacional para establecer una política pública uniforme. Por su parte, los Estados están preparando su propia legislación o armonizando la existente para controlar los productos genéticamente alterados.

#### ¿QUE HEMOS HECHO PARA ATENDER LOS CASOS DE BIOTECNOLOGIA?

El Departamento de Agricultura revisó la Ley Núm. 93, aprobada el 5 de junio de 1973, Ley de Sanidad Vegetal de Puerto Rico y el Reglamento General promulgado bajo su amparo. Se encontró que estos estatutos proveen el marco necesario para regular los productos provenientes de la biotecnología, especialmente aquellos que tengan que ver con las plantas o partes de plantas. En adición, esta misma legislación fue sometida al Gobierno Federal encontrándolas adecuadas para regular la introducción de productos de plantas genéticamente alteradas.

La Ley Núm. 135 del 22 de julio de 1988, crea la Corporación para el Desarrollo Tecnológico de Recursos Tropicales de Puerto Rico (TROPICO). Su objetivo principal es promover el desarrollo de nueva tecnología en recursos tropicales, de forma que Puerto Rico se beneficie de las ventajas naturales en el desarrollo competitivo de la agricultura, ganadería, pesca, agroindustria, recursos acuáticos y marinos, forestales y terrestres, fuentes renovables de energía, medicina tropical y otros. Tendrá una estructura administrativa que permita la aplicación de tecnologías y proyectos de extensión en las siguientes áreas, entre otras: biotecnología de plantas, transferencia de embriones de ganado, acuicultura y maricultura, procesamiento agroindustrial, etc.

Hemos estado enviando personal a participar en diferentes conferencias nacionales sobre la Reglamentación Federal y Estatal en Biotecnología y otras conferencias relacionadas con esta actividad.

Aquellas personas o entidades que interesen llevar a cabo experimentación con productos u organismos genéticamente alterados deberán obtener un permiso federal para tales propósitos. El Gobierno Federal consultará con el Estado (incluyendo a Puerto Rico) para otorgar o no el permiso. El Estado hará la evaluación correspondiente y notificará al Gobierno Federal.

Entendemos que el movimiento de productos u organismos genéticamente alterados está bien controlado y que no habrá riesgos para el pueblo, más allá de aquellos normales que pudieran ocurrir al introducir cualquier producto u organismo producido por otros medios. Entendemos, además, que esta técnica será de gran beneficio, especialmente para la producción de abastos de alimentos para la creciente población mundial. Todos tenemos que aunar esfuerzos para la consecución de este fin.

COMMONWEALTH OF PUERTO RICO  
MUNICIPAL GOVERNMENT OF MAYAGUEZ  
OFFICE OF THE MAYOR

P R O C L A M A T I O N

DISTINGUISHED VISITORS AND GUESTS OF HONOR

WHEREAS: The Caribbean Food Crops Society is an independent, professional organization not affiliated with any public or private institution. Its objectives are to advance and foster Caribbean food production, processing and distribution to help improve the standard of living among the people of the Caribbean;

WHEREAS: Membership is open to all persons, firms or corporate bodies interested in the objectives of the Society. And at the present, CFCS has approximately 350 individual members from the Caribbean, Africa, Asia, North America and South America;

WHEREAS: As the Caribbean Food Crops Society will hold its 26th Annual Meeting on July 29-August 4, 1990 in the City of Mayaguez celebrating its Technical and Plenary Sessions in the Yaguez Theater and the Cultural Center "BAUDILIO VEGA BERRIOS";

WHEREAS; The Municipal Administration must express our greetings and offer our visitors our cordial hospitality, and honor all of them as it has been customary with DISTINGUISHED VISITORS;

THEREFORE: I, BENJAMIN COLE, MAYOR OF THE EXCELLENT CITY OF MAYAGUEZ, issue this PROCLAMATION providing as follows:

- a- Sincere greetings and warm welcome are conveyed to our DISTINGUISHED VISITORS, wishing at the same time a happy stay in our city.
- b- Our visitors are hereby designated DISTINGUISHED VISITORS AND GUESTS OF HONOR with all honors and privileges that such designation implies.

Have this PROCLAMATION registered in the records of this Municipal Government and published throughout different communication media-radio, press and television.

Copy of this Proclamation shall be delivered to our worthy visitors and the original shall be kept in our files for information of the posterity,

GIVEN UNDER MY HAND SIGNATURE AND THE OFFICIAL SEAL THIS JULY 24th., 1990.

BENJAMIN COLE  
Mayor

ATTEST:

OLGA LOPEZ HERNANDEZ  
City Clerk

WELCOME ADDRESS  
TROPICAL AGRICULTURE RESEARCH STATION 90th ANNIVERSARY

Dr. Antonio Sotomayor-Ríos

Director  
USDA-ARS, Tropical Agriculture Research Station  
Mayaguez, Puerto Rico

Master of Ceremonies, Dr. Miguel A. Lugo-López, ladies and gentlemen: On behalf of the entire staff, I welcome you to the Tropical Agriculture Research Station. We are very pleased to have you take part in this historic ceremony commemorating our 90 years of service in tropical agriculture research. It is a privilege for us to cohost with the University of Puerto Rico at Mayaguez and the Commonwealth of Puerto Rico Department of Agriculture the 26th Annual Meeting of the Caribbean Food Crops Society. I trust that we will continue working together, helping to create a better world for future generations. During the past 90 years, this Station and the University of Puerto Rico's Agricultural Experiment Station have made important contributions in the field of tropical agriculture. A very special recognition should be given to those who devoted their lives and careers to help maintain the reputation of this Station throughout the years. Fortunately, tonight we are honored to have with us a number of them, who are joining us in this celebration. I would like to thank all of you for being here tonight and to let you know that our Area Director, Dr. Ernest Corley, who has been a constant supporter of our programs, and our ARS Administrator, Dr. Dean Plowman, are here to share on this significant occasion.

During my 10 years as the Station's leader, I have learned that the captain of the team cannot win the game by himself. It is the individual players who, by giving their best in every situation and working together as a team, bring the victory and score that needed run. I am very proud of my staff; they have devoted long hours of their time to make this meeting possible. Without them, the job could not have been done. I would also like to give special recognition to Professor Pablo Rodriguez, the Acting Chancellor of UPR, Mayaguez, and his able staff, to Dr. Alejandro Ruiz, to the Hon. Alfonso Dávila, Secretary of Agriculture of Puerto Rico, to the members of the Mayaguez Lions Club, to Mr. and Mrs. Lilia Pol, and to the Mayor of the City of Mayaguez, the Hon. Benjamin Cole. It would be impossible to enumerate the names of all the other generous people who lent us their time, talents and experience for this and the other activities which you have enjoyed and you will be enjoying during this week. I trust that the results of their efforts will be obvious at the end of this week. We thank you again for being with us tonight and helping us to make this a very memorable occasion.

COMMENTS AT THE 90TH ANNIVERSARY CEREMONY  
OF THE TROPICAL AGRICULTURE RESEARCH STATION,  
MAYAGUEZ, PUERTO RICO

Dr. Ernest L. Corley

Director  
USDA-ARS, South Atlantic Area, Athens, Georgia

Distinguished speakers, members of the Caribbean Food Crops Society, colleagues from the University of Puerto Rico, fellow members of the Agricultural Research Service of the U.S. Department of Agriculture and guests: Let me say at the beginning what a delightful experience this is for me to participate in this very special event -- the celebration of the 90th Anniversary of the Tropical Agriculture Research Station here at Mayaguez.

My first trip to Puerto Rico was nearly 20 years ago when my work was focused on animal science research. I remember so well discussions with Dr. Jose Vicente-Chandler and seeing first-hand the tremendous accomplishments he and his staff had made in increasing milk and meat production from all-grass on steep pasture conditions here in Puerto Rico. My next trip was five years ago soon after moving into my current assignment. It was then that I first visited Mayaguez and the Tropical Agriculture Research Station. I was impressed then, as now, with the importance and uniqueness of the mission of this station, which is to:

1. Conduct tropical and sub-tropical agricultural research for the benefit of Puerto Rico, the Caribbean Basin and the United States, by introducing, evaluating, selecting, preserving and distributing germplasm;
2. Maximize utilization and conservation of natural resources;
3. Develop systems to increase food production for local use and export;
4. Develop systems for long-term use, conservation, and management of tropical plants and soils; and
5. Train young students and scientists from the Caribbean Nations for leadership positions in agriculture in the Region.

There has been a long and rich history during the past 90 years of development and accomplishments which can be seen on display here. Also, there has been and continues a true spirit of cooperation with our colleagues at the University, the City of

Mayaguez, and many growers throughout Puerto Rico. Working together, I am sure we will continue to develop and effectively face the challenge of the next decade and then the next century.

And now, it is my pleasure to introduce the keynote speaker for this 90-year anniversary program.

Our next speaker grew up on a dairy farm in Utah. He earned his Bachelor of Science Degree in Dairy Science at Utah State University, his Masters Degree in Animal Husbandry, and his Doctor's Degree in Animal Genetics at the University of Minnesota. He joined the Agricultural Research Service in 1956 at Beltsville, MD, where he was first animal geneticist, and then advanced to positions of increasing responsibility -- Research Leader, Branch Chief, and Director of ARS programs in 7 western states.

In 1984 he became Head of the Animal, Dairy and Veterinary Sciences Department at Utah State University.

Then in 1988 he was appointed Administrator of the Agricultural Research Service, the position he now holds. As Administrator over the past two years, he has distinguished himself in his (1) open and effective management style, (2) his common sense approach to decision making, (3) his attention to science and the needs of scientists, and (4) his insistence that the administrative process must service the needs of scientists.

Ladies and gentlemen, please welcome our keynote speaker, Dr. R. Dean Plowman.



STATEMENT ON THE 90th ANNIVERSARY CEREMONY  
TROPICAL AGRICULTURE RESEARCH STATION

Dr. R. Dean Plowman

Administrator  
USDA, ARS, Washington, D.C.

Mr. Cole, Dr. Corley, Dr. Sotomayor, representatives of the Caribbean Food Crops Society, guests:

This graceful setting reminds us of the importance of agriculture to Puerto Rico and throughout the Caribbean Basin. The serenity of this place belies the fact that this Station has been a dynamic and innovative center for agricultural research for nearly a century. As we look back on 90 years of accomplishments at the Tropical Agriculture Research Station, we should also look ahead to many challenges in the future. This station has many advantages: Good land, good scientists, good facilities. It has the support of its community, the goodwill of its neighbors in the Caribbean Basin, and the respect of its peers in scientific research.

It is appropriate that this ceremony is being held during a meeting of the Caribbean Food Crops Society. The past, present, and future of the Station is tied to the Caribbean Basin. We hope that the spirit of cooperation that has existed in the past will become even stronger in the future.

It is also appropriate that local civic officials are here for this occasion. The city of Mayaguez and the University of Puerto Rico at Mayaguez--as well as the Commonwealth of Puerto Rico--have been strong and consistent supporters of our work. We appreciate their cooperation and assistance. In return, we hope that we have given back as much as we have received.

This Station was established by the United States Congress at the beginning of the 20th Century. It was originally established on a temporary basis at Rio Piedras but moved to Mayaguez in 1902. Over the years, and with a few changes in its name, it has become one of the world's premier facilities for tropical and subtropical agricultural research. In 1951, on its 50th anniversary, the Station received a USDA Superior Service Award for exceptional achievement in research on problems of tropical agriculture.

The Station has made many contributions to agriculture, not only in Puerto Rico and not only in the Caribbean Basin, but in the larger sense as well. Some of the past and current accomplishments include:

- \* The first systematic soil survey on Puerto Rico. Conducted in 1902, this survey in the vicinity of Arecibo and Ponce covered nearly all of the soil and climatic conditions on the island. Later, at the recommendation of the Station's Botanist, the first forest reserve on the island was established at a time when there was great concern about the declining forest on the island. This reserve is now known as the Luquillo Division of the Caribbean National Forest.
- \* Introduction and development of improved varieties of sugar cane. This helped sustain the sugar industry in Puerto Rico during the early years. At the same time, there was extensive research on the culture and diseases of coffee and tobacco, which along with sugar were by far the most important export crops of Puerto Rico early this century.
- \* Investigation of both native and introduced legumes. These legumes are essential in pasture improvement, soil rehabilitation, and soil conservation. Many different legumes have been given trials, and many seeds have been distributed on the island and elsewhere.
- \* Research on improving tropical crops and adapting varieties to the tropics. These include sweet potatoes, yams, sweetcorn, and tropical beans. Suresweet, one of the first sweetcorn varieties suitable for the tropics, was developed by the Station. At one time, there was flourishing pineapple research here, and current on tropical fruit centers around the papaya.
- \* The successful winter nursery program. The winter nursery, at Isabela, has become an invaluable resource for plant breeders in the United States. It allows scientists to get a second generation of a several grain and legume crops every year, thus accelerating selection. More than 20 research organizations and universities in the United States participate in this program.
- \* The tropical and subtropical plant germplasm program. One of the highest priorities within the Agricultural Research Service is the maintenance of biological diversity through germplasm preservation, evaluation, enhancement, and improvement. This situation, with its extensive collection of tropical plant germplasm, its close ties to the National Clonal Germplasm Repository in Miami, and its supervision of the Germplasm Introduction and Research Unit at St. Croix, is a valuable resource worldwide for breeders of tropical germplasm.
- \* An extensive program of training for young scientists. This program helps young scientists become established in science, aids ongoing research and extension, and prepares

students for challenging opportunities in agriculture throughout the Caribbean Basin.

How does this Station fit into the bigger picture of agricultural research in the United States? ARS is the principal scientific research agency of the United States Department of Agriculture. We are a problem solving agency. We look to this Station, therefore, to solve problems related to tropical agriculture.

Our highest priorities as an agency include several that are directly related to the work at this Station, including soil and water conservation and related environmental research, germplasm studies, improving the economic efficiency of agricultural production, and enhancing the marketability of agricultural commodities.

I am reminded of one of my first duties upon being named Administrator of the Agricultural Research Service more than two years ago. I helped install five scientists into the ARS Hall of Fame. The Hall of Fame honors researchers from the agency who have made outstanding contributions to agricultural science and who are examples for other researchers.

One of those five researchers was Dr. José Vicente-Chandler. A leader in research, teaching, and extension, Dr. Vicente-Chandler exemplifies all that is good in science for the benefit of people everywhere. He has been a scientist, research leader, agricultural leader, and ambassador of good will in Puerto Rico and throughout the Caribbean Basin.

On this special occasion, it is my pleasure to present Dr. Sotomayor with a special gift. This plaque was specially commissioned for the anniversary and I understand that Dr. Sotomayor will display it in a place of honor in the administration building.

The plaque shows a picture of the administration building, and beneath it are the seal of the United States Department of Agriculture and these words:

"Tropical Agriculture Research Station

Congratulations and Best Wishes on Your 90th Anniversary"

Dr. Sotomayor, I can't improve on that wording except to say that we look ahead to even greater accomplishments in the future. We wish you well for many more years to come.