COMMITTEE REPORTS AND SECTION MEETINGS

REPORT OF THE STANDING COMMITTEE ON
GERMPLASM AND BREEDING

INTRODUCTION

Before outlining the general activities of the Committee for the last three years, we bring to the Society's notice a serious situation for possible remedial action. Workers in all crop plants are seriously concerned that with the advent of modern varieties, increasing population pressure on the land and rapid urbanisation, valuable genetic resources of cultivated plants and their wild relatives will be irretrievably lost. Older varieties with valuable gene blocks will be discarded and wild relatives will be bulldozed out to make way for cities and organized agriculture.

In the particular context of sugarcane, there are several points that should be stressed. First, sugarcane evolved in New Guinea and associated islands. Rapid developments in mining, agriculture and urbanisation, associated with the trend to eating processed sugar rather than sugarcane, is leading to rapid depletion of genetic resources in this region. Second, recent studies on the origin of sugarcane by means of chemical markers has indicated that there are other genera besides *Saccharum* involved in the origin of sugarcane. Genera closely related to sugarcane are very poorly represented in the world collection because most collecting expeditions have concentrated almost exclusively on *Saccharum*. These genera could be vital to a reconstruction of the sugarcane plant for greater disease resistance, higher sugar concentration and increased yields. Third, our present world collection is only a fraction of the total material available and needs augmentation.

In the past, collecting expeditions and genetic conservation have been activated by individual organisations. The Society is very indebted to the USDA, Government of India, HSPA, Queensland BSES and CSR in this regard. However with rising costs of exploration and research, and the recognition of greater needs, it is suggested that the sugar industry as a whole, through the society should give some measure of financial support to genetic exploration and conservation.

We have considered various possibilities for accomplishing this end. It is suggested that the Society could attempt to negotiate a contract with the University of Papua and New Guinea to collect and maintain all available clones of *Saccharum* and related plants. Selected clones could be introduced to the world collections and the material would be available *in toto* for scientific research on the spot by interested parties. It would also be possible for interested organisations or the Society to finance studies on specific aspects (students for higher degrees etc). The yearly cost could be in the order of US$20,000 financed by a levy on cane sugar producing countries *pro rata* to their gross production. Alternatively, if this proves too difficult to negotiate, approaches could be made to international organisations and foundations (FAO, Rockefeller, etc).
WORLD GERMPLASM COLLECTIONS

The statement of Dr Coleman on the current status of the world collection at Canal Point and Beltsville is attached to this report.

The contributions of the Government of India and the United States of America in maintaining and distributing genetic stocks is deserving of special recognition. It is recommended that the Resolutions Committee be asked to prepare appropriate resolutions to honor the Governments involved.

We are also indebted to Dr Yen of the Bernice Bishop Museum Honolulu who arranged a collection of sugarcane clones from the Solomon Islands on our behalf.

ISSCT SUGARCANE BREEDERS NEWSLETTER

Dr Norman James of the USDA has been editor of the Newsletter for the last three years and continued the high standard set by his predecessor. The continuing success of the Newsletter is a reflection of Dr James' ability and hard work. He deserves special recognition by the Society along with USDA who published the Newsletter without cost to the Society.

Dr James finished his three year term as Editor with the March 1974 issue. Mr B. T. Roach of CSR Ltd, Macknade, Queensland has kindly agreed to accept the position as Editor for a three year term during which publication will be sponsored by the CSR Ltd.

MISCELLANEOUS

There has been general acceptance of our standardized system of call signs, recording year and clone numbers. Several organisations have registered new call signs and systems with the committee.

The problem of describing sugarcane clones has not been completely solved and is still under review.

In accordance with a resolution of the 14th Congress, the Committee reviewed the "man-made" hybrids collection of 400 clones maintained at Canal Point. The number of clones were reduced below 200. With subsequent additions of outstanding germplasm, this category now numbers 197. There will be an approximately annual review of this category to maintain the best available germplasm for distribution to breeders.

We record with deep regret the death of a most valued member of our Committee, Dr R. R. Panje. Dr Panje was a distinguished scientist whose pioneering researches on the wild cane germplasm collection at Coimbatore were models of scientific investigation. He will be greatly missed by colleagues and members of this Committee.

J. DANIELS
Chairman
Standing Committee on
Germplasm and Breeding
COMMITTEE REPORTS AND SECTION MEETINGS

STATS OF THE WORLD COLLECTION AT CANAL POINT, FLORIDA AND BELTSVILLE, MARYLAND

a) Status:

<table>
<thead>
<tr>
<th>Species or Group</th>
<th>No. end of '70</th>
<th>Added</th>
<th>Deleted</th>
<th>No. end of '73</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>S. officinarum</em></td>
<td>686</td>
<td>10</td>
<td>54</td>
<td>642</td>
</tr>
<tr>
<td><em>S. robustum</em></td>
<td>46</td>
<td>0</td>
<td>9</td>
<td>37</td>
</tr>
<tr>
<td><em>S. spontaneum</em></td>
<td>286</td>
<td>1</td>
<td>61</td>
<td>226</td>
</tr>
<tr>
<td><em>S. edule</em></td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td><em>S. sinense</em></td>
<td>104</td>
<td>0</td>
<td>8</td>
<td>96</td>
</tr>
<tr>
<td>Man-made hybrids</td>
<td>367</td>
<td>20</td>
<td>190</td>
<td>197</td>
</tr>
<tr>
<td>Domestic commercial</td>
<td>75</td>
<td>5</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>Others (including special and natural hybrids)</td>
<td>333</td>
<td>42</td>
<td>76</td>
<td>299</td>
</tr>
</tbody>
</table>

b) Distribution:

During the 3 years 1970-73, cuttings of 1,710 sugarcane clones were furnished to 57 countries. Transfer of these clones to research and other agencies required 82 air shipments.

c) Seven hundred of 1,586 clones now in the collection are maintained at Beltsville, Maryland in a quarantine greenhouse. All of the *S. officinarum* and *S. robustum* clones are at Beltsville. They were moved there in 1967 following the occurrence of leaf scald at Canal Point. For the past 2 years, no incidence of leaf scald has been observed in the World Collection at Canal Point. In 1972, Dr. A. G. Gillaspie, Plant Pathologist, was transferred from Houma, Louisiana to Beltsville. He now has the responsibility of maintaining the collection in a disease-free condition and supervising the quarantine of newly introduced clones.

The collection of man-made hybrids was reduced to 197 clones during 1973 in accordance with direction from the ISSCT Germplasm and Breeding Committee (see ISSCT Sugarcane Breeders' Newsletter 31:6).

The big job of selecting healthy, insect-free cuttings, and of preparing and handling shipments on this scale has made it necessary for the US Department of Agriculture to organize the operation on a large scale and to limit future shipments to other countries to one period each year and to 25 clones per country. All requests for varieties will be accumulated each year for shipment during that period. Requests accompanied by permits (when necessary) must be in Beltsville by June 1 of each year.

Dr. R. E. Coleman
United States Dept Agriculture

THE 1971-74 STANDING COMMITTEE ON SUGARCANE DISEASES

MEMBERS OF THE COMMITTEE

B. T. Egan (Chairman) Australia  L. J. Liu, Puerto Rico
H. M. Barat, France            A. Noronha, Mozambique
This has been a period of consolidation, building on the results achieved by committee members in the preceding term. My first report in 1971 detailed several worthwhile projects which had come to fruition in the 1968-71 period, e.g., SPN, Incandex, the ISSCT Standard Disease Rating System, revision of the World Disease List. Further progress on these and other items is given below.

**Sugarcane Pathologists' Newsletter**

The Experiment Station of the South African Sugar Association sponsored SPN during this inter-Congress period. Editors were G. M. Thomson and J. Dick of the Station staff, with whom were associated H. Koike in Louisiana and L. S. Leu in Taiwan. The Pathology Section meeting at the last Congress resolved that the Standing Committee, and specifically the Chairman of it, should have overall responsibility for the Newsletter.

The distribution list expanded from 250 in 1971 to 318 from 51 different countries at present. SPN has been published twice yearly, except for the final issue in 1973 which had to be postponed due to lack of articles contributed: The expanded list of people receiving SPN has not resulted in any increase in articles, unfortunately.

SPN is produced and posted at the expense of the sponsoring body — copies are free of cost to those requesting it. This is a happy situation as long as costs are kept in bounds, so perhaps some restrictions should be placed on the number of copies produced, and hence on who can receive it. The alternative, in view of escalating costs, is to introduce a subscription charge, which would result in other difficulties. Policy was discussed at the 1971 Sectional meeting, and it was decided that — contributions should be relatively informal, and distribution mainly should cover those engaged in sugarcane research or administration, with regular reviews of the list.

I am happy to report that the Experiment Station of the Hawaiian Sugar Planters' Association will sponsor SPN for the next three years, commencing with the final issue in 1974. Editors will be G. W. Steiner and R. S. Byther, of the Genetics and Pathology Department.

**Incandex**

This is the International Cane Disease Index initiated by former SPN editor P. B. Hutchinson, and supported by CSR Limited, Australia. Literature references are added regularly to the file, with the assistance of pathologists.
in many sugar-producing countries. Appropriate entries may be retrieved and listed on request, either for the disease as a whole or specified aspects of it. Sugarcane pathologists were probably the first international group to have computer access to an up-to-date annotated bibliography of their subject.

CSR Limited deserves our thanks for this free service. It has been used at the fairly high rate of one search every four days since its inception.

**ISSCT Collection of Colour Slides Illustrating Diseases**

This now comprises 277 colour transparencies on a wide range of diseases. This project is currently administered and supported by CSR Limited, Sydney, Australia. Pathologists from many countries have co-operated in building the collection. During the last five years, approximately 4,700 duplicates have been despatched to pathologists and other interested personnel in most sugar-producing countries.

**ISSCT Standard Disease Rating System**

The subject was raised at the 13th Congress, and reported on by the previous Standing Committee at the 14th Congress. The Pathology Section meeting there accepted our recommendation, and requested research organizations and individuals to adhere to this 0 - 9 system in reporting results. Acceptance has been reasonably good.

**World Disease List**

Unfortunately, not all the suggested changes to the List were implemented in printing the Proceedings of the last Congress. Some items have been re-submitted in 1974. Fewer additions were made to the 1974 list, compared with 1971. Some name changes for countries occurred, and further scope for rationalization and/or elimination still exists. It is obvious that some countries have a far from complete listing of diseases present, but it is difficult for the Committee to obtain accurate (or any) information at times.

The previous Committee recommended that nematodes be considered for inclusion in the List, as from 1974. However, the Pathology Section meeting at New Orleans voted against this, arguing that problems with identification, pathogenicity and taxonomy were still too fluid. Consequently, nematodes have not been added.

**Other Matters**

Liaison with FAO on disease loss assessment has been continued, but little progress has resulted as far as sugarcane is concerned.

The 2nd International Congress for Plant Pathology was held in the USA in 1973. Several sugarcane pathologists present met to discuss items of mutual interest. Unfortunately, due to delays beyond my control, this Committee was not represented at a meeting held to discuss links between crop oriented groups and the International Society of Plant Pathologists. This should be followed up by the next Committee.

My thanks go to those Committee members who were able to assist me in various ways during the last three years.

B. T. Egan

Chairman
SUGARCANE DISEASES AND THEIR WORLD DISTRIBUTION

INTRODUCTION

It is now 24 years since the initial publication of this list, as a paper by J. P. Martin at the 7th ISSGT Congress in Brisbane in 1950. The list has grown in size and importance, and is the standard reference for those interested in sugarcane diseases. This was accomplished through the efforts of the previous Chairman, J. P. Martin and C. A. Wismar of Hawaii, and R. Antoine of Mauritius, assisted by the many committee members who have served over the years.

The first major revision in style and format was made by the 1968-1971 Committee to consolidate the entries, and improve readability. Unfortunately, not all the suggested changes were implemented for the 1971 Proceedings. Some have been resubmitted in 1974.

At a meeting of the Standing Committee held at the Experiment Station, Mount Edgecombe on 28th June, 1974, it was decided that only amendments to the disease list should be published in the Proceedings and not the complete list in its customary three parts as has been done in the past.

The amendments include all new records, additional countries reporting sugarcane diseases for the first time, country name changes and amendments to the pathogen list.

Fewer new records for diseases or localities were received for the 1974 list, compared with the 1971 list. Again, references to all additions have been given. Three new countries appear in the list (Chad, Congo Republic, Morocco) while two name changes (Sri Lanka, Zaire) were made. Two names disappeared, as Okinawa is included with Japan, and New Britain with New Guinea. Further scope for rationalization still exists, e.g. with some of the Caribbean islands.

Major changes in pathogens include the shifting of ratoon stunting and grassy shoot from virus to bacterium? and mycoplasma? respectively.

Also, Drechslera is recognized in place of Helminthosporium as the generic name for several fungi.

THE CANE SUGAR PRODUCING COUNTRIES AND THEIR DISEASES (New Entries)

<table>
<thead>
<tr>
<th>Country</th>
<th>Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Red spot of leaf sheath¹³</td>
</tr>
<tr>
<td>Burma</td>
<td>Basal stem, root and sheath rot (M. sacchari),³⁹</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Rust (P. kuehnii)¹¹</td>
</tr>
<tr>
<td>Chad</td>
<td>Smut.¹¹</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Chlorotic streak.⁴</td>
</tr>
<tr>
<td>Guadeloupe</td>
<td>Leaf scald.¹¹</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Seedling blight,⁵ smut.¹</td>
</tr>
<tr>
<td>India</td>
<td>Alternaria leaf spot,⁸ striate mosaic.¹⁰</td>
</tr>
<tr>
<td>Iran</td>
<td>Red stripe.¹⁵</td>
</tr>
</tbody>
</table>
Ivory Coast. Smut.11
Malawi. Sheath rot.8
Mali. Smut.11
Morocco. Mosaic.11
Mozambique. Pineapple disease, rind disease, wilt.2
Nigeria. Mosaic, smut.11
Puerto Rico. Root rot (Pythium).6
Senegal. Smut.11
Swaziland. Brown spot, chlorotic streak, gumming, mosaic, pineapple disease, pokkah boeng, ratoon stunting, ring spot, rust, sheath rot, smut.16
Taiwan. Alternaria leaf spot, black leaf spot, yellow wilt.14
Upper Volta. Smut.11

REFERENCES TO NEW DISEASE LISTINGS

DISEASES OF SUGARCANE, THEIR CAUSAL AGENTS AND DISTRIBUTION (New Records)
Brown Spot, Cercospora longipes Butl, Swaziland.
Chlorotic Streak, Virus?, Swaziland.
Culmicolous Smut, Ustilago scitaminea Syd, Chad, Swaziland.
Gumming Disease, Xanthomonas vasculorum (Cobb) Dows, Swaziland.
Mosaic, Virus, Morocco, Swaziland.
Pineapple Disease, Ceratocystis paradoxa (Dade) C. Moreau, Swaziland.
Pokkah Boeng, Gibberella moniliformis Wincland, Swaziland.
Ratoon Stunting Disease, Virus? Bacterium?, Congo Republic, Swaziland.
Ring Spot, Leptosphaeria sacchari B. de Haan, Swaziland.
Rust, Puccinia kuehni (Krueg) Butl, Swaziland.
Sheath Rot, Cytospora sacchari Butl, Swaziland.

THE DISEASES OF SUGARCANE AND THEIR CAUSAL AGENTS (Amendments)
Alternaria Leaf Spot, Alternaria tenuis Auct.
Chlorotic Streak, Virus?
CAUSAL AGENTS OF SUGARCANE DISEASES (Amendments)

The causal agents of the diseases are arranged alphabetically under the following headings:

1. Bacterial Diseases
2. Fungal Diseases
3. Virus Diseases
4. Mycoplasma Diseases

1. Bacterial Diseases

Ratoon stunting?

2. Fungal Diseases

Alternaria tenuis Auct
Alternaria leaf spot
Leaf spot, seedling blight.

Curvularia senegalensis (Speg) Subram
Seedling blight

Drechslera halodes (Drechs) Subram and Jain
Seedling blight

Drechslera hawaiiensis (Bugn) Subram and Jain

Drechslera rostrata (Drechs) Rich and Fraser
Helminthosporium leaf spot

Drechslera sacchari (Butl) Subram and Jain
Eye spot

Drechslera stenospila (Drechs) Subram and Jain
Brown stripe

Pythium tardicrescens Van
Root rot

Chlorotic streak?

Mycoplasma sp

Grassy shoot?