IMPORTANCE OF DIGITIZATION OF LIBRARY RESOURCES WITH SPECIAL REFERENCE TO THE DIGITIZATION PROJECT OF THE NATIONAL SCIENCE FOUNDATION

SEMINAR ON USE OF INFORMATION TECHNOLOGY FOR DEPARTMENT LIBRARIANS

National Library Documentation Services Board

28 November 2017

Sunethra Perera

TOPICS DISCUSSED

- What is digitization
- Why Digitization? Benefits of Digitization
- World Scenario
- Selection criteria for digitization
- NSF Digitization project
- Sri Lanka – scenario

WHAT IS DIGITIZATION

- Process by which analogue content is converted to a sequence of 1s & 0s & put into a binary code to be read by a computer.

- Analogue material $\xrightarrow{\textit{conversion}}$ Digital material

  modem

ANALOGUE MATERIAL

Analogue material - many types

- Text
- images
- Audio - Sound (music, voice)
- Video

Nature of Analogue material

- Tied to a physical medium
- Bound to a sequential representation predetermined by the author (linear, fixed)

- very flexible

- can be browsed, searched, indexed, collated instantly

- can be manipulated, copied, altered easily

- can be compressed for storage (storage media-DVD, CD-ROM, other)

- **Can be copied unlimited number of times without degradation of the original analogue material**

- **Can be delivered in a variety of ways.**

- **Can be delivered to increasing numbers of computers - computer networks; Internet**

- Can be linked to a whole web of other content -

- Can be linked with other media to create multimedia

Contents
Featured content
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Languages ⚙

Geography of Sri Lanka

From Wikipedia, the free encyclopedia

Coordinates: 7°00′N 81°00′E

"Ceylon" redirects here. For the programming language, see Ceylon (programming language). For the hamlet in Canada, see Ceylon, Saskatchewan.

The main island of the island nation of Sri Lanka, itself known as **Sri Lanka** (formerly called *Ceylon*, *Lanka-dvipa*, *Simhala-dvipa*, etc.), is a South Asian island in the Indian Ocean, southeast of the Indian subcontinent, in a strategic location near major Indian Ocean sea lanes.

It has a total area of 65,610 km², with 64,740 km² of land and 870 km² of water. Its coastline is 1,340 km long. Sri Lanka's climate includes tropical monsoons: the northeast monsoon (December to March), and the southwest monsoon (June to October). Its terrain is mostly low, flat to rolling plain, with mountains in the south-central interior. The highest point is Pidurutalagala at 2,524.13 m. Natural resources include limestone, graphite, mineral sands, gems, phosphates, clay, hydropower.

Adam's Bridge, a land connection to the Indian mainland, is now mostly submerged with only a chain of limestone shoals remaining above sea level. According to temple records, this natural causeway was formerly complete, but was breached by a violent storm (probably a cyclone) in 1480. The formation is also known as *Rama's Bridge*, as according to Hindu mythology, it was constructed during the rule of Lord Rama.

Sri Lanka

Native name: ශ්‍රී ලංකා
Nickname: Pearl of the Indian Ocean

Map Sri Lanka

● Sri Lanka

Network *Internet access*

Contents [hide]
1 Geology
2 Topography
3 Climate
4 Ecological zones

WHY DIGITIZATION?

- **Digital collections have enormous potential for changing the way that information is used & for developing new ways of preserving, collecting, organizing, propagating & accessing knowledge.**

  (Witten, & Bruinbridge, 2003)

  - **due to the nature of digital material**
  - **Due to the advent of digital technologies**

WHAT TYPE OF MATERIAL CAN BE DIGITIZED?

- Printed material - books and <u>collections on paper</u>, from basic text documents to complex graphics
- rare documents, manuscripts, and high-resolution imagery.
- Hand written documents
- Type written (on manual type writers)
- Text in different languages
- Photographs

- audio and video tapes
- Multimedia

BENEFITS OF DIGITIZATION

- Access : broader & enhanced access to a wider community (computer networks/Internet)
- Delivery in many ways
- Collection Development –

  - online consortia (group of Libraries)- Library gateways/portals
  - Reunification of collections held in far –away locations.
  - Common interface
  - Cross reference searching – federated searching
  - Research & Education

- Support preservation
- Revenue - Sale of publications
- Institutional & strategic benefits – improve profile

DIGITAL LIBRARIES IN THE WORLD

1. World Digital Library. A source for manuscripts, rare books, films, maps and more in multilingual format.

2. Universal Digital Library. A collection of one million books.

3. Project Gutenberg. More than 33,000 e-books to read and download.

4. Bartleby. An immense collection of books for consultation, including fiction, essay and poetry.

5. ibiblio. E-books, magazines, academic essays, software, music and radio.

6. Google Books. More than 100,000 books for consultation, download or on-line purchase.

7. Internet Archive: The largest digital library for downloading e-books and audio-books for free.

8. Open Library: More than one million e-books of classic literature to download.

USPTO United States Patent and Trademark Office documents

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Application 10743335**
by United States Patent and
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Application 09848616**
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Application 10743327**
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Trademark Office

Network
Internet access

opics & Subjects

washington   440,100
new york   342,449
obama   279,947
california   269,950

Telev
CNN

KNTV (NBC)

Fox News
24,285

WRC (NBC)
27,669

son

Community Media   Community Texts   Free Audiobook Collection

NATIONAL DIGITIZATION PROJECT

- Project period : 5 years (2011 – 2015)

- Funds - Rs. 102 million

- Funding Body – Government of Sri Lanka

- Implementation Body – National Science Foundation

- Central Fund

- National Team of experts on e-repository development

- Project Steering Committee – 05 members
  - coordinate,
  - implement &
  - monitor

- Specifications to the Digital files

- Digitization - outsourced to a suitable reputed service provider Memorandum of Understanding

NATIONAL DIGITIZATION PROJECT

- 15 Universities
- 30 Research institutes   Service & Other
- S & T Institutions
- R & D Organizations
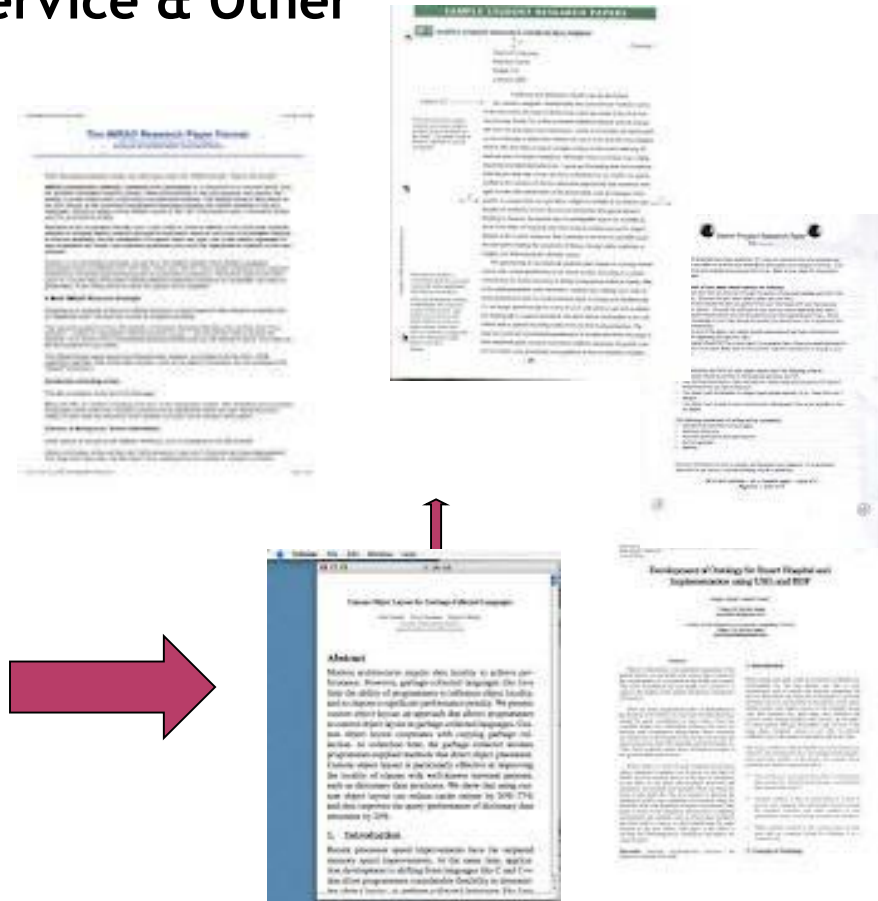
NATIONAL RESEARCH OUTPUT???   **Visibility ???**

LOCAL RESEARCH OUTPUT -TYPES OF MATERIAL
VISIBILITY ???

- Periodical articles – local S & T journals
- Periodical articles of local scientists foreign/international S & T journals
- Post Graduate Theses/dissertations
- Research Papers presented at conferences (by local researchers)
- Technical Reports (committees/S & T institutions)
- Research Reports (local researchers/S & T institutions)
- Data sets
- Maps, Pictures, images
- Monographs
- Historical documents, palm leaf, ola leaf information
- Annual Reports of local S & T institutions
- Extension material
- Newspaper articles

- all languages

- all formats
  - Text, pdf
  - Power point presentations
  - Images (gif, jpeg, png)
  - video/mpeg

USERS
NATIONAL REPOSITORY OF SCIENCE & TECHNOLOGY INFORMATION

- Scholars (major category)

  - Scientists researchers & Technologists
  - Policy makers
  - Academics

- General Public & Students

- Industry and entrepreneurs

- **Administrators**

- **Funding Bodies**

SRI LANKA SCIENCE INDEX (SLSI)

OBJECTIVES

To digitize local S & T literature available in Research & Academic institutions in the country with a view to
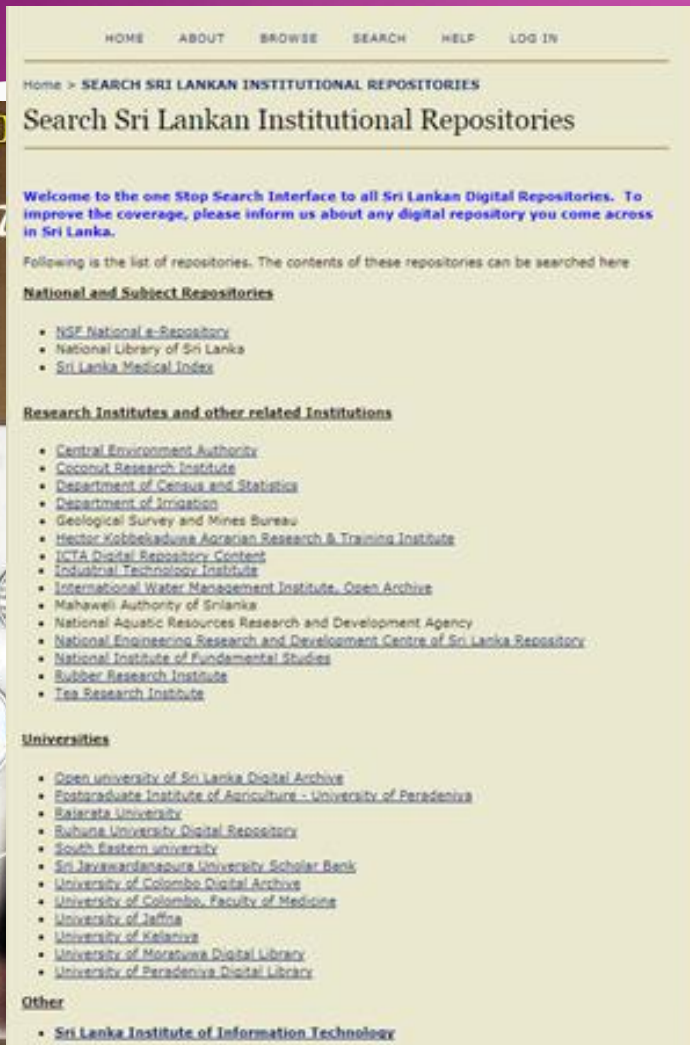
- **15 Universities**
- **30 Research institutes**
- **R & D Organizations**
- **Service & Other S & T Institutions**

- develop a mechanism to ensure that the local academic & scientific community have adequate, easy & quick **online access to the full text of locally originated scientific literature**

- **enhance the usage** of S&T information for national development**.**

- support establishment/maintenance of **Institutional Repositories (open archives**) of S & T literature in the country at institutional level.

- **preserve the original** local S & T literature with a potential for deterioration.

PROJECT FRAME WORK

1.National Science foundation

(central point)

2. Universities

3. Research institutions

4. Service organizations & other

Science & Technology

Institutions

Total number of Items in the National Network is over 80,000

PROJECT OUTPUT

Search Sri Lankan Institutional Repositories

NATIONAL NETWORK OF INSTIUTIONAL REPOSITORIES

- ◉ **National Network of e-repositories**
- ◉ **Collective literature output**
- ◉ **Scholarly literature of local origin**
- ◉ **online access - quick and easy - Full text**

OFFERING FACILITIES

- ◉ **Resource discovery**
- ◉ **Resource sharing**
- ◉ **Federated searching**

TO PROMOTE

- **Avoid duplication of research**
- **Productive research**
- **Inventions & Innovations**
- **Social & Economic Development**

SUPPORT PRESERVATION

- Provide access to digital surrogates of rare /fragile objects (*Prevents the original being used often/ Prevents from being damaged*)
- Not a substitute for traditional preservation.

DIGITIZATION – IMPORTANT POINTS

- **Identification of Material for Digitization**

- **Copy Right**

- **Quality control of the digitized files**

- **Resource Discovery – Search Interface – Search ENGINE**

- **Decide on the <u>Access policy</u>**

- **Disaster recovery & Restoration of the system**

SHOULD LIBRARIES DIGITIZE ALL THEIR COLLECTIONS?

- Not all collection are worth /practical digitizing

- Careful planning & evaluation is required

- Selection criteria for digitization

  - Intellectual content

  - **COPY RIGHT**

  - Usage of the material - Demand for items

  - Items that bring greatest benefits to the users.

  - Importance/value of the collection

  - Nature & the condition of the collection

COPYRIGHT
CARETAKING OF COPYRIGHTED MATERIAL

- Copyright is a confusing body of rules

- Copyright law differs from country to country *(Sri Lanka: Intellectual Property Right Act no. 36 of 2003)*

- Copyright law applies to both the author & the user

  - Information on the copyright status of the material metadata record

  - Licensing scheme – Creative Commons?

  - Prevention of Unauthorized Access

    - Access limited to registered users or users logging in from authorized IP addresses

    - Charging mechanism

  - Application of technological tools

TYPES OF OUTPUT FILES

To be selected based on the purpose

- **TIFF**
- JPEG2000
- MPEG-1
- MPEG-2
- JEPG
- PDF

- **Master file - Each document is saved as a TIFF file - preservation**
  - acceptable format for saving archival master copies of digital images
  - Large high resolution & high quality files

- **Files for online access by users – smaller files – less download time – JEPG, PDF**

OPTICAL CHARACTER RECOGNITION

- Page generated with an optical scanner or a digital camera is a graphic file - computer can't read the words on the page like we can.

- OCR is the process of turning a <u>picture of text into text</u>

- scanned JPG of a printed or handwritten page → produce a TXT or DOC file

- software (program) automatically analyze printed text and turn it into a form that a computer can read

- OCR file - search through by keyword, edit with a word processor, incorporate it into a Web page

QUALITY CONTROL OF THE DIGITAL PRODUCT

- **Two types of files**

  Image file (type written material, hand written/drawn material etc.)

  OCR (Optical Character Recognized) Text file

  Image of page on the upper layer – identical to the original page

  Full Text searchable text Running underneath

- **Quality of the digital file**

- Resolution – 300 dpi

- Accuracy of content – 98.5% ensured

- Cleaned up enhanced clearly readable image, dynamic threshold capabilities for optimum images
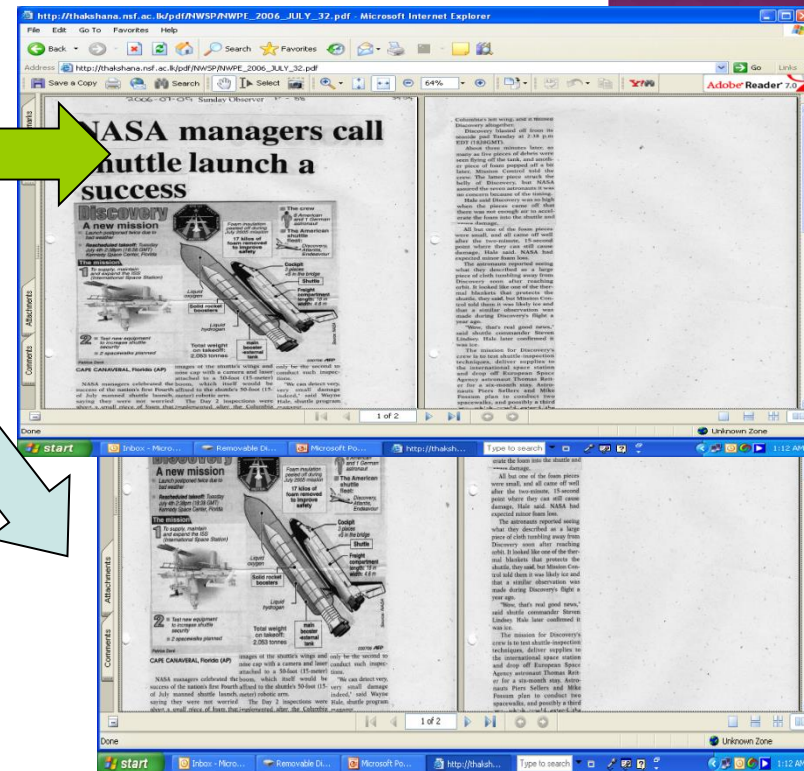
ORGANIZE TO FACILITATE SEARCHABILITY

- Search/Find

- Accessibility

- Download

- Print

- Distribution

- Index,
- Catalog and
- Add metadata
- Database

- Metadata records (describes the information content in the database)
- Ease of use & functionality
- Content finding tools & aids
- Indexes at field level for selection of search terms
- Title & title words
- Keywords & phrases
- Abstract words/content page
- Help to end user
- Search time – very fast

HOME   ABOUT   BROWSE   SEARCH   HELP   LOG IN

Home > **SEARCH SRI LANKAN INSTITUTIONAL REPOSITORIES**

Search Sri Lankan Institutional Repositories

Welcome to the one Stop Search Interface to all Sri Lankan Digital Repositories. To improve the coverage, please inform us about any digital repository you come across in Sri Lanka.

Following is the list of repositories. The contents of these repositories can be searched here

National and Subject Repositories

- NSF National e-Repository
- National Library of Sri Lanka
- Sri Lanka Medical Index

Research Institutes and other related Institutions

- Central Environment Authority
- Coconut Research Institute
- Department of Census and Statistics
- Department of Irrigation
- Geological Survey and Mines Bureau
- Hector Kobbekaduwa Agrarian Research & Training Institute
- ICTA Digital Repository Content
- Industrial Technology Institute
- International Water Management Institute, Open Archive
- Mahaweli Authority of Srilanka
- National Aquatic Resources Research and Development Agency
- National Engineering Research and Development Centre of Sri Lanka Repository
- National Institute of Fundamental Studies
- Rubber Research Institute
- Tea Research Institute

Universities

- Open university of Sri Lanka Digital Archive
- Postgraduate Institute of Agriculture - University of Peradeniya
- Rajarata University
- Ruhuna University Digital Repository
- South Eastern university
- Sri Jayawardanapura University Scholar Bank
- University of Colombo Digital Archive
- University of Colombo, Faculty of Medicine
- University of Jaffna
- University of Kelaniya
- University of Moratuwa Digital Library
- University of Peradeniya Digital Library

Other

COMPOSITION OF THE NATIONAL NETWORK

NSF -14348	TRI – 1988
IFS - 1583	Open Uni – 1295
HARTI – 1649	SEU – 2327
SL Index Medicus – 2052	Uni. Col. MF – 190
CEA – 14619	Uni. Jaffna – 963
CRI – 2057	Uni Kelaniya - 15617
Dept Census – 368	UM – 6365
Dept. Irrigation	UP - 5994
ITI – 943	
IFS – 1583	
RRI - 1327	

National Science Foundation of Sri Lanka
National e-Repository

NSF DL Home

This e-Repository has been established to create global visibility and accessibility to the collective output of scholarly research of Sri Lanka. The repository is maintained by the National Science Foundation and it archives, preserves and offers access to the full text of scholarly literature of Sri Lankan origin.
The repository is up dated daily.

View Statistics

We Invite Sri Lankan Scholars to upload your publications in this Repository

Search Sri Lankan Institutional Repositories

Directory of Repositories

Communities in NSF e-Repository

Select a community to browse its collections.

- **1.NSF Funded Research** [2105]
- **2.NSF Publications** [2481]
- **3.Conferences and Workshops of Sri Lanka** [51]
- **4.Journals Published in Sri Lanka** [9590]
- **5.New Submissions** [0]
- **6. Chronic kidney disease (CKDu)** [121]

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Author
Senanayaka, U.M. (67)
De Silva, H.J. (52)
Jansz, E.R. (52)
Karunaratne, V. (50)
Ratnasooriya, W.D. (50)

GLOBAL VIEWS TO NSF REPOSITORY
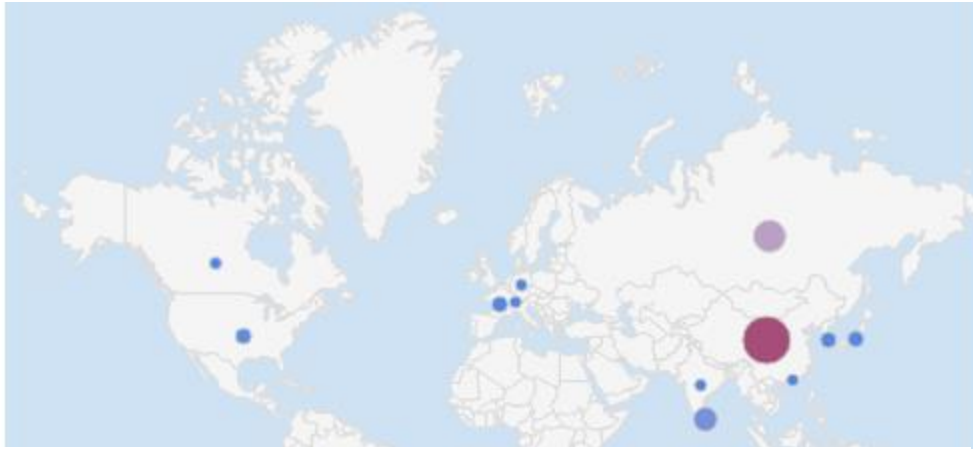
Community Views (January - April 2016)
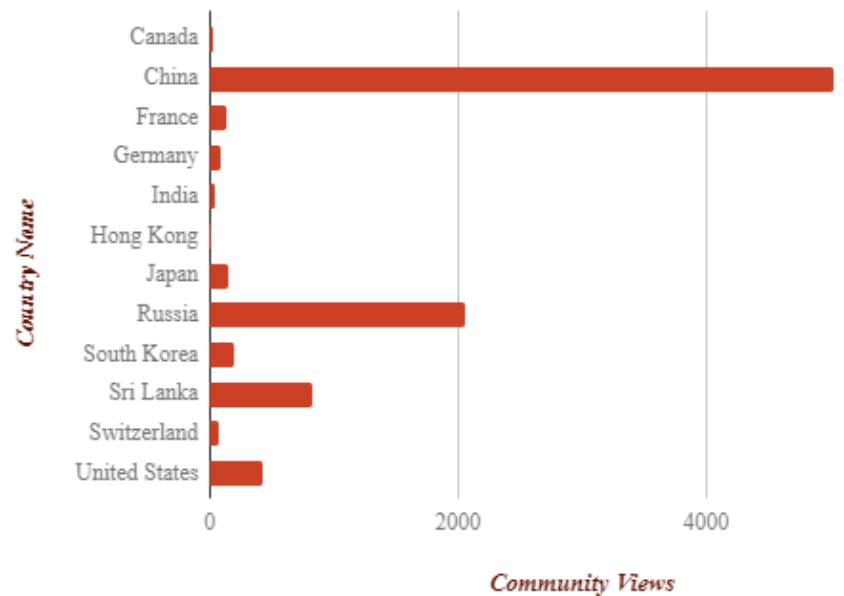
Community Views as Presentage (Jan -April 2016)
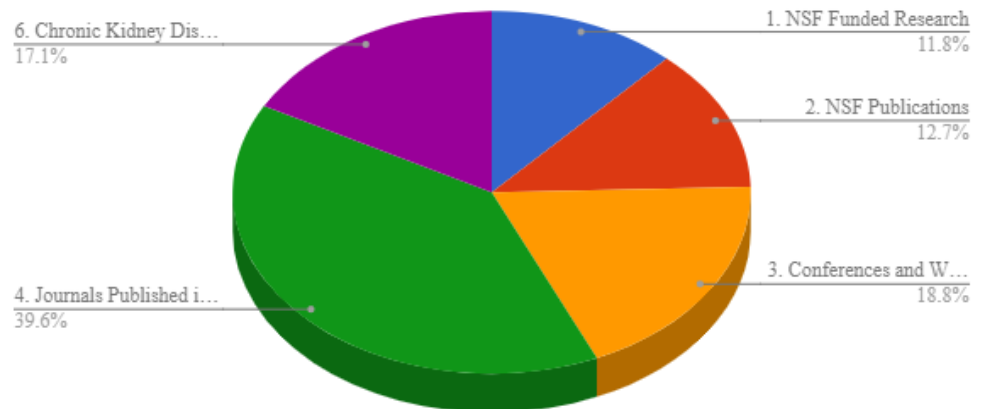
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Message:

CEA

Central Environmental Authority Repository

Collections in this com

- ඉරිදා දිවයින [430]
- ඉරිදා රැස්දිව [2]
- ඉරිදා රාවය [48]
- ඉරිදා සිළුමිණ [311]
- ඉරිදා ලංකාදීප [655]
- ඉරිදා ලක්බිම [323]
- ඉරුදින [10]
- ඉරුදිය [8]
- දිනමිණ [1309]
- දිවයින [1395]
- ඕපුමිණ [71]
- රාවය [4]
- සිළුමිණ [157]
- ලංකාදීප [1057]
- ලක්බිම [356]
- ජීරසර [821]
- සිළුමිණ [632]

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SHORT COMMUNICATION

The Aloin Content of Local Aloe Species

E. R. JANSZ, VAJIRA SILVA AND DAMAYANTHI RATNAYAKE

Natural Products Section, Ceylon Institute of Scientific and Industrial Research (CISIR),
P. O. Box 787, Colombo 7, Sri Lanka.

Aloin obtained from Aloe species is a mixture of anthrone glucosides and is commonly used as a laxative.[4] The genus Aloe grows profusely, unattended, in the Northern Province of Sri Lanka, notably in the Jaffna Peninsula and the island of Mannar. There are apparent chemical differences in the juice of samples of Aloe collected from those two locations although both belong to Aloe vera Linn. var littoralis Koen[2] (synonym A. barbadensis L.). and in this communication they will be termed Jaffna and Mannar Aloe.

A previous communication[2] described, (i) the identification of the plant, (ii) the solution to the Browning reactions of Jaffna Aloe samples, (iii) a modified method of preparation of aloin from Aloe juice and (iv) the isolation of an aloin (M. P. 136° – 138°C) from Jaffna Aloe juice. In the above investigation, assays were done by the Fairburn method.[1]

In this communication, the screening of the Jaffna and Mannar Aloe for aloin content using the tlc-spectrophotometric method of McCarthy[3] (which affords the accurate and rapid assay of small quantities of material) is reported along with the use of this test to monitor process losses in the isolation of aloin.

In the screening studies, juice from the 5th, 6th and 7th youngest leaves of each plant (where yield of juice is a maximum) is dissolved in methanol prior to use in the tlc technique. The solvent used was $CHCl_3$: Abs. C_2H_5OH (3:1) and aloin was estimated at 360 nm spectrophotometrically.

Assay of aloin content of the juice of individual plants showed that although there was some variation between plants of the same location, the fresh juice of the Mannar Aloe samples had a significantly higher aloin content than those of

HEVEA BRASILIENS[IS]

OR

PARA RUBBER

ITS BOTANY, CULTIVATION, CHE[MISTRY]
AND DISEASES,

BY

HERBERT WRIGHT, A.R.C.S., [F.L.S.]

Controller, Government Experiment Station,
Peradeniya, Ceylon.

WITH PLATES AND DIAGRAMS.

COLOMBO:
MESSRS. A. M. & J. FERGUSON.

1905.

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1. පොල් වගා ඇටුම් හා වගා කළමනාකරණය 1
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5. පොල් වගා පවත්වා පැලෑටම 15
6. පොල් වියළි පළිබෝධ හා රෝග කළමනාකරණය 18
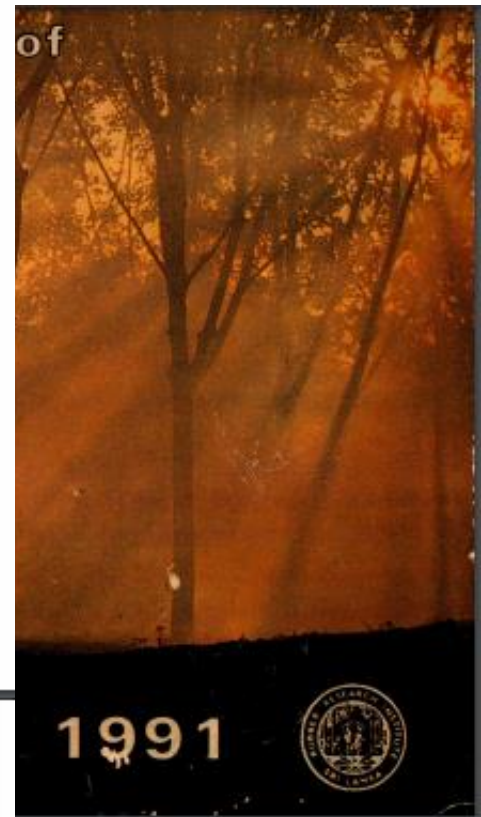
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OF SRI LANKA

ANNUAL REVIEW 1991

CONTENTS

DIRECTOR'S REVIEW 1
by L. M. K. Tillekeratne

Geological Survey and Mines Bureau
භූ විද්‍යා සමීක්ෂණ සහ පතල් කාර්යාංශය
புவிச் சரிதவியல் அளவை சுரங்கப் பணியகம்

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GSMB Products

Whole Island Mineral & Geological Map Series

Map	Scale	Detail	Price (US $ + postage and handling)
Mineral resources map of Sri Lanka.	Scale 1:506,880 (8 miles: 1 inch).	Black-and-white. First published 1983, printed with assistance of Dept. of Mines & Energy, South Australia.	SAARC Countries US $ 1.50, European Countries US $ 2.50, Australia US $ 3.50, South Africa US $ 3.50, Japan US $ 5, USA US $ 3.50, Canada US $ 5.50.
Mineral resources map of Sri Lanka. Sinhala Version.	Scale 1:506,880 (8 miles: 1 inch).	Black-and-white. 1997.	Price SL Rs. 50/=, SAARC Countries US $ 1.50, European Countries US $ 2.50, Australia US $ 3.50, South Africa US $ 3.50, Japan US $ 5, USAUS $ 3.50, Canada US $ 5.50.
Mineral resources map of Sri Lanka. - Tamil Version.	Scale 1:506,880 (8 miles: 1 inch).	Black-and-white. 1998.	Price SL Rs. 500/=.Price US $ 5 + postage and handling (SAARC Countries US $ 1.50, European Countries US $ 2.50, Australia US $ 3.50, South Africa US $ 3.50, Japan US $ 5, USA US $ 3.50, Canada US $ 5.50.
Metamorphic map of Sri Lanka.	Scale 1:506,880 (8 miles:1	Black-and-white. First published 1983, printed with	SAARC Countries US $ 1.50, European Countries US $ 2.50, Australia US $ 3.50, South Africa US $ 3.50, Japan US $ 5, USA

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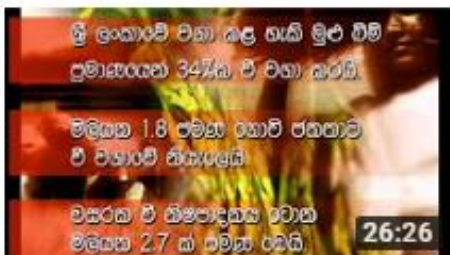
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Sri Lanka Council for Agricultural Research Policy	Geological Survey & Mines Bureau	Wayamba University of Sri Lanka
Postgraduate Institute of Agriculture	National Library & Documentation Services Board	Sabaragamuwa University of Sri Lanka
University of Moratuwa	Mahaweli Authority of Sri Lanka	University of Ruhuna
Rubber Research Institute		Postgraduate Institute of Medicine
National Science Foundation	Irrigation Department	Irrigation Department*
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FACILITIES OFFERED BY THE NSF

1. **Digitization of literature collections**
2. **Develop e-repositories (on Dspace software)**
3. **Training on database management & administration**
4. **Conversion of current databases into DSpace**
5. **Equipment /Database hosting facilities**
6. **Temporary Staff for data entry**
7. **Technical support and trouble shooting**

IMPLEMENTATION OF THE NATIONAL DIGITIZATION PROJECT

- Provide Space and electricity other facilities for the digitization team (where relevant)

- **Host an Institutional Repository/Metadata database of the digital collection**

- **Provide access to the full text of documents as decided by the management (free/on charge/limited access).**

- Provide the NSF with a copy of the complete set or a part of the digitized files for preservation/storage purposes (as decided by the management)

THANK YOU