IPM Innovation Lab. and Institutional Capacity Building in Ethiopia

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Integrated Pest Management IPM CRSP Collaborative Research Support Program

- The current status and distribution of the weed Parthenium in Ethiopia.
- Results on assessment based on opinion pools made on the impact of the weed on crop production, livestock and the environment in general.

USAID – IPM CRSP Role In an Integrated Parthenium Weed Management In Innovation Lab. and Institutional Capacity Building in Ethiopia

Native: Central & South America, Gulf of Mexico
(probable centre origin)

Parthenium hysterophorus

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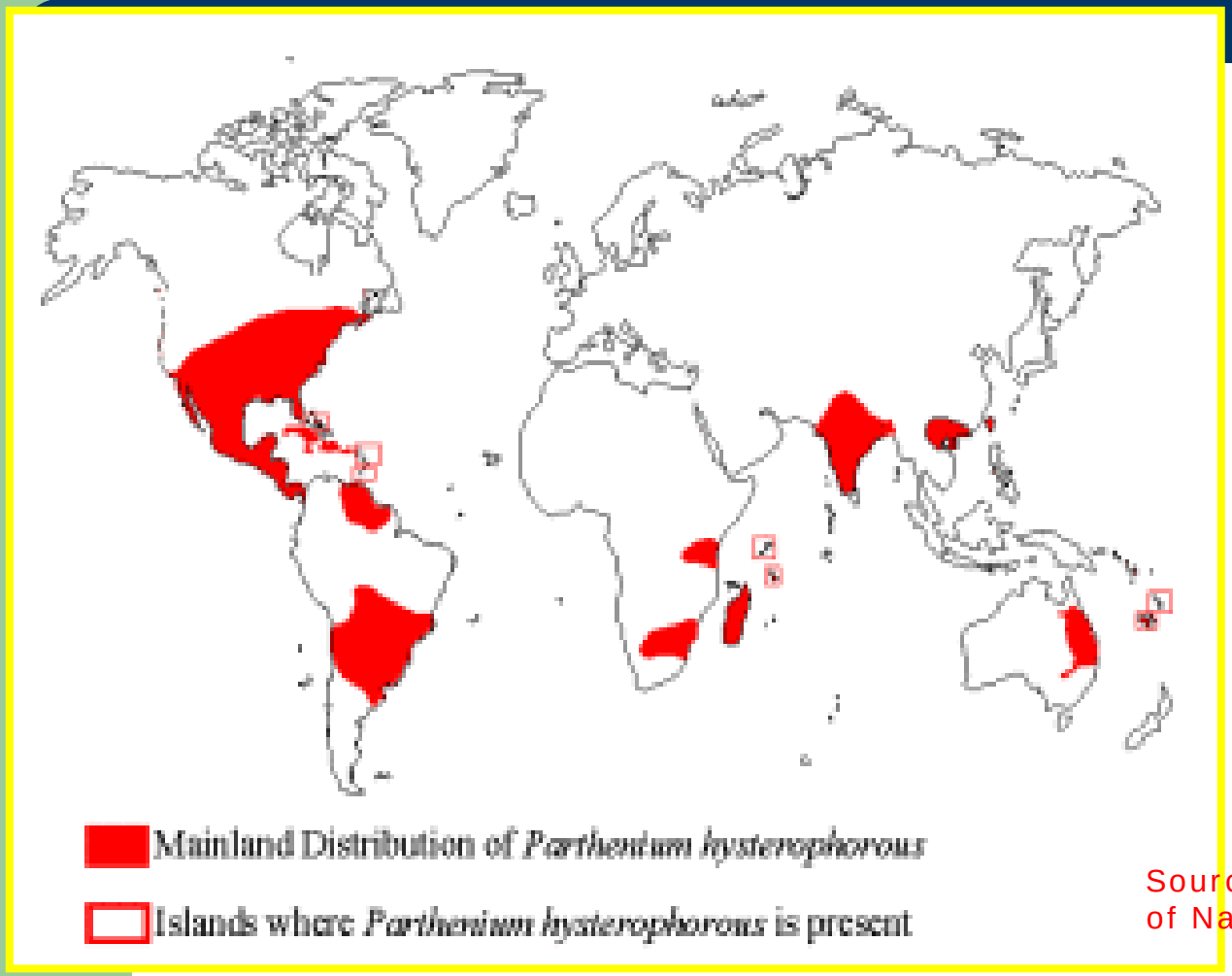

Invaded: conservation, rangeland & agricultural land in Australia, India, Taiwan, southern China, Papua New Guinea, Pacific Islands, Africa (SA, Swaziland, Mozambique, Zimbabwe, Mauritius, Reunion, Madagascar, Seychelles, Kenya, Ethiopia, Somalia).

Source: Queensland Department of Natural Resources

Is an invasive weed introduced to Ethiopia in the 1970's with grain aid.

- The rapid spread of Parthenium is attributed to its seed biology and adaptive ecology.
  - Can germinate, grow, mature and set seed in 4-8 weeks

- Parthenium weed adversely affects food security, biodiversity and human as well as livestock health.

- It attained major weed status in Ethiopia during the last 30 years.

- Reduces yield (tef, wheat, barley, sorghum, corn, etc.
- competes with pasture species .
- Yield losses ranging from 40 -100 %
- The grain prod-n in Ethiopia is potentially at even increasing risk in the future.

- When consumed by domestic animals, spoil their milk and meat, reducing their value.

Impacts on human health

Caused human health problem like asthma, bronchitis, dermatitis, Allergy and high fever.

And found to have a greater economic outlay to treat the effects of allergy symptoms than none sensitized residents in the same area.

Impacts on animal health, meat , milk quality and marketing

- The pastoralists expressed the quality of animal products and their marketability.
  - The meat has bad odour & the quality is depreciated.

- The milk has bitter taste or taint from livestock that fed on parthenium.
- Indicated that nobody would purchase the milk and meat if alternatives were available.

Impacts on grazing and agricultural lands

- Replaces natural vegetation, because of its ability to release toxic chemicals, and thus it is a threat to one of the world's richest country of bio-diversity like Ethiopia.

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IPM CRSP contribution

- Senior scientists for short term work and collaborative research support in Ethiopia;
- Graduate research /education for collaborating personnel at collaborating U.S. institutions as approved the work plan;

- Supplies, equipments, and travel for IPM CRSP collaborating personnel;

Project out put

- Distribution survey data for Ethiopia were compiled into a database and mapped.

- Established the first official quarantine facility and weed biological control program and research facility in Ethiopia.

- Serving as a training center for biological control research (more than 200 students and researchers were trained)

- The experience gained from the design and conversion of a glasshouse to a quarantine facility may also serve as an example for other developing countries that embark into weed biological control for the first time.

- Created a net work of scientists from Australia, USA, Eastern and Southern Africa, India devoted to abating the adverse impacts of Parthenium.

Biological agent imported

- Tested a host ranges of bio-control agents for the control of parthenium.

- The leaf feeding beetle and stem-boring weevil (*Zygograma bicolorata* and listronatus setosipennis).

- Secured land for establishing a mass rearing center for parthenium leaf feeding beetle (zygogramma bicolorata) at welenchiti
- Will be released in June - July 2013.

Human resource development

- Seven graduate students, two of them female were supported by the project have graduated with an M.S. degree.
- All conducted their M.S. thesis projects on parthenium.

- Five Ethiopians have been trained in rearing and testing of biological agents and quarantine procedures in SA

Mechanical (hand pulling, slashing , burning before seed setting)

Prior to importing the biological agents the facility was inspected by known scientists from SA, Australia, India for meeting international standards (2nd partners meeting and workshop)

During the 2nd partners meeting and work shop

The quarantine facilities was evaluated before the second bioagent *Listronatus* introduced

Short term training

Four Researchers & two TAs from EIAR trained in SA

- ***Nursery Establishment***
- ***Culturing and maintaining bio-control agents***
- ***Host range testing , Bio-safety***

IPM CRSP Team Visit Sept, 07

Biocontrol facility at Ambo Research Center inaugurated in October 2007.

Objective 3. Biological control

After the facility was inspected by IPM CRSP team and South African scientists the leaf feeding beetle (Zygogramma) introduced in October, 2007

Larvae of Zygogramma feeding on *parthenium* at PPRC quarantine

Defoliated *parthenium* plants in rearing cage at PPRC

The second biocontrol agent, *Listronotus setosipennis* has been introduced from SA

Acknowledgements

- ***Financial and technical assistance of USAID, IPM-CRSP and EIAR for upgrading quarantine facilities is gratefully acknowledged.***
- ***Thanks are expressed to senior scientists Lorraine and Andrew of SA, ARC-PPRI for their valuable support and advice.***

THANK YOU