



ACP Science and Technology Programme

AFS/2009/219015

AFROweeds Adventices du riz en Afrique African weeds of rice

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16 octobre 2011

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APPENDIX 1

Presentation of the AFROweeds Collaborative Platform



The Web 2.0 collaborative platform of AFROweeds: African weeds of rice



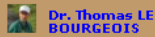


Home page of the AFROWeeds collaborative platform presenting the last events

Spotlight

Welcome to AFROWEEDSBOOK

Integrated weed management is considered one of the most attractive options for crop protection. It entails a proper choice of compatible measures (cultural, mechanical, biological and chemical) so that the components complement each other in keeping the weed population at manageable levels. However, in order to be effective, integrated weed management should build on knowledge of weed biology and ecology which in turn requires the specific weed species to be known. The lack of awareness, timely information and knowledge of the weeds limits the actual implementation of integrated weed management at the farmers' level. Extension services in SSA (Sub-Saharan Africa) play a significant role in dissemination of advances in agricultural research among the farming community. Most often the extension services rely upon direct contacts with national agricultural research systems or universities to identify weeds and obtain recommendations on control measures. Researchers of NARS are constrained by a lack of means to obtain up-to-date information on problem weeds and suitable best management practices from across the region. Improving information and exchange (network) would highly benefit efficiency of existing extension and research systems serving rice farmers in the regions. [African Weeds of Rice \(AFROweeds\)](#) are available.


Dr. Thomas LE BOURGEOIS

Tropical weed scientist working on biology, ecology of weeds according to the cropping systems. I also work a lot on identification process and information on weeds

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Your groups



IDAO - SVG

Développeurs SVG pour IDAO vous êtes les bienvenus !

open group / **8** members
[Unfeature](#)



AFROWeeds general

Global information and discussion on the AFROWeeds project

open group / **9** members
[Unfeature](#)



Gestion des enherbements / Weed management

Désherbage

open group / **18** members
[Make featured](#)



AFROWeeds Coordination

closed group / **5** members
[Make featured](#)



Botanique - Identification

open group / **16** members
[Make featured](#)



reseau de l'ON

réseau envahi par les plantes nuisibles

open group / **4** members
[Make featured](#)



Distribution et invasion d'adventices regionale / Regional weed distribution and invasion

open group / **6** members
[Make featured](#)



Mission à St Louis - Sénégal

Description des espèces - Mission St Louis du Sénégal

open group / **6** members
[Make featured](#)

Spotlight

Welcome to AFROWEEDSBOOK

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Working groups

AFROWeeds general group



AFROWeeds general

Integrated weed management is considered one of the most attractive options for crop protection. It entails a proper choice of compatible measures (cultural, mechanical, biological and chemical) so that the components complement each other in keeping the weed population at manageable levels. However, in order to be effective, integrated weed management should build on knowledge of weed biology and ecology which in turn requires the specific weed species to be known. The lack of awareness, timely information and knowledge of the weeds limits the actual implementation of integrated weed management at the farmer's level. Extension services in SSA (Sub-Saharan Africa) play a significant role in dissemination of advances in agricultural research among the farming community. Meet often the extension services rely upon direct contacts with national agricultural research systems or universities to identify weeds and obtain recommendations on control measures. Researchers of IARIS are constrained by a lack of means to obtain up-to-date information on problems weeds and suitable best management practices from across the region. Improving information and exchange (network) would highly benefit efficiency of existing extension and research systems serving rice farmers in the region. [AFROWeeds general's Videos](#) are available.

Owners: Dr. Thomas LÉ BOURGEOIS
Group members: 9

Group members

Description:

The AFROWeeds project

Integrated weed management is considered one of the most attractive options for crop protection. It entails a proper choice of compatible measures (cultural, mechanical, biological and chemical) so that the components complement each other in keeping the weed population at manageable levels. However, in order to be effective, integrated weed management should build on knowledge of weed biology and ecology which in turn requires the specific weed species to be known. The lack of awareness, timely information and knowledge of the weeds limits the actual implementation of integrated weed management at the farmer's level. Extension services in SSA (Sub-Saharan Africa) play a significant role in dissemination of advances in agricultural research among the farming community. Meet often the extension services rely upon direct contacts with national agricultural research systems or universities to identify weeds and obtain recommendations on control measures. Researchers of IARIS are constrained by a lack of means to obtain up-to-date information on problems weeds and suitable best management practices from across the region. Improving information and exchange (network) would highly benefit efficiency of existing extension and research systems serving rice farmers in the region. [AFROWeeds general's Videos](#) are available.

Main partners
CIRAD (INRA, ARAR)

Affiliate
Africa Rice

Funding
ACP S&T programme of the European Commission
Resources of the AFROWeeds project available for public use
[The seed sources list and access information](#)

Web site: [Your gateway provides a permanent and informative site on projects and reports. It is available: \[AFROWeeds general members' Web site\]\(#\)](#)

Brief description: Global information and discussion on the AFROWeeds project

Website: <http://www.afroweeds.org>

Latest discussion

No topics have been created.

Group files

- Report of the second workshop of the AFROWeeds project (Cotonou - Benin) June 2011
Dr. Thomas LÉ BOURGEOIS 62 days ago
- Rapport du deuxième atelier du projet AFROWeeds (Cotonou/Benin) Juin 2011
Dr. Thomas LÉ BOURGEOIS 61 days ago
- Synthèse bibliographique / Literature synthesis
Dr. Thomas LÉ BOURGEOIS 227 days ago
- Rapport du premier atelier du projet AFROWeeds (Cotonou, Bénin, fév. 2011)
Dr. Thomas LÉ BOURGEOIS 231 days ago
- Recommandations pour photographier une plante en danger en option numérique
Dr. Thomas LÉ BOURGEOIS 231 days ago

Group bookmarks

- Bookmarked: FeedSmart from INRA (Video resource)
Dr. Thomas LÉ BOURGEOIS 4 days ago
- Bookmarked: SAIS - Société Nationale d'Étude et d'Expérimentation des Variétés de Riz de Haute Stabilité et des Variétés de Haute Stabilité de la Région de la Vallée du Niger
Dr. Thomas LÉ BOURGEOIS 17 days ago
- Bookmarked: Centre Régional des Riziculteurs du Niger et du Tchad (Benin) (Video resource)
Mamotte Pascal 131 days ago

Group pages

This group does not have any pages yet.

Group albums

Atelier de lancement Cotonou 2010
Created 231 days ago

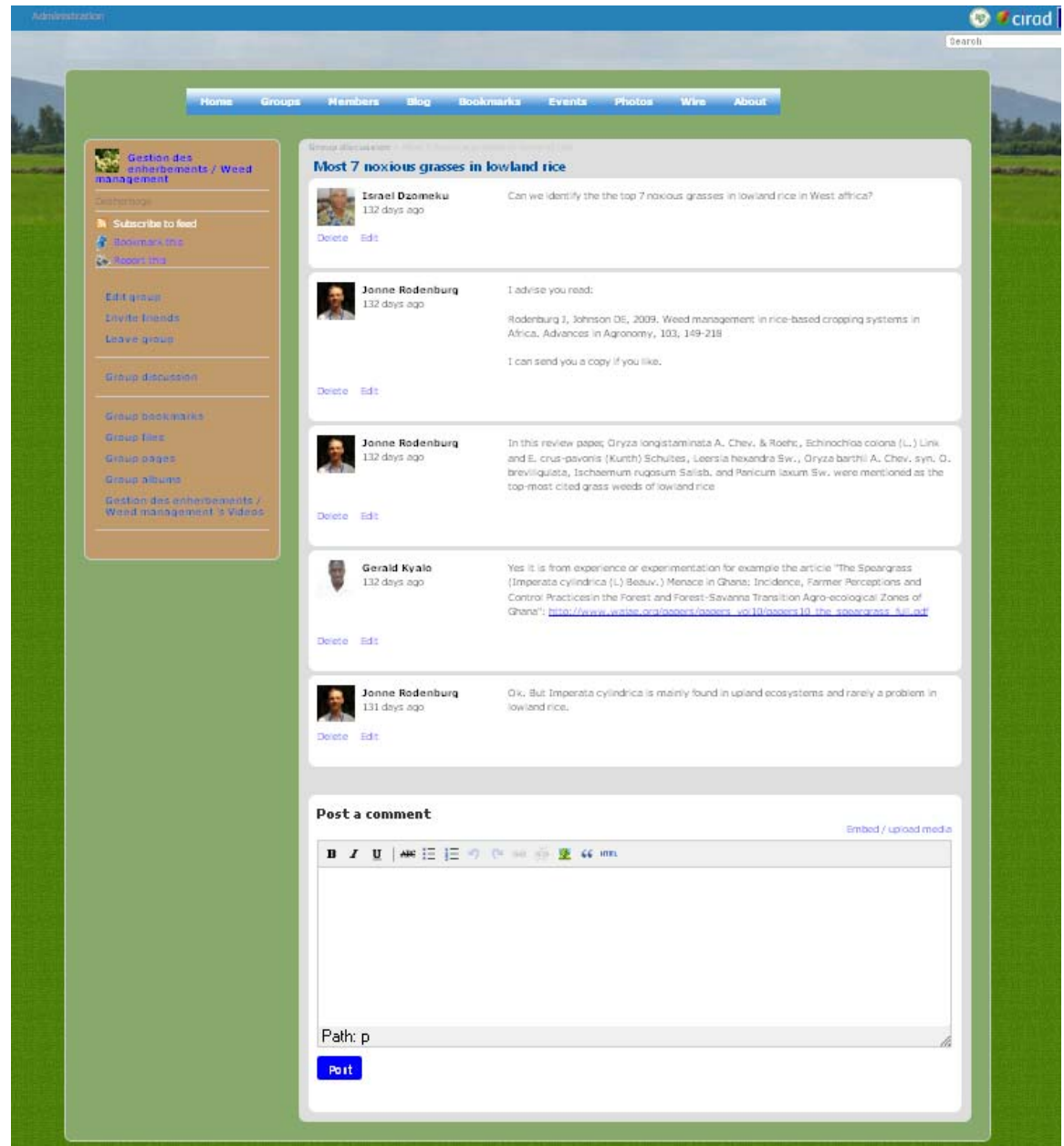
Spotlight

Welcome to AFROWEEDSBOOK

Integrated weed management is considered one of the most attractive options for crop protection. It entails a proper choice of compatible measures (cultural, mechanical, biological and chemical) so that the components complement each other in keeping the weed population at manageable levels. However, in order to be effective, integrated weed management should build on knowledge of weed biology and ecology which in turn requires the specific weed species to be known. The lack of awareness, timely information and knowledge of the weeds limits the actual implementation of integrated weed management at the farmer's level. Extension services in SSA (Sub-Saharan Africa) play a significant role in dissemination of advances in agricultural research among the farming community. Meet often the extension services rely upon direct contacts with national agricultural research systems or universities to identify weeds and obtain recommendations on control measures. Researchers of IARIS are constrained by a lack of means to obtain up-to-date information on problems weeds and suitable best management practices from across the region. Improving information and exchange (network) would highly benefit efficiency of existing extension and research systems serving rice farmers in the region. [AFROWeeds general's Videos](#) are available.

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Example of discussion in the Weed management group : The most 7 noxious grasses in Lowland rice



The screenshot shows a web page for a discussion group titled "Gestion des engraissements / Weed management". The page has a blue navigation bar with links for Home, Groups, Members, Blog, Bookmarks, Events, Photos, Wire, and About. A search bar is located in the top right corner. The main content area is titled "Most 7 noxious grasses in lowland rice" and contains five comments:

- Israel Dzomeku** (132 days ago): "Can we identify the the top 7 noxious grasses in lowland rice in West africa?"
- Jonne Rodenburg** (132 days ago): "I advise you read: Rodenburg J, Johnson DE, 2009. Weed management in rice-based cropping systems in Africa. *Advances in Agronomy*, 103, 149-218. I can send you a copy if you like."
- Jonne Rodenburg** (132 days ago): "In this review paper; Gryzza longistaminata A. Chev. & Roehr., Echinochloa corona (L.) Link and E. crus-galionis (Kunth) Schultes, Leersia hexandra Sw., Gryzza barthii A. Chev. syn. O. breviligulata, Ischaemum rugosum Salisb. and Panicum laxum Sw. were mentioned as the top-most cited grass weeds of lowland rice"
- Gerald Kyalo** (132 days ago): "Yes it is from experience or experimentation for example the article "The Speargrass (Imperata cylindrica (L.) Beauv.) Menace in Ghana: Incidence, Farmer Perceptions and Control Practices in the Forest and Forest-Savanna Transition Agro-ecological Zones of Ghana": http://www.wipac.org/soyers/soyers_vo10/soyers10_the_speargrass_Aki.pdf"
- Jonne Rodenburg** (131 days ago): "Ok. But Imperata cylindrica is mainly found in upland ecosystems and rarely a problem in lowland rice."

At the bottom, there is a "Post a comment" section with a rich text editor and a "Post" button.

Example of Group bookmarks

AFROWeeds general: Extension service or research centers involved in rice and rice weed management

Weed management: Links on weed management and pesticide databases



Group bookmarks

-  Bookmarked: [WeedSmart from IRRI](#) (Visit resource)
Dr. Thomas LE BOURGEOIS 4 days ago
-  Bookmarked: [SAED : Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé](#) (Visit resource)
Dr. Thomas LE BOURGEOIS 17 days ago, Comments (2)
-  Bookmarked: [Conseil Régional des Riziculteurs du Mono et du Couffo \(Bénin\)](#) (Visit resource)
Marnotte Pascal 131 days ago

[More bookmarks](#)



Group bookmarks

-  Bookmarked: [Des canards pour désherber les rizières](#) (Visit resource)
Dr. Thomas LE BOURGEOIS 74 days ago
-  Bookmarked: [DIVECOSYS](#) (Visit resource)
Marnotte Pascal 133 days ago
-  Bookmarked: [EU Pesticides Database](#) (Visit resource)
Marnotte Pascal 236 days ago
-  Bookmarked: [e-phy](#) (Visit resource)
Marnotte Pascal 236 days ago

[More bookmarks](#)

Example of Group files

AFROWeeds general:






Group files

-  Report of the second workshop of the AFROWeeds project (Cotonou - Benin) June 2011
Dr. Thomas LE BOURGEOIS 62 days ago
-  Rapport du deuxième atelier du projet AFROWeeds (Cotonou-Bénin) Juin 2011
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Dr. Thomas LE BOURGEOIS 234 days ago
-  Recommandations pour photographier une plante et régler un appareil numérique simple
Dr. Thomas LE BOURGEOIS 234 days ago

[More files](#)

Weed management: Technical and scientific documents on weed control

Group files

-  General guidelines for weed management in lowland rice
Dr. Thomas LE BOURGEOIS 3 days ago
-  Gestion des adventices du riz en Afrique
Dr. Thomas LE BOURGEOIS 3 days ago
-  Nuisibilité de l'enherbement sur le riz / Guyane
Marnotte Pascal 131 days ago
-  Rodenburg J, Saito K, Glele Kakaï R, Touré A, Mariko M, Kiepe P, 2009. Weed competitiveness of the lowland rice varieties of NERICA in the southern Guinea Savanna. Field Crops Research 114, 411-418
Jonne Rodenburg 131 days ago
-  Rodenburg J, Riches CR, Kayeke JM, 2010. Addressing current and future problems of parasitic weeds in rice. Crop Protection 29, 210-221.
Jonne Rodenburg 131 days ago

[More files](#)

Example of Group albums in the Identification group

The image displays two screenshots of a web application interface. The left screenshot shows the 'Botanique - Identification's photo albums' page, which features a sidebar with options like 'Subscribe to feed', 'Bookmark this', and 'Report this'. The main content area lists several albums: 'A identifier', 'Album d'aventures d'Amadou Touré', 'photos de Cyperus sp. nd', 'Album d'aventures de Mariame', and 'Weeds from Abia State, Nigeria'. A blue arrow points from the 'photos de Cyperus sp. nd' album to the right screenshot.

The right screenshot shows a detailed view of the 'photos de Cyperus sp. nd' album. It displays three photos of a plant. Below the photos, there are comments from users: 'Marnotte Pascal 132 days ago' with the text 'Est-ce que cette Cyperaceae pourrait être Cyperus ferax ou Cyperus odoratus?', and 'Dr. Thomas LE BOURGEOIS 132 days ago' with the text 'Je ne sais pas c'est trop à contre jour, prends les photos dans l'autre sens'. A comment box at the bottom is partially visible with the text 'Pelt: p' and a 'Post' button.

Photos of the *Cyperaceae* sp. album and comments

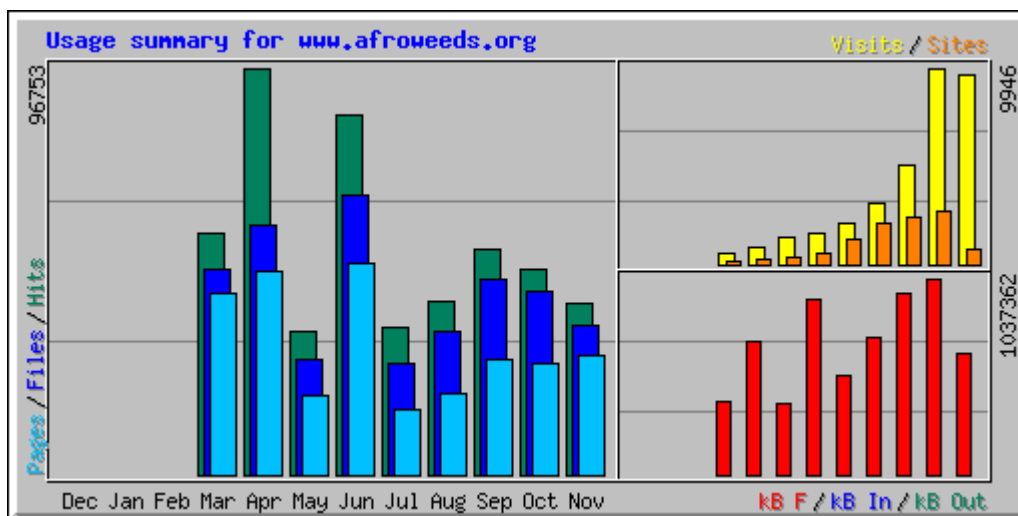
APPENDIX 2

Monthly statistics of the AFROweeds Website and collaborative platform consultation

Usage Statistics for www.afroweeds.org

Summary Period: Last 12 Months

Generated 21-Nov-2011 03:52 EST



Summary by Month												
Month	Daily Avg				Monthly Totals							
	Hits	Files	Pages	Visits	Sites	kB F	kB In	kB Out	Visits	Pages	Files	Hits
Nov 2011	1931	1696	1348	456	738	644267	0	0	9590	28313	35621	40555
Oct 2011	1578	1409	859	320	2720	1037362	0	0	9946	26637	43693	48925
Sep 2011	1788	1541	910	167	2373	953381	0	0	5016	27304	46247	53657
Aug 2011	1322	1101	622	99	2129	728395	0	0	3073	19294	34132	40991
Jul 2011	1132	860	495	66	1250	521284	0	0	2071	15351	26679	35107
Jun 2011	2857	2210	1670	53	523	923442	0	0	1598	50109	66309	85719
May 2011	1101	891	607	44	367	373918	0	0	1391	18844	27633	34146
Apr 2011	3225	1982	1617	29	247	702114	0	0	872	48538	59485	96753
Mar 2011	2395	2034	1803	23	202	385524	0	0	570	43278	48826	57480
Totals						6269686	0	0	34127	277668	388625	493333

Generated by [Webalizer Version 2.01](#)

APPENDIX 3

MISSION REPORTS

3.1 Cotonou- Benin 23/11-5/12 2010 (J. Rodenburg, G. Kyalo, K. Aloys – AfricaRice)

3.2 Shinyanga, Tabora & Mwanza – Tanzania (K. Aloys – AfricaRice)

3.3. Cotonou, Comé & Zinvié – Bénin, 27/6-2/7 2011 (J. Rodenburg, G. Kyalo, K. Aloys – AfricaRice)

3.4. Mwanza – Tanzania, 15-20/08 2011 (G. Kyalo, K. Aloys, E. John – AfricaRice)

3.5. Arusha & Moshi – Tanzania, 06-11/09 2011 (G. Kyalo, K. Aloys, E. John – AfricaRice)

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3.8 Maputo – Mozambique, 09-14/10 2011 (J. Rodenburg, G. Kyalo – AfricaRice)



TRIP REPORT
COTONOU-BENIN
23 NOVEMBER-5 DECEMBER 2010
AFROWEEDS PROJECT

JONNE RODENBURG, GERALD KYALO AND KOBUSINGE ALOYS
WEED SCIENCE
AFRICARICE



ITINERARY

23/11/2010 Dar es Salaam-Nairobi-Cotonou

5/12/2010-Cotonou-Nairobi-Dar es Saslaam

PEOPLE MET:

- Dr. Papa A. Seck, Director General, AfricaRice
- Marco Wopereis, Deputy Director General AfricaRice
- Paul Kiepe, Program 2 leader AfricaRice
- Mariam Mariko, Research Technician AfricaRice

INTRODUCTION

The Afroweeds project is a collaborative project between CIRAD, France and AfricaRice funded by the EU ACP Science and Technology Program. The project aims at establishing a viable African-European weed science network, consolidating existing knowledge on weed management by building a user friendly web based platform on weeds of West and East African lowland rice-cropping systems and enhancing the exploitation and dissemination of good weed management practices in lowland rice-cropping systems. The objectives of our mission to Benin were to 1) digitalize the herbarium currently present at AfricaRice headquarters in Cotonou and file weed species in the herbarium 2) participate in the AfricaRice annual research days

ACTIVITIES DONE

On our first day at AfricaRice Cotonou, we started digitalizing weed species and by the end of our stay, we had digitalized 107 herbarium samples. Weed species digitalized include *Bacopa decumbens* Fernald, *Phyllanthus pentandrus* Schum. & Thonn., *Bulbostylis pilosa* (Willd.) Cherm., *Croton lobatus* L. , *Panicum laxum* Sw. , *Digitaria horizontalis* Wild, *Caladium bicolor* among others. We also participated in the annual AfricaRice research Days held at the headquarters from 29th November to 2nd December 2010. Kobusinge and Gerald were also introduced to the Director General and the Deputy Director General of AfricaRice. The research days were very educative and interesting. We highly appreciate that we were able to participate.



A



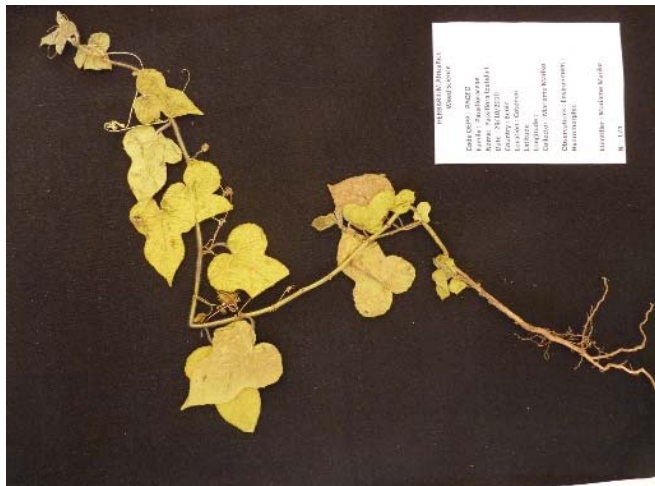
B



C



D



E



F



G



H

Photos: Digitalization of herbarium samples (A), some of the weed species digitalized: *Cyperus distans* L. (B), *Thalia geniculata* L. (C), *Brachiaria subquadripara* (Trin.) Hitchc. (D), *Passiflora foetida* L. (E), *Fuirena ciliaris* L. Roxb (F), *Croton lobatus* L. (G), *Desmodium adscendens* (SW.) DC. (H).

ACKNOWLEDGEMENTS

We would like to thank Ms. Mariame Mariko for her extremely useful expertise in identifying and filing the weed species and for maintaining the herbarium.

CONCLUSIONS

The mission was very successful and we are making good progress. By now we have digitalized all the herbarium samples at our offices in Dar es Salaam and Cotonou. We shall now embark on organizing the data base by feeding in information and photos of herbarium samples and weed species.



TRIP REPORT

24-31MARCH- 2011

(TABORA,SHINYANGA AND MWANZA)

KOBUSINGE ALOYS

AFROWEEDS PROJECT

RESEARCH TECHNICIAN

AFRICARICE



ITINERARY

24/03/2011DAR ES SALAAM-TABORA

25/03/2011TABORA-NZEGA/IGUNGA

26/03/2011TABORA-SHINYANGA

27/03/2011SHINYANGA-MWANZA

28/03/2011MWANZA-SERENGETI

29/03/2011MWANZA-MAGU/KWIMBA

30/O3/2011SHINYANGA-KISHAPU

31/O32011 SHINYANGA-DAR ES SALAAM

PEOPLE MET

MR.KIBISA-DALDO IGUNGA TABORA

MR.ELIAS SYLIVESTER-A FARMER IN IGUNGA DISTRICT

MR.ALPHONSE ADP COORDINATOR SHINYANGA

MR.MFANGA-AGRO INPUTS AGENT SHINYANGA

Mr.KAMIHANDA- ADP COORDINATOR MWANZA

MR. JULIUS KAYANDA-EXTENSION OFFICER MAGU

KYENGESHO ABAS ACTING DALDO KWIMBA

JAMES.E. PETER EXTESION OFFICER KWIMBA

INTRODUCTION

The Afro weeds project is funded by the EU-ACP Science and Technology Program and led by CIRAD, France. The project started in October 2009 and expects to result in a viable African-European weed science network, a useful information platform on the most important lowland weeds in rice in Africa, and a web-based user-friendly and comprehensive weed identification tool. We are currently in the second stage of the project, aimed at the collection and compilation of existing knowledge resources on the weeds of rice of West and East-Africa, from NARS, Universities and partners involved in the project. This mission also enabled us to collect photos and some few herbarium samples on the common and existing weeds in the lowland rice growing areas of Tanzania and management practices.

OBJECTIVE OF THIS MISSION

This mission aimed at collecting enough information of current farmer practices with respect to weeds problems and management.

FIELD WORK

The mission was successful as we managed to visit almost all the places as it was planned except for Kagera.This was because the person who could meet us and take us around all the necessary areas(Demonstration plots) was on his way back from Kagera to Dar Es Salaam. His work contract had ended.

On the first day at miswaki irrigation scheme in Nzega district Tabora region, it had just started raining. Among the farmer practices that were taking place are, Tillaging and

harrowing. Apart from these activities, one thing that was observed is that most of the farmers were making bands that help to collect some water from rainfall.

Weeds that seem to be common in the area are mostly the broad leaf and grassy weeds e.g. Echinochloa spp and Sphaeranthus spp. Ways that were used for controlling weeds are; physical weeding/ hand pulling, allowing standing water in the field (flooding the field), and by planting a variety with high tillers e.g. sar05.

The next day we managed to visit Bugelela irrigation scheme in Serengeti district, Mwanza region. We found that most of the farmers were at transplanting stage. The common weeds which were in this area are, Echinochloa, wild sorghum Cyperaceae weeds, and broad leaf weeds.

The only way for controlling these weeds is by physical weeding/hand pulling for both broad leaf, and grassy weeds, there was no any herbicide that is used as a control measure.

We visited a demonstration plot at Ngashe village in Magu, Mwanza region. The common weeds in this area were; Ipomeas, grassy weeds e.g. Star grass, Echinochloa, wild sorghum and broad leaf weeds.

The weed control method that was used by most farmers is hand weeding, no herbicides that were applied.

The following day we visited another demonstration plot at Mahiga irrigation scheme in Ngudu-Kwimba, Mwanza region. Weeds that seem to be a problem in this area were of the cyperaceae family; though broad leaf weeds existed it was not a big problem. The control way again was the hand pulling that helped them to get rid of the broad and grassy weeds only. Alternatively they plant a high tiller variety eg Burungwa (a local rice variety with 18-20 tillers)

Lastly we visited Itilima irrigation scheme in Kishapu, Shinyanga region. Also the area had broad leaf, grassy and surges (cyperaceae) weeds. They also control all other weeds especially during when they are young by hand weeding but still the cyperaceae remain the big problem.

CONCLUSION

Very few farmers (individual farmers) who know well about herbicides do apply it, because there was an AGRO-INPUTS shop that was selling herbicides. Most farmers seem to have very little knowledge on how it will work in their soil, some saying that it could destroy all plants and soil.



WEEDS IN THE LOWLAND RICE FIELDS OF NORTH-WESTERN TZ.

ACKNOWLEDGEMENT

We sincerely thank Mr.Kibisa the Igunga District Agricultural and Livestock Officer, and Mr. Kamihanda for their commitment of spending their time with helping us to access all necessary field,persons and information that we needed.

**TRIP REPORT
SHINYANGA & MWANZA, TANZANIA
15-20 AUGUST 2011**

AFROWEEDS PROJECT

**GERALD KYALO, SARWATT ATHANASI & EUNICE JOHN
WEED SCIENCE**

AFRICARICE



ITINERARY

15/08/2011: Dar es Salaam – Shinyanga

16/08/2011: Shinyanga –Mwanza- Bunda

19/08/2011: Mwanza –Singida

20/08/2011: Singida- Dar es salaam

PEOPLE MET

- Mr. Doto, Agricultural Engineer Shinyanga region- representing the Regional District Agricultural officer.
- Mr Malongo Masheno, Field officer, Mwanza

INTRODUCTION

The Afroweeds project, a collaborative project between CIRAD, France and AfricaRice funded by the EU ACP Science and Technology Program is in its second year. We are still collecting and compiling existing knowledge on the weeds of rice of West and East-Africa. The objective of the field trip to Shinyanga and Mwanza (North Western Tanzania) was 1). to make photos of weed species in lowland rice, collect their herbarium samples and discuss with prospective partners about the project and 2) introduce internship students Mrs Eunice John and Mr Sarwatt athanasi to the activities of the project and train them on how to take photos, collect and preserve herbarium samples.

FIELD WORK

At Shinyanga, despite prior information that we could find a rice crop at the irrigation schemes, we did not find much and we proceeded to Mwanza. In Mwanza we took a number of photos of weed species in lowland rice and also collected their herbarium samples (see table 1 for details). We also interacted with farmers to learn more about the local names of different weed species, their uses and different management practices. Farmers in this area do not know much about the local names of the different weed species encountered in their fields. They however informed us that *Amaranthus viridis* is locally known as Mchicha pori and is used as a vegetable in their area. The farmers also informed us that they use hand hoe and hand weeding as the only weed management practices. They do not apply herbicides at all.

We met Mr Doto, Agricultural Engineer, Shinyanga region, who was representing the Regional Agricultural Officer who is currently on leave. We introduced to him the Afroweeds project, its objectives, outputs and activities. He was happy with the project as well as all the work that AfricaRice does generally.

Table 1: List of weed species collected

Name	Family
<i>Trianthema portulacastrum</i> L.	Asteraceae
<i>Portulaca oleracea</i> L.	Portulacaceae
<i>Conyza bonariensis</i> (L.) Cronquist	Asteraceae
<i>Chloris pycnothrix</i> Trin.	Poaceae
<i>Oldenlandia corymbosa</i> L.	Rubiaceae
<i>Corchorus aestuans</i> L.	Malvaceae
<i>Dactyloctenium aegyptium</i> (L.) P.Beauv.	Poaceae
<i>Amaranthus viridis</i> L.	Amaranthaceae
<i>Cyperus rotundus</i> L.	Cyperaceae
<i>Phyllanthus amarus</i> Schumach. & Thonn.	Euphorbiaceae
<i>Solanum nigrum</i> L.	Solanaceae
<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Poaceae
<i>Basilicum polystachyon</i> (L.) Moench.	Lamiaceae
<i>Commelina africana</i> L.	Commelinaceae

Note: These are the weeds that we could identify directly in the field; ten other species have been collected and are pending identification.

**A****B**



C



D



E



F



G



H



I



J



K



L

Photos: The group preparing herbarium samples (A& B), *Trianthema portulacastrum* L. (C & D), *Portulaca oleracea* L. (E& F), *Conyza bonariensis* (L.) Cronquist (G), *Oldenlandia corymbosa* L. (H&I), *Dactyloctenium aegyptium* (L.) P.Beauv., (J), *Setaria pumila* (Poir.) Roem. & Schult. (K), *Corchorus aestuans* L. (L)

CONCLUSIONS

The mission undertaken to Mwanza and Shinyanga helped us to enrich our herbarium. We are also strengthening our collaboration with partners as well as our insights with respect to important lowland weed issues in Tanzania.

ACKNOWLEDGEMENTS

We would like to sincerely thank Mr Malongo Masheno who took us around the rice fields in Mwanza.

**TRIP REPORT
MOSHI AND ARUSHA, TANZANIA
06-11 SEPTEMBER 2011**

AFRO WEEDS PROJECT

GERALD KYALO, SARWATT ATHANASI & EUNICE JOHN

WEED SCIENCE

AFRICARICE



ITINERARY

06/09/2011: Dar es Salaam- Moshi

07/09/2011: Moshi

08/09/2011: Moshi-Arusha

09/09/2011: Arusha

10/09/2011: Arusha-Korogwe

11/09/2011: Korogwe-Dar es salaam

PEOPLE MET

- Mr. Nodoro, Tutor, Kilimanjaro Agricultural Training centre (KATC)
- Mr. Canisius J. Kayombo, Botanist, Forestry Training Institute Olmotonyi-Arusha Tanzania.
- Mr. Ephraim Njau. Director, National Herbarium of Tanzania, Arusha
- Mr. Daniel Sitoni , Botanist, National Herbarium of Tanzania
- Mrs. Elina Macha, Botanist but currently works with Department of Crop Protection, Tropical Pesticides Research Institute (TPRI).

INTRODUCTION

Afroweeds, a collaborative project between CIRAD, France and is in its second year of implementation. We are still collecting and compiling existing knowledge on the weeds of rice of West and East-Africa. The objective of the field trip to Moshi and Arusha (North Tanzania) was 1). To make photos of weed species in lowland rice, collect their herbarium samples and discuss with prospective partners about the project and 2). Visit the National Herbarium in Arusha to check the weed samples and discuss with management how Afroweeds project can utilize the herbarium.

FIELD WORK

At Moshi we took many photos of weed species in lowland rice and also collected their herbarium samples in Chekereni, Rau and Mabogini villages. We also interacted with farmers to learn more about the local names of different weed species and different management practices. Farmers in this area know the local names of the different weed species encountered in their fields. The farmers also informed us that they use hand hoe, hand weeding and flooding as the weed management practices. Some few farmers use herbicides for controlling weeds in their gardens. In Moshi, the problematic weeds are *Cyperus* spp, *Echinochloa colona*, *Ludwigia adscendens*, *Schoenoplectus senegalensis* and *Marsilea crenata*.

In Arusha, we visited herbaria in Olmotonyi Forestry training Institute and National Herbarium of Tanzania. The two herbaria are very organized with very many weed species. The one at the Forestry institute is more recent dating back just over five years while the one at the National herbaria is very old dating back as early 1890. At both herbaria, we requested for permission to take photos of the weed species. We were informed that we shall have to write a formal request before they can consider our proposal. At the National Herbarium, we will also have to pay bench fees if our request is granted.

We also visited lowland rice fields in Usa river where we took a number of photos and herbarium samples. Unlike Moshi, majority of the farmers here use herbicides for controlling weeds and they supplement it with other methods like flooding, hand hoe weeding and hand pulling. Their biggest challenge is the problem of adulterated herbicides. The problematic weeds in this area are *Cyperus* spp, *Leersia hexandra*, *Echinochloa colona* and *Crassula granvikii* Mildbr.

Table 1: List of weed species collected

Name	Family	Local Name
<i>Tridax procumbens</i> L	Asteraceae	
<i>Sida acuta</i> Burm.f.	Malvaceae	
<i>Marsilea crenata</i> C.Presl	Marsileaceae	Karanga
<i>Euphorbia hirta</i> L.	Euphorbiaceae	
<i>Cyperus</i> spp	Cyperaceae	
<i>Corchorus aestuans</i> L.	Malvaceae	Mlenda
<i>Echinochloa colona</i> (L.) Link	Poaceae	
<i>Phyllanthus amarus</i> Schumach. & Thonn.	Euphorbiaceae	
<i>Sorghum arundinaceum</i> (Desv.) Stapf	Poaceae	Mtama pori
<i>Ludwigia adscendens</i> (L.) H.Hara	Onagraceae	
<i>Launea cornuta</i> (Oliver&Hiern) C.Jeffrey	Asteraceae	
<i>Schoenoplectus senegalensis</i> (Steudel) Raynal	Cyperaceae	Vitunguu
<i>Spilanthes uliginosa</i> Sw.	Asteraceae	Dawa kikohozi
<i>Panicum repens</i> L.	Poaceae	
<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	
<i>Kyllinga pumila</i> Michaux	Cyperaceae	
<i>Eclipta prostrata</i> (L.) Hassk.	Asteraceae	
<i>Eragrostis tenuifolia</i> (A. Rich.) Hochst. ex Steud.	Poaceae	
<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	
<i>Leptochloa caerulescens</i> Steudel	Poaceae	
<i>Cyperus difformis</i> L.	Cyperaceae	
<i>Fimbristylis ferruginea</i> L.Vahl	Cyperaceae	
<i>Aeschynomene afraspera</i> Léonard	Fabaceae	
<i>Leersia hexandra</i> Sw.	Poaceae	
<i>Crassula granvikii</i> Mildbr.	Crassulaceae	

Note: These are the weeds that we could identify directly in the field



A



B



C



D



E



F



G



H

Photos: Farmers weeding their rice crop (A), Children get involved in weeding activities (B& C), A hand sprayer used by farmers in controlling weeds (D), Rice crops heavily infested by *Crassula granvikii* Mildbr. and *Marsilea crenata* C.Presl respectively (E& F), Mr. Gerald Kyalo discusses with one of the farmers (G), A rice crop completely ravaged by one the broad leaved weeds.

CONCLUSIONS

The mission undertaken to Moshi and Arusha helped us to enrich our herbarium. We also met and introduced Afroweeds activities to a very experienced group of Botanists which strengthens our collaboration with partners. At a later time, we will take photos of weed species at both herbaria visited at Arusha.

ACKNOWLEDGEMENTS

We would like to sincerely thank Mr. Nodoro and Mr. Kayombo who took us around the rice fields in Moshi and Arusha respectively.



**TRIP REPORT
COTONOU, BENIN
25 JUNE – 5 JULY 2011**

- AFROWEEDS PROJECT -

Jonne Rodenburg, Gerald Kyalo & Kobusinge Aloys

AfricaRice



ITINERARY

Gerald Kyalo & Kobusinge Aloys

25/06/2011: Dar es Salaam – Nairobi – Cotonou

05/07/2011: Cotonou –Nairobi

06/07/2011: Nairobi – Dar es Salaam

Jonne Rodenburg

25/06/2011: Dar es Salaam – Nairobi – Cotonou

02/07/2011: Cotonou –Nairobi

03/07/2011: Nairobi – Dar es Salaam

OBJECTIVES

We went to Cotonou to prepare and attend the 2nd AFROweeds project workshop, to discuss the project progress and way forward with representatives of our partner CIRAD and to work on the weed species data base and (digital) herbarium.

HIGHLIGHTS

- On the first day (Monday 27 June) we met with Thomas Le Bourgeois, Pierre Grard, Pacsal Marnotte and Nora Bakker of CIRAD to discuss the technical progress and administrative issues of the AFROweeds workshop (see details below).
- During day 2 and 3 we held the 2nd AFROweeds project workshop. The workshop was attended by 12 participants from the NARES representing 9 different African countries: from south-east to north-west: Mozambique, Rwanda, Nigeria, Benin, Burkina Faso, Ghana, Cote d'Ivoire, Mali and Senegal (see participant list at the end).
- We have presented the new AFROweeds website (www.afroweeds.org) and the collaborative platform 'Weedsbook' (www.afroweeds.org/network).
- We registered all workshop participants as new members of the collaborative platform and showed them how it can be used (see detailed report below).
- We also discussed the kind and formats of information that we need from the different NARS.
- The day after the workshop (Thursday) we worked with CIRAD on the database, discussing all 'ins-and-outs' and entering photos and technical information (e.g. descriptions of biology and ecology of weeds).
- On Friday and Saturday we had a field day to Lokossa and Zinvié (the latter was only attended by CIRAD and Gerald).
- On Monday 4 and Tuesday 5 July, Gerald and Kobusinge worked on the herbarium together with Mariame Mariko.



CONCLUSIVE REMARKS

The meetings were very useful as they revealed both our achievements and shortcomings. We have a clear idea of how we should proceed now and we have also developed a strategy to attain the project goals as they were outlined in the project proposal. The website and in particular the collaborative platform will be very useful in communications for the remaining project period. We have created a solid basis for continued collaboration with our partners.

ACKNOWLEDGEMENTS

We would like to thank Thomas Le Bourgeois for leading a successful workshop and project. Thanks to his expertise, relentless energy and enthusiasm, this project is really going in the right direction. A special thanks goes to Ms. Carine Kan for her assistance in preparing this workshop and her availability during the course of it, ensuring a smooth and well-organized workshop. We also thank all the other colleagues of AfricaRice headquarters for their help in the organization of the workshop. Finally we thank the participants for their attendance and inspiring participation.

DETAILED WORKSHOP AND PRE-WORKSHOP REPORT

CIRAD – AfricaRice meeting (27/06/2011)

Technical meeting (morning)

This meeting was attended by Thomas Le Bourgeois, Pierre Grard, Pascal Marnotte and Nora Bakker (all CIRAD) and Gerald Kyalo, Kobusinge Aloys and Jonne Rodenburg (all AfricaRice).

- Pl@ntnote – we will use the old version, while waiting for the new one. We will work on the database (directly) and send new versions of the data base on a regular basis (every 2 weeks). New version of Pl@ntnote should be available by January.
- Database of species - We (CIRAD-AfricaRice) should make an overview of what we already have in terms of data and photos to prioritize the work on those species that are still lacking or have scant information.
- CIRAD: has 2060 photos, 313 herbarium samples, 188 information sheets (mainly French descriptions). Information sheets also contain info on the abundance and level of problems (weedyness) in all the countries.
- Information sheets - AfricaRice: to continue the work on information sheets in English; CIRAD will work in French.
- We are lacking information about weed management from different countries.
- The French version of the database van already be accessed online through: <http://www.afroweeds.org/fr/telecharger.html> (or through the website www.afroweeds.org -> resources -> species information or www.afroweeds.org -> downloading).
- One-day workshop in Tanzania: also invite Andrew Kahenya (Andrew.kahenya@bayer.com)? He is coming from Kenya so this is no option but we can invite him to join the platform.
- We have gone through the website to show each folder and sub-folder and discussed how it can be improved.
- Website: Activities ->Field trips : for AfricaRice to make a synthesis of all trip reports (summary of 5-10 lines, just copy –paste) and some accompanying pictures. We can send it to Doan (Vietnam).
- Go to collaborative platform and add “album” with photos of a trip or event or species we are not able to identify (separate albums). These albums of “unidentifiable species” have to be added to group “plant identification”. Photos on weed management can be uploaded in an album under the group “Weed Management”.
- Group “weed management” -> edit: link to weed management video or other information.
- Website: under Weedsbook ->AFROweeds general-> Group files-> Literature synthesis a link is made to “Google docs”. We can update this with new publications or interesting publication we find.
- To upload publications: go to Collaborative platform->groups -> group files -> ‘upload a file’
- In each group you can add files, links to websites or start discussions
- A presentation of IDAO (online: www.afroweeds.org/idao/) is given by Pierre Grard.

Administrative meeting (afternoon)

This meeting was attended by Thomas Le Bourgeois, Pierre Grard, Pascal Marnotte and Nora Bakker (all CIRAD) and George Maina, Leny Medenilla, Akram Sadikou and Jonne Rodenburg (all AfricaRice).

- Thomas Le Bourgeois explained that EU is very strict with respect to justifications of expenditures. We had to explain a lot of issues to EU to pass the first year review. Every change from the original proposal had to be justified/explained. Also on the financial report. We received it 7 times back from EU for revisions. This has cost us 4 months of the project (we had to bridge this gap by pre-financing).
- We cannot double charge expenditures with respect to subsistence when we also claim per diems. This issue emerged during the project launching workshop when we had a workshop dinner while we claimed full per diems for participants.
- Dates of missions and number of per diem days claimed did not always correspond.
- Time sheets should correspond with days worked, holidays, missions etc.
- Some expenditures claimed on the financial report were not related to AFROweeds project activities.
- EU will pay each year after approval of the annual report (financial and technical) 80% of the total 85% (the total is a sum of what EU-ACP, CIRAD and AfricaRice are pooling together for the whole project). The remaining 20% will be reimbursed upon project completion and after having received the full and approved financial and technical reports.
- We need to provide an audit upon project completion. CIRAD is discussing with their Auditor services to see if it can be done for the two institutes combined. AfricaRice did not budget the audit. If the EU obliges us to do a separate audit, AfricaRice would be charged for this separately without any project support.
- Contingencies (5%) can only be used upon approval by Mr den Ouden of the EU.
- We have requested EU reallocate the unpaid salary that was earmarked for the Research Assistant, Technician and Web Programmer, for the organization of a second (mid-term) workshop with (11) participants from member countries. This was approved and we are holding this workshop tomorrow.
- How does the change in recruitment periods for the technicians and the organization of the second workshop affect the AfricaRice budget? It does not really affect it. The only changes are with respect to the Web Programmer who is now on CIRAD budget.
- Per diem as stipulated in the EU agreement (Europe –rate) are not the same as the per diem standard of AfricaRice. The same is the case for CIRAD. AfricaRice and CIRAD need to claim the official rate of per diem as published on the EU website, which is updated every 6 months. The rates claimed are independent of the per diem standard of the institutes. We always have to use the lowest per diem rate of the EU; if the newly updated per diem rate of the EU is higher than the one that was determined at the start of the project (October 2009) we have to use the rate of October 2009; if the current rate is lower than the October 2009 rate, we have to use the current rate.
- We have updated the second year budget with the proposed/actual changes (e.g. salaries of support staff and organization of the second year workshop) and the carry-over amount resulting from unspent funds of the first year. We discussed the forecast for the second year. Unused funds can be carried over to the next year but we still need to spend at least 70% of the second year funding (but salary is already more than 50% of the total budget).
- Some line items are negative in the budget. They represent unexpected costs. For instance we have replaced some missions to Senegal for missions to Cote d'Ivoire and Uganda and Kenya.
- Thomas Le Bourgeois went to an EU-ACP S&T meeting to discuss financial management. Many representatives of these kinds of projects complained about the rigid requirements of justifications of

all activities from all partners etc. The response was that this is the requirement and it cannot be changed. For the next round of applications from this grant scheme, they will make some changes however to make it less rigid.

Project progress evaluation (afternoon)

This meeting was attended by Thomas Le Bourgeois, Pierre Grard, Pascal Marnotte and Nora Bakker (all CIRAD) and George Maina, Leny Medenilla, Akram Sadikou and Jonne Rodenburg (all AfricaRice).

- We presented the work done by AfricaRice (e.g. number of information sheets, photos, herbarium samples etc.)
- Some points of the information sheets are particularly difficult to fill out. Some of these points are meant for observations from the field (by AfricaRice or African partners). One of the objectives of the project is to compile all kinds of information retrieved from field observations from different locations. We want to capture the diversity in terms of habitats and morphology and phenology etc.
- The beauty of the current project is that the outputs are already accessible before the project has completed. The work is still in progress and the database will be updated regularly but all information compiled so far can be uploaded to the website/collaborative platform and is publicly available.
- Partners can contribute where they see fit and have access to all information. Hence with little effort they can share their observations and data and have access to a rich database and a wide weed science community to enhance their work.
- Herbarium photos are always double (one with and one without flash light). We can select the best one to be uploaded to the database.
- We concluded this session by taking stock of the present and absent information and photos with respect to the 200+ weed species on our list. This is to be able to prioritize future work. If we know which are the problem species with respect to lacking information or photo material, we can present this to the workshop participants and identify locations with a high likelihood of finding the species. This will enable us to make more progress in completing the database on all species on our list.

The 2nd AFROweeds Project Workshop

The workshop was attended by 23 participants, with 12 participants of the NARES (including universities, national research centers and extension services) coming from 9 different countries. The other participants came from CIRAD (4) and AfricaRice (7).

Workshop day-1 (28-June)

- The workshop started with a round of introduction of the participants at 08:45 o'clock.
- Dr Takashi Kumashiro gave an opening speech to welcome all participants and present the objectives of the workshop. He mentioned the importance of weeds as production constraint in SSA. He also briefly presented the objectives of the AFROweeds projects and explained that we are at the medium-term right now.
- Pascal Marnotte presented an introduction the AFROweeds project, mainly for those that were not there during the project launching workshop and as a quick reminder for those that are already familiar with the project.

- Thomas Le Bourgeois presented the AFROweeds website (www.AFROweeds.org), showing all sub-pages and the collaborative platform Weedsbook (www.AFROweeds.org/network) showing all applications and explaining the different member groups; membership of the AFROweeds network is based on open-access, implying that is publicly available to anyone who is interested in weeds in rice. The different groups created are focusing on subjects like “botany”, “weed management” etc. Each member of the network can become a member of any group he/she is interested in. The groups enable targeted discussions and exchange of information on the specific subject theme of the group.
- Salif Diack wanted to know the difference between “platform” and “group”. Thomas Le Bourgeois and Pascal Marnotte explained this.
- Pierre Grard presented the online version of the species identification tool IDAO.
- After this presentation we had a session to register new members to our collaborative platform and instructions on its use.
- In the afternoon we have trained the participants in the use of the collaborative platform (e.g. becoming member of a group, creating a photo album, starting a discussion).
- By adding tags (keywords) to photo’s or discussions they can be found back if one conduct a global ‘search’ at the Weedsbook home-page.
- A question was asked, if it is possible to find an effective management practice on the website or platform for a weed species that has been identified already. Answer: this is exactly the objective of this project. It should be possible only if the species is included in the database and if there is enough information collected on the species. It is also a dynamic process where different members can contribute by sharing their experiences through the discussion forums on the collaborative platform.

Workshop day-2 (29 June: morning)

- Representatives of the extension services were given the floor to explain the difficulties/challenges encountered in the field and how the project can be helpful in addressing them.
- In Cote d’Ivoire it can help farmers directly when they have a weed problem. They can ask extension agents to help and they can consult the participatory platform through their cell phones and/or use the tools to identify and the database to see what management strategies can be proposed. There is also a lot of local knowledge and traditional means and local innovations for control available. Extension services can observe those and describe them and include them in the database to make them available to the AFROweeds community.
- In Benin the tool/database can help supporting the farmers better. In Benin there are also examples of local knowledge shared by farmers and this can be noted and uploaded in the database. If locally we find a problem species that is not on the list we can include photos and look for information on this species as
- In Senegal, 80% of the rice is irrigated (mainly in the Senegal River Valley). Chemical weed control is often used here (Propanil – 2,4-D or Londax). Cyperaceae and Gramineae are posing the largest problems. Weeds are often used as fodder. Salif Diack, agent of SAED, explained in detail the kind of problems encountered with respect to weed management and how the AFROweed tools can address them. He proposes to also print information sheets to be able to disseminate information among farmers. We can also work together with NGO’s. There is a problem with the vernacular names. There is a wide diversity of names and also names that may cover different species. He explains that is not often just one species but rather a family or a group/community of species. We

have to find general recommendations for management of a group of similar species. We can discuss on the forum page of the platform what kind of groups can be distinguished and how such groups can be composed. They can be targeted as a group of species with similar phenological/life-cycle/ecological and biological functions and requirements. In rain-fed lowlands in the south (Casamance) they use less herbicides, the fields are smaller and have less access to extension. In the Casamance there are a lot of NGO's. There is a manual on rice production available on the website of SAED (www.saed.sn), which is a product of SAED, AfricaRice and ISRA. We can make this available through the AFROweeds website too.

- In Mali, Office du Niger (ON): 70 years of experience 90,000 ha irrigated rice. Weed management is chemical and mechanical (hand and hoe-weeding). Weeds are hosts for RYMV. Perennial species are posing a large problem (e.g. *Oryza longistaminata*). Large scale farms (private) 100-200 ha, direct seeding is used. *Salvinia molesta* is posing a large problem in the waterways as well as in the field. The project AFROweeds can assist in better weed control. Daouda will organize meetings with farmers and extension to inform them about the AFROweeds tools. Following this summary we had a discussion on the use of herbicides and biological control (against water weeds). It was suggested that this kind of discussion could be continued or started through the forum page on our collaborative platform.
- In Rwanda rice is mainly irrigated. Weeds are not managed chemically. Farmers only use hand weeding. Claude has a list of species encountered in different areas where rice is grown in irrigated conditions in Rwanda. Weeds can also be used for different purposes by farmers. Knowledge derived from the field on these uses should be made available through our website/database. We do not need completely filled-out information sheets. Even if we have just a few lines to add on a species it can be shared. Any information that can be useful to the database can be sent to Thomas Le Bourgeois (Fre.) or Jonne Rodenburg (Eng.). There are no figures on yield losses caused by weeds.
- In Nigeria, extension services are rather weak. There is a Nigerian Weed Science society through which we can reach a lot of interested persons. Friday works at the university and will inform students through that means too.
- In the second half of the morning, Thomas Le Bourgeois presented the data base, showing how it can be used and how we can add data. Information, knowledge, photos and data should come from the different partners.
- The remainder of the day we used to work on the database, to become familiar with renaming of photos of weed species and to respond to questions.
- At the end of the workshop many participants expressed their appreciation for the progress made and the usefulness of the website, tools and products of AFROweeds.

END

Appendices – workshop program and list of participants

Programme du deuxième atelier Afroweeds Cotonou - Bénin 28-29 juin 2011			
Program of the second Afroweeds project workshop Cotonou - Benin 28-29 June 2011			
Date	Time	Activités	Activities
27-Jun		Arrivée des participants	<i>Arrival of participants</i>
28-Jun	matin/ <i>morning</i>	Lancement atelier / Intro Présentation Site web et plateforme collaborative Présentation IDAO Afroweeds	<i>Launch of the workshop/ Introduction; Presentation of the web-site and collaborative platform</i>
28-Jun	après midi/ <i>afternoon</i>	Présentation de la base de données Bilan des collectes d'informations	<i>Presentation of the data base; Stock-taking of collected information</i>
28-Jun	soir/ <i>evening</i>	Cocktail	<i>Cocktail</i>
29-Jun	matin/ <i>morning</i>	Inscriptions des membres sur la plateforme collaborative Initiation à l'utilisation de la plateforme collaborative	<i>Registration of members to the collaborative platform; Introduction in the use of the collaborative platform</i>
29-Jun	après midi/ <i>afternoon</i>	Programmation des actions de l'année 2 Les données à acquérir Les informations à partager Les contributions Conclusion de l'atelier	<i>Planning of the 2nd project year; data to be acquired; information to be shared; contributions to be expected from members; conclusion of the workshop</i>
30-Jun		départ des participants	<i>Departure of participants</i>



ACP Science and Technology Programme

AFS/2009/219015

AFROweeds Project African weeds of rice

Trip report
5-11th September 2011
St Louis - Senegal



Pierre Grard – Cirad
Alain Carrara – Cirad

Calendar of the mission

5/09/2011	21h00	Arrival (Dakar Int. Airport)
06/09/2011	morning	Presentation of the project and discussions around the fieldtrips.
	afternoon	Meeting at SAED office
07/09/2010	morning	Collection of species in Dagana delegation (Ross Bethio)
	afternoon	Collection of species in Kassak north and Boudoum
08/09/2010	morning	Collection of species in Dagana and Gaya
	afternoon	Collection of species in Dieurba and Fanaye
09/09/2010	morning	Collection of species in Podor and Aéré
	afternoon	Collection of species in Diomandou and Diatar
10/09/2010	morning	Collection of species in Podor
	afternoon	Travel back from Podor to St Louis
11/09/2010	morning	Sorting pictures and collected samples
	afternoon	Travel from St Louis to Dakar and night flight to Paris then Montpellier

Introduction

The Afroweeds project is funded by the EU-ACP Science and Technology Program and led by CIRAD, France. The project started in October 2009 and expects to result in a viable African-European weed science network, a useful information platform on the most important lowland weeds in rice in Africa, and a web-based user-friendly and comprehensive weed identification tool. We are currently in the second stage of the project, aimed at the collection and compilation of existing knowledge resources on the weeds of rice of West and East-Africa, from NARS, Universities and partners involved in the project. It is in this context that the mission, reported here, has been undertaken. The first objective of the mission was to make a presentation of the web based platform on weed species and to make a show case of the identification tool. The second objective of the mission was to make photos of important weed species of the Senegal River delta and to collect herbarium samples.

Presentation and training session



The AFROweeds project presentation has been organized by SAED in their meeting room. It allowed us to meet 13 persons involved in extension along with people working for rice development projects which are implemented in the Senegal Valley. After the registration of the people present at the meeting, a training session has been organized showing the different capabilities of the AFROweeds platform.

Field trip

The field trip took place from September 7th to 10th in the irrigated paddy fields of the Senegal valley from Saint Louis to Podor and beyond on the way to Mali.

For each species, we have collected:

- Location with GPS record
- A minimum of 10 pictures per species
- 5 samples per species
- Information collected with the farmers: *What is the most noxious species ? How frequent is it ? Its date of flowering etc...*

During this field trip, we have collected 90 samples covering 35 different species and taken a total of 1920 pictures of weeds (habit, leaves, flowers and important details).



This field trip would have not been possible to organize without the help and the efficiency of the « *Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des Vallées du fleuve Sénégal et de la Falémé* » (SAED, see <http://www.saed.sn>) and I would like to warmly thank, among others, M. Salif Diack, senior weed scientist at SAED.

List of collected species

Species	Samples collected
Aeschynomene indica L.	3
Amaranthus graecizans L.	1
Bolboschoenus maritimus (L.) Palla	4
Cyperus alopecuroides Rottb.	2
Cyperus digitatus Roxb.	1
Cyperus esculentus L.	3
Cyperus rotundus L.	2
Dactyloctenium aegyptium (L.) Willd.	2
Dichanthium annulatum (Forssk.) Stapf var. annulatum	2
Echinochloa colona (L.) Link	6
Echinochloa crus-pavonis (Kunth) Schult. var. rostrata Stapf	7
Eclipta prostrata	3
Enteropogon prierii (Kunth) Clayton	3
Euphorbia hirta L.	3
Fabaceae 1 indéterminée	3
Fimbristylis littoralis Gand.	3
Fuirena ciliaris (L.) Roxb.	5
Heliotropium ovalifolium Forssk.	1
Heteranthera callifolia Rchb. Ex Kunth	1
Ipomoea aquatica Forssk.	1
Ipomoea sinensis (Desr.) Choisy	3
Leptochloa caerulescens Steud.	4
Leptochloa fusca (L.) Kunth syn. Diplachne fusca (L.) P.Beauv. Ex Staf	4
Ludwigia adscendens (L.) H.Hara	1
Ludwigia sp.	1
Malvaceae 1 indéterminée	2
Oryza barthii A. Chev.	2
Oryza longistaminata A.Chev. & Roehr.	3
Panicum laetum Kunth	3
Physalis angulata	
Poaceae 1 indéterminée	2
Sesbania sp.	1
Spermacoce verticillata L.	1
Sphenoclea zeylanica Gaertn.	4
Trianthema portulacastrum L.	3
Total	90

People met during the fieldtrip

Date	Place	People met	Structures	Obsv.
06/11	Direction générale SAED	Mor DIOP Seyni NDAO Amadou Thiam Baye Salif Diack	DG Adjoint SAED Directeur de la DDAR Chef Cellule Suii Eval Chargé du Prog. Riz	Visite de courtoisie Planification tournée
	Direction générale SAED	<i>Seyni NDAO</i> <i>Amadou Thiam</i> <i>Baye Salif Diack</i> Khassim Sarr Samba Sow Abdou Mbodj Latyr Diouf Amadou M. Ndiaye Ablaye Sow Jacques Derneville Jean Moreira Djiba Marc	SAED « . » « . » « . » « . » « . » « . » « . » « . » « . » JICA PAPRIZ 3 PRD	Presentation of the AFROweeds project Training on
07/11	Délégation de Dagana (Ross Béthio)	Abou NDAO Alioune T. Samb	CPSE Dagana DPRD Dagana	Visite de courtoisie
	Grande Digue tellel	Bara Ngom	Chef Secteur Δ Central	Collecte adventices, Discussions - échanges
	Kassack Nord	Idrissa Diack Assane SALL	Conseillers Agricoles	
	Boundoum	Ibra TALL		
08/11	Dagana	Mansour Cissé	Conseiller Agricole	Collecte adventices, Discussions - échanges
	Gaya			
	Ndieurba	Modou Dione	Conseiller Agricole	Collecte adventices, Discussions - échanges
	Fanaye			
9/11	Délégation de Podor	Alioune Ndiaye Alioune Ndiaye Ousmane Diop	DPRD de Podor Chef secteur Aéré Cons. Agricole	Collecte adventices, Discussions - échanges
	Aéré	Félicien Ama	Cons. Agricole	
	Diomandou			
	Guédé	Ibrahima Hann	Chef de Secteur Guédé	
10/11	Diatar	<i>Alioune Ndiaye</i> Ahmet Thiam Mamadou Diallo <i>Ibrahima Hann</i>	DPRD de Podor Cons. Agricole Cons. Agricole Chef de Secteur Guédé	Collecte adventices, Discussions - échanges
NB : Dans tous les sites visités, des Producteurs ont accompagné la mission et ont largement contribué à l'identification des mauvaises herbes qui posent le plus de problèmes, leurs caractéristiques et les noms locaux				



**TRIP REPORT
MAPUTO, MOZAMBIQUE
9-14 OCTOBER 2011**

- 10TH AFRICAN CROP SCIENCE SOCIETY CONFERENCE -

Jonne Rodenburg

AfricaRice



ITINERARY

09/10/2011: Dar es Salaam – Nairobi-Maputo

14/10/2011: Maputo - Nairobi

INTRODUCTION

The 10th African Crop Science Society Conference (ACSSC) was held in Maputo, Mozambique from 10-13 October 2011. I organized and moderated a workshop on ‘Advancing Weed Research in Africa’ with the main objective to discuss the need, feasibility and *modus operandi* of a pan-African weed science society or network. This idea originated from interactions I had late 2010 with Dr PJ Pieterse of Stellenbosch University, South Africa and Leonard Gianessi, Director of the Crop Protection Research Institute of the CropLife Foundation, USA. Besides the workshop my abstract entitled “Weed control reduces bird pressure and bird-inflicted yield losses in irrigated rice”, co-authored by Matty Demont, Abdoulaye Sow and Ibnou Dieng, as well as my abstract on the AFROweeds project “AFROweeds – A collaborative and participative online network to enhance weed science capacities in Africa”, co-authored by Thomas Le Bourgeois, Pierre Grard and Pascal Marnotte, and the abstract entitled “Weed competitiveness of upland NERICA varieties in the Guinea Savanna zone”, authored by Gerald Kyalo and co-authored by Israel Dzomeku, Kazuki Saito and me, were all accepted to be presented as oral presentations (see abstracts below).

WORKSHOP: ADVANCING WEED RESEARCH IN AFRICA

The workshop ‘Advancing Weed Research in Africa’, moderated by me, was attended by about 20 participants and consisted of four presentations:

1. Gualbert Gbèhounou (Food and Agriculture Organization –FAO-, Rome , Italy): “Weed management challenges in Africa and future prospects”
2. Charlie Riches (Natural Resources Institute, U.K.): “Raising the profile of Weed Management in Africa”
3. Jonne Rodenburg (Africa Rice Center, Tanzania), Thomas Le Bourgeois, Pierre Grard, Pascal Marnotte (CIRAD, France/Vietnam/Benin): “AFROweeds – a collaborative and participative online network to enhance weed science capacities in Africa”
4. Jonne Rodenburg (Africa Rice Center, Tanzania): “Proposal for an African Weed Science Network”.

The objective of the workshop was to assess the need for an African Weed Science Network and to discuss how such a network should operate and how it would relate to other networks or societies with overlapping objectives or geographical ranges. Among the participants of the workshop there was a broadly shared belief that a platform for weed scientists working in Africa, or on African topics, would be useful. The platform could serve to share information, knowledge and contacts and facilitate the organization of events such as workshops and

conferences and be instrumental in capacity building and raising more funds for weed research in Africa.

Proposal for an AWSN

We propose an association of weed scientists working in Africa called “African Weed Science Network” (AWSN). The AWSN will primarily work through a website. The website will feature a comprehensive database of weed scientists in Africa with names, addresses and professional profiles and will enable any interested individual to quickly assess ‘who-does-what-and-where’. The website will further consist of pages containing relevant information on events (e.g. workshops, conferences), capacity building opportunities (e.g. scholarship information), calls for funding, (new) publications and discussion fora. In addition the website could contain a weed species database with photos and identification tools and information on management, similar to the one created by AFROweeds (<http://www.afroweeds.org>). As an additional feature, the AWSN could disseminate a regular newsletter (for instance 2 times a year). The AWSN will link with the Southern African Weed Science Society (<http://www.weeds.org.za/>) to make use of the existing weed scientist database for Southern Africa. The same can be done with other national societies like the one of Nigeria (WSSN). The AWSN will initially operate under the umbrella of the already existing African Crop Science Society (ACSS; <http://www.acss.ws/>). The ACSS, organizes bi-annual conferences and the AWSN can organize a one-day workshop as part of the larger conference to present weed science papers, exchange and discuss progress in weed research, funding and capacity building opportunities and any other relevant AWSN issues. This is a low-cost construction that would enable the AWSN to come together at least one time every two years and to create a critical mass for weed science during the ACSS conferences. The next ACSS conference will be in 2013 in Cameroon.

AWSN working group

To investigate the optimum *modus operandi* and funding opportunities for the AWSN and to establish the actual network, a working group composed of six members has been proposed:

- Gualbert Gbèhounou (FAO, Italy)
- David Ojo (NIHORT, Nigeria)
- Hottensiah Mwangi (KARI, Kenya)
- Lum Fontem (Univ. of Buea, Cameroon)
- Elbé Hugo (ARC, South Africa)
- Jonne Rodenburg (AfricaRice, Tanzania; Coordinator)

The Terms of Reference (ToR) of the working group are:

1. To fine tune the proposal of the modus operandi of the AWSN.
2. To constitute a database of African weed scientists (who, what and where)
3. To recruit members and to generate publicity and institutional support.
4. To investigate funding opportunities.

5. To establish a Memorandum of Understanding (MoU) with the ACSS.
6. To obtain a web domain for the AWSN and to establish a website.
7. To appoint a steering committee of 4-6 members and to establish ToR of the committee to ensure a good start of the AWSN.
8. To appoint an editor for the newsletter and the website.
9. To launch the AWSN.

CONCLUSIVE REMARKS

The idea of the AWSN working under the umbrella of the ACSS has been discussed with the outgoing (Dr G.D. Joubert) and incoming (Dr L. Santos) presidents of the ACSS and they were both very much in favor of the idea.

The conference was successful and provided me a platform to initiate the launch of a weed science network, to generate more attention and interest to my work and the AFROweeds project and to meet new people and potential new collaborators. I wish to thank the LOC of the conference, Dr Luisa Santos in particular, for accepting our abstracts and for giving me the opportunity to organize and moderate the workshop.

Appendix 1: List of participants to the Weed Science workshop

Name	e-mail address	country	institution
Rafael Hassinga	rafael.massinga@gmail.com	Mozambique	ISPM
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Jonne Rodenburg	j.rodenburg@cgiar.org	Tanzania	AfricaRice

APPENDIX I. Accepted Abstracts:**AFROWEEDS – A COLLABORATIVE AND PARTICIPATIVE ONLINE NETWORK TO ENHANCE WEED SCIENCE CAPACITIES IN AFRICA**

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Weed competition cause high yield losses in African crop production systems. Conservative estimates show that even for rice alone weeds cost economies of sub-Saharan Africa (SSA) already a near \$1.5 billion per year. For subsistence farmers in SSA there is only a limited range of affordable and effective control strategies. Due to the diversity of weed species, the complexity of crop – weed ecology and associated environmental and management interactions, as well as the socio-economic constraints of subsistence farming in Africa, few effective weed control strategies are developed so far. Moreover, even the limited number of control strategies, or component technologies currently available face limited dissemination and adoption among the (rice) farmer communities in SSA. The above described situation is largely the result of the sub-optimal capacities of agricultural research and development (R&D) organizations in SSA. The region has an extremely low ratio of trained weed scientists per farmer. Conversely, in the absence of weed scientists, students, R&D professionals or farmers looking for information on weeds, reliable, comprehensive and comprehensible sources are scant and scattered. The EU-ACP funded Afroweeds is an initiative of CIRAD and Africa Rice Center (AfricaRice) to link European and African botanists and weed scientists with the objective to enhance the regional capacities in these fields of expertise. Afroweeds is a network for professionals and students aimed at sharing knowledge on rice weeds. The *modes operandi* of Afroweeds is an open-access website (<http://www.afroweeds.org/network>). This online platform enables members to exchange information, discuss relevant issues and to access an increasingly extensive library of information and photos on weed species and management. The most eye-catching features of the Afroweeds collaborative platform are the extremely user-friendly weed species identification tools. They encompass image recognition software and a multiple-choice program (called 'plant robot') using schematic drawings of plant organs (e.g. leaves, flowers). Identification results can be cross-checked with a rich gallery of photos of field-growing or herbarium specimen and information on ecology and biology, while the Afroweeds data base can also be consulted for effective management options. The strength of the Afroweeds collaborative site further lies in the fact that information and concerns can easily be shared with the other members of community for feed-back. By facilitating such exchange between actors who are otherwise isolated from each other, Afroweeds contributes towards spreading and enhancing knowledge on rice weeds and best weed management practices to improve the productivity of African rice-based cropping systems.

Keywords: Africa, rice, knowledge base, online platform, identification tools

WEED CONTROL REDUCES BIRD PRESSURE AND BIRD-INFLICTED YIELD LOSSES IN IRRIGATED RICE

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Rice farmers in the Senegal River Valley (SRV), representative for irrigated rice in the Sahel, perceive lower bird pressure and bird-inflicted yield losses when their crop is weeded, compared to weedy fields. Remarkably, the interaction between both distinct pests has never been analyzed before. The current study aimed to 1) investigate single and combined yield reducing effects of weeds and birds on irrigated rice, 2) analyze the interaction between both pests to confirm farmers' perception that bird damage can be reduced through weed control, and 3) assess the potential of cultivar choice as an anticipatory strategy to mitigate bird damage. To this end, two years of multi-factorial experiments were carried out in the hot dry seasons of 2009 (30 March – 12 August) and 2010 (18 March – 20 July) on the experimental farm of the Africa Rice Center at Ndiaye, northern Senegal (16°14'N, 16°14'W, 1 m a.s.l.). Treatments included all combinations (complete or absent) of weed and bird control tested against one popular medium-short cycle cultivar (Sahel 108) and one popular medium-long cycle cultivar (Sahel 202). In both years, weed-free rice plots with season-long exposure to birds showed lower relative yield losses across cultivars (32% in 2009 and 49% in 2010) than bird-free (netted) plots suffering from season-long weed competition (71% in 2009 and 63% in 2010). The combination of bird exposure (*Quelea quelea*) and weed competition (mainly *Echinochloa colona* and *Cyperus difformis*) resulted in near-complete yield failure (83% relative yield loss in 2009 and 97% in 2010). Cultivars showed equal yielding and weed suppressive abilities in both years. In the later sown first year's trial (2009) the short-cycle cultivar Sahel 108 had significant higher yields when exposed to birds alone, compared to the long-cycle cultivar Sahel 202, whereas the opposite was observed in the earlier sown 2010 trial. In the latter trial, between grain filling and maturity, weedy plots were visited significantly more frequently by birds than weed-free plots but the difference between the weed-free and weedy decreased in time. No significant differences in frequency of bird visits were observed between cultivars. For irrigated rice in the Sahel, farmers can reduce bird pressure and damage through weed control. If farmers can sow early, a long-cycle cultivar is likely to yield higher than a short-cycle cultivar when the crop is exposed to birds, while the opposite might be true when the onset of the season is delayed.

Keywords: Oryza sativa, Quelea quelea, weed management, bird control

WEED COMPETITIVENES OF UPLAND NERICA VARIETIES IN THE GUINEA SAVANNA ZONE

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Weeds are major production constraints in rice production systems in sub-Saharan Africa. In rain-fed uplands weeds are particularly problematic as the crop is grown without a weed-suppressive permanent flood water layer. The interspecific rice cultivars of NERICA (New Rice for Africa), derived from crosses between the African rice species *Oryza glaberrima* with the Asian *O. sativa*, were generated to enhance the available pool of low-input/high-response and weed competitive cultivars for resource-poor African rice farmers. As weed competition is one of the overarching production constraints in rain-fed uplands, we have evaluated all 18 upland cultivars of NERICA for their weed competitiveness. These NERICA cultivars were compared to their parents, *O. glaberrima* CG14 and *O. sativa* cultivars WAB 56-50, -181-18, -56-104, a weed competitive check IG10 and a locally adapted cultivar Moroberekan under weed-free and weedy conditions during the 2008 and 2009 growing seasons at Nyankpala, near Tamale, northern Ghana. The most frequently encountered weeds were *Bacopa decumbens*, *Mollugo nudicaulis*, *Senna obtusifolia*, *Brachiaria lata*, *Ageratum conyzoides* and *Ludwigia abyssinica*. Weed pressure was very similar between the two years. Average weed-inflicted yield loss was 21% in 2008 and 20% in 2009. Year, weeding and cultivar choice all had highly significant ($P < 0.01$) effects on yields. Consistent high yielding cultivars under weed-free conditions were NERICA 12, 16 and 9. Under weedy conditions WAB56-50 and NERICA 17 showed relative high yields in 2008 but were average in 2009. Conversely, NERICA 12 and 16 were average in 2008 but had relatively superior yields under weedy conditions in 2009. The locally adapted Moroberekan consistently showed the lowest yields of all cultivars but also the lowest weed-inflicted relative yield losses. Cultivars also had a significant ($P < 0.05$) effect on weed pressure in both years. Cultivars IG10 and CG14 (both *O. glaberrima*) and WAB56-104 were most weed suppressive in both years. No cultivar has been identified that combined all of the useful weed competitive traits. However, a best-bet choice for farmers would be the use of cultivars that are high yielding under weedy conditions as these are also generally high yielding under weed-free conditions. In this respect NERICA 12 and 16 are recommended. Future investigation should clarify if the observed weed tolerance of Moroberekan and weed suppressiveness of IG10 would be useful and feasible genetic traits to improve the weed competitiveness of high-yielding and adapted cultivars such as NERICA 12 and 16.

Keywords: Oryza sativa, Oryza glaberrima, weed competition, yield loss

APPENDIX 4

Second participatory workshop Cotonou - Benin June 2011



ACP Science and Technology Programme

AFS/2009/219015

AFROweeds Project African Weeds of rice

Second workshop of the AFROWeeds project and field surveys
June 27-July 2, 2011
Cotonou - Benin



(© T. Le Bourgeois - Cirad)



Thomas Le Bourgeois - Cirad
Pierre Grard - Cirad
Nora Bakker - Cirad
Jonne Rodenburg - AfricaRice

Summary

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Administrative aspects of the AFROweeds project.....	15
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Mission calendar

26/06/2011	20h		CIRAD team arrived in Cotonou
27/06/2011	8:30-12h		Technical Meeting AfricaRice / CIRAD, update on the progress of the various actions
	12h-13h30		Lunch
	13h30-15h		Administrative Meeting AfricaRice / CIRAD
	15h-18h		Technical Meeting AfricaRice / CIRAD program of future actions
28/07/2011	8h30 to 8h45	Workshop with partners	Introduction by T. Kumashiro representative of the Director of Research for Development AfricaRice
	8:45-9h		The project AfroWeeds P. Marnotte
	9h-9h30		The website Afroweeds T. Le Bourgeois
	9:30 - 10h30		The collaborative platform T. Le Bourgeois
	10h30 -10h45		Coffee break
	10h45-12h		The identification system P. Grard
	12h-13h30		Lunch
	13:30 - 17:30		Partner training in the use of the collaborative website
29/07/2011	8:30 - 10:30	Workshop with partners	The database, review data collection T. Le Bourgeois
	10:30 - 10:45		Coffee break
	10h45-12h		Working on data with partners
	12h-13h30		Lunch
	13:30 - 15:30		List of priority species remaining to be collected
	15:30 - 15:45		Coffee break
	15h45-17h		Actions to implement
30/06/2011	8:30 – 12h	Training	Training AfricaRice team on the management of data in the database
	12h-13h30		Lunch
	13h30-17h		Training AfricaRice team on the management of data in the database
01/07/2011	8:30-12h	Surveys of CRR at Comé	Survey in rice fields at Toudjonoukouin and collection of material
	12h-13h30		Lunch
	13:30 - 16:30		Survey in rice fields at Codji Haham and collection equipment
02/07/2011	8:30-12h	Surveys of CRR at Zinvié	Survey in rice fields at Dokomey and collection of material
	12h-13h30		Lunch
	13:30-16:30		Survey in rice fields at Gbodjé and collection of material
28-29/06/2011: Analysis of financial documents AfricaRice first year, budget year and the second recall of administrative and financial rules (N. Bakker, L. Medenilla, C. Kan, G. Maina, A. Sadikou)			
03/07/2011	23h		Departure Cirad team

Introduction

The AfroWeeds project

The project aims to **create an initial network of partners in West, Central and Eastern Africa, and Europe**, interested in sharing their knowledge through the computer science applied to agriculture and the creation of a dedicated database for the identification and management of major weeds in rice farming systems in humid areas (lowland and irrigated rice fields).

The mission had three objectives:

- Make a point between the administrative and technical AfricaRice and CIRAD;
- Making a second workshop with partners weed scientists and extension people from different countries of Africa;
- Conduct field surveys in Benin.

The second workshop

At the mid-time of the project, the second project workshop was held for two days in Cotonou, Benin in AfricaRice temporary headquarters, located in Abomey-Calavi.



Second workshop AfroWeeds temporary headquarters AfricaRice Cotonou - Benin (© P. Gard - CIRAD)

This second meeting brought together partners AfricaRice and CIRAD, and weed scientists in national research systems and universities in different countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Nigeria, Rwanda, Mozambique) and extension services in rice from Benin, Senegal, Mali and Côte d'Ivoire. Various points were discussed:

- Presentation of project progress and, in particular, the tools developed and how they work (website, collaborative platform, system identification ...).
- Training partners to use the various tools and analysis of their suitability to the needs of scientific and technical professionals.
- Definition of the activities to be implemented in the coming months.

Partners

The coordinators of the AfroWeeds project are CIRAD and AfricaRice. CIRAD was represented at the workshop T. Le Bourgeois (weed scientist), P. Grard (expert computer information systems in botany) and N. Bakker (management assistant). Note that P. Marnotte (weed scientist) left the CIRAD in April 2011 to be allocated by the Ministry of Foreign and European Affairs) to the Embassy of France in Benin, as technical advisor to the INRAB. AfricaRice was represented by J. Rodenburg (weed scientist), G. Kyalo (research assistant), K. Aloys (technician), G. Maina (lead management), L. Medenilla (administrative follow-up), C. Kan (administrative follow-up) and A. Sadikou (accountant).

Twelve national, weed scientists and extension agents of rice development were invited to participate in this workshop. They are members of national research structures (agricultural research centers and universities) and are from seven countries in West and East Africa: Benin, Ivory Coast, Burkina Faso, Ghana, Nigeria, Rwanda and Mozambique or from extension services (Benin, Côte d'Ivoire, Mali, Senegal).

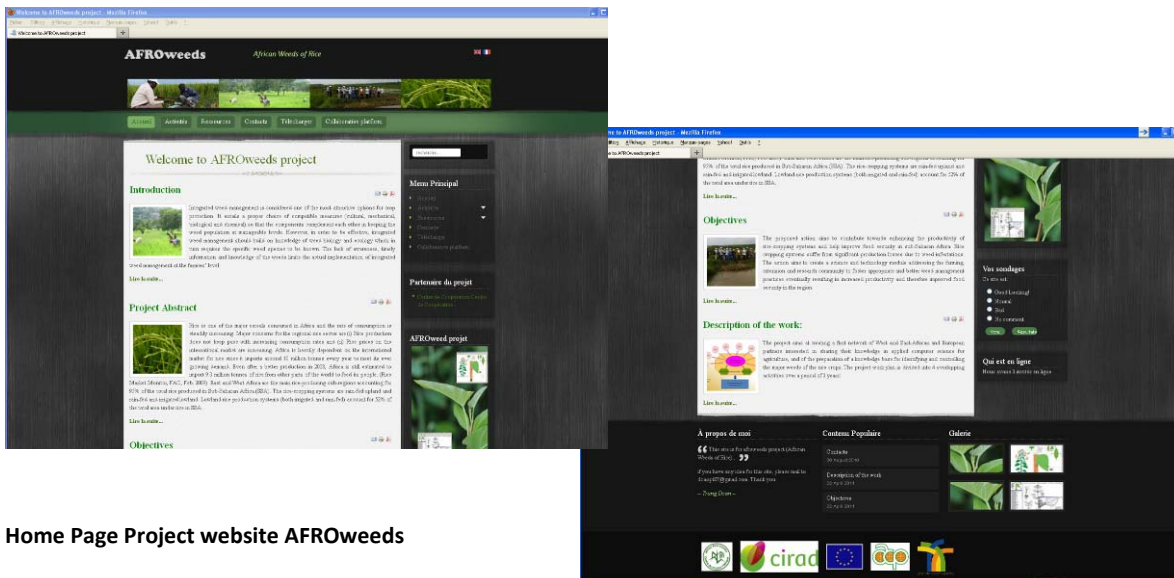
Some agronomists from AfricaRice also attended the workshop.

The list of participants is presented in Appendix 1.

Presentations and discussions

1 The Website Afroweeds

The project website Afroweeds is available at <http://www.afroweeds.org>



Home Page Project website AFROweeds

This website is presenting the AFROweeds project, the various activities (workshops, trade missions, techniques used), the project resources (bibliographical, botanical resources, fact sheets on species and identification system), contact of project coordinators and links with the collaborative platform.

2 The collaborative platform

The platform is a Web-2 collaborative space for members of the AFROweeds project. It allows to:

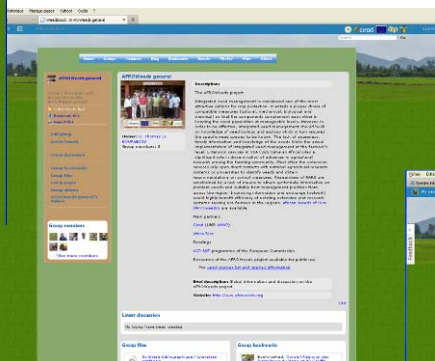
- create working groups on specific topics;
- sharing information, working documents, Web links of interest;
- create, animate and participate in online discussions;
- to supply photo albums (collections of missions, weed control practices, unidentified weeds ...)
- to submit questions or photos (eg to identify a weed or to discuss a practice of weeding) to the entire community.

Any page, document or photo can be subject to comments from members of the platform. These comments will include the basis for exchanges between the partners.

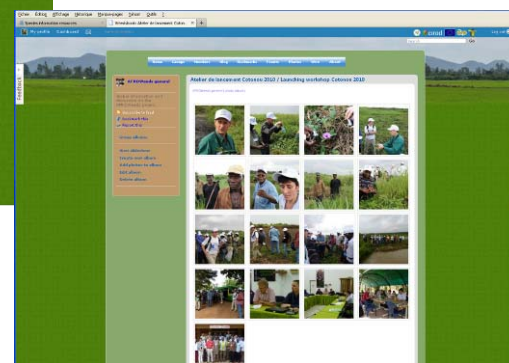
Participation in this platform requires registration. Registration is validated by the project coordinators to prevent automated registrations from bots or from people completely outside the issue of weed management in rice. There are currently 28 members registered to the platform. The workshop participants have been trained in the use of this platform and are now able to present it in their professional networks and seek new subscriptions.



Some working groups of the platform



Example of the AfroWeeds General group



Album photo of the first workshop in Cotonou 02/2010

At present, seven working groups are formed:

- Operation of the project AFROweeds
- AFROWeeds Coordination (closed group limited to the project coordinators)
- Botany and identification
- Tools and methods for identifying IDAO
- Distribution and invasion of regional weeds
- Irrigation network of the Office du Niger
- Management of weed infestations

Many scientific papers have already been made available to the community and a summary of references on the topic of weeds in general and weed control in rice.

3 software IDAO identification of weeds

Identification using the identikit process allows identifying a plant at any stage of development or from an incomplete sample, without requiring knowledge in botany.

This process is error tolerant.

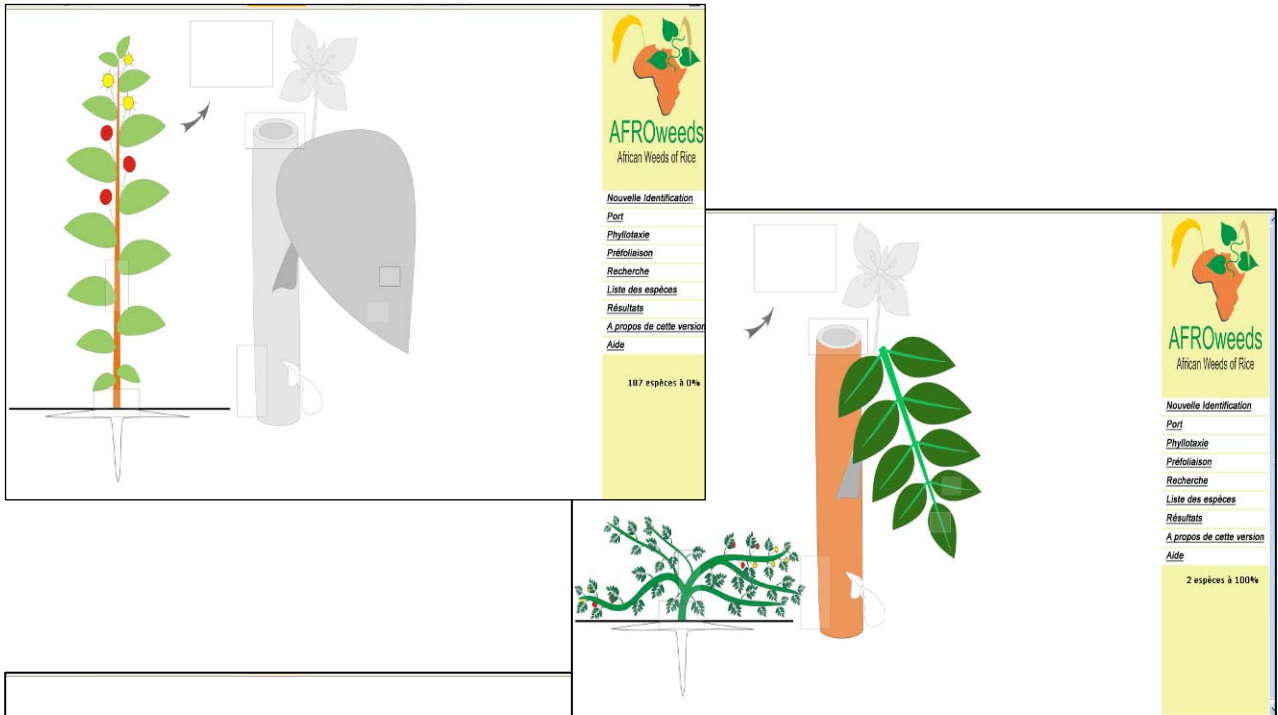
Species are listed in order of probability of consistency with the information provided by the user.

Each species is fully described with information on its origin, its distribution, its ecology, its aggressiveness and control methods used, and abundantly illustrated.

This is a working tool, but also a way for the dissemination of knowledge and a teaching and training tool.

It is accessible from the website AFROWeeds from the tab "Resources" and from the collaborative platform from the working group "Botany - identification" or the working group "IDAO SVG," or can be used directly at:

<http://www.afroweeds.org/idao>



Liste des espèces (95 %)

Nom d'espèce	Pourcentage	Erreur
Mimosa pudica	100%	-
Tribulus terrestris	100%	-
Aberranthera costifera H.B.K.	50%	View
Aberranthera surinam H.B.K.	50%	View
Aberranthera sessilis (L.) P. Nir. ex DC.	50%	View
Alvinia purpurascens	50%	View
Bidens pilosa	50%	View
Boerhaavia diffusa	50%	View
Cordia alliodora L.	50%	View
Conium maculatum	50%	View
Conium maculatum	50%	View
Crotalaria coronata	50%	View
Echinosphenacium apocynum	50%	View
Digitaria horizontalis	50%	View
Hemiphragma striatum	50%	View

2 espèces à 100%

Several screens of the IDAO identification software and extract of the information sheet of the species *Mimosa pudica*

AFROweeds
African Weeds of Rice

AFROweeds African Weeds of Rice

Nouvelle Identification

Port

Phylotaxie

Préfoliation

Recherche

Liste des espèces

Résultats

A propos de cette version

Aide

2 espèces à 100%

AFROweeds
African Weeds of Rice

AFROweeds African Weeds of Rice

Nouvelle Identification

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AFROweeds African Weeds of Rice

Nouvelle Identification

Port

Phylotaxie

Préfoliation

Recherche

Liste des espèces

Résultats

A propos de cette version

Aide

2 espèces à 100%

Mimosa pudica

Mimosa pudica L.

Famille: Mimosastraceae

Port: Arbuste

Phylotaxie: Fabaceae

Préfoliation: Feuilles bipartites

Recherche: Mimosastraceae

Liste des espèces

Résultats

A propos de cette version

Aide

2 espèces à 100%

2 espèces à 100%

Mimosa pudica

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Liste des espèces

Résultats

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Résultats

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Liste des espèces

Résultats

A propos de cette version

Aide

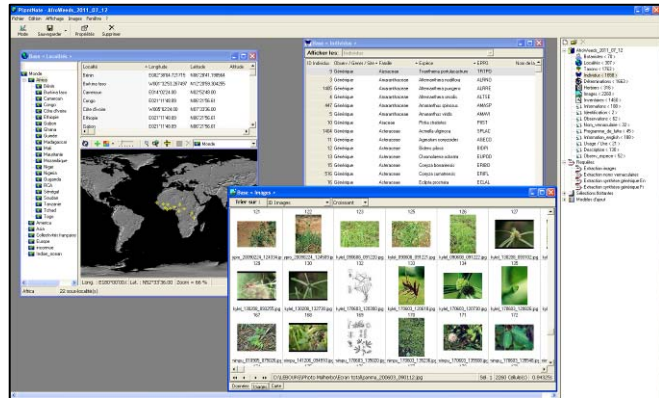
2 espèces à 100%

2 espèces à 100%

4 Database

The AFROweeds database is managed using the software PI@ntNote V.0.9. This enables data management in botany from repositories (taxonomic, geo-referenced locations, people) and modules for managing information on the species (illustrations, herbarium, descriptions, identification, control methods, synthesis of information in English and French, etc.). This software database, currently under development in the project PI@ntNet, will at least allow local management information and an online management for multi-user network use.

In its current state, the AFROweeds database contains 2200 photos and 316 herbarium sheets covering 160 species. The fact sheets include information on 120 species present.



Visualization of different modules of the database

5 The new partners from research institutions

Tomas Chiconela is a researcher and professor of weed science at the Faculty of Agriculture and Forestry of the University Eduardo Mandlane Maputo in Mozambique. He worked on the weeding of rice to Mozambique.

Claude Runyambo is a researcher in Rwanda Agricultural Board, in Butare. He works on botany and weed management. In Rwanda the system of rice production is only recent and traditional with mainly irrigated rice. There is no use of herbicide. Weeds are weeded by hand. Some of them are used (food, livestock feed, fertilizers ...). In Rwanda, there is a strong need for baseline studies showing the yield losses due to weeds.

6 The new partners from extension services

Representatives of the extension services were given the floor to explain the difficulties/challenges encountered in the field and how the project can be helpful in addressing them.

Assemien Koutou, Coderiz, Tiassale, Côte d'Ivoire.

Opinion: "In Ivory Coast rice farmers face huge problems with weeds, firstly to identify them and secondly to control them. Species that pose the most problems are *Echinochloa* spp. and *Lindernia* spp. Herbicides are typically used, particularly at the time of soil preparation.

This type of tool (recognition and platform) will allow us to better identify the species, including those from other regions but present in the seed lot and we do not know, as well as access to the means of struggle in seeing the practices of other regions. There is also a lot of local knowledge and

traditional means and local innovations for control available. Extension services can observe those and describe them and include them in the database to make them available to the AFROweeds community. The platform will allow us in particular to exchange information with other parts of the country such as between Korhogo and Katiola. It is therefore important that all structures of development are part and participate. This can also serve as a training tool for technicians and farmers. "

Emmanuel Anado Codjo, Conseil Régional des Riziculteurs du Mono et Couffo, Benin.

Opinion: "I plan to share this AFROweeds platform with counterparts from the five other regions of Benin. This will allow us to exchange information and better advice and support the farmers.

For example, a farmer recently referred to a species of the Lamiaceae family against which it is difficult to control but which is interesting because it serves as an indicator of fertility for the selection of plots. With the platform, we will be able to take pictures of the plant to ask others to help identify and then see if there is information on this species. If the species is not in the database we can add it. "

A reciprocal link is made between the CRR website Mono and Couffo (<http://crrmc.ilemi.net>) and the AFROWeeds website and platform.

Salif Diack, SAED, Saint Louis, Senegal

Opinion: "The SAED oversees the production of rice in two distinct areas:

- the Senegal River Valley where intensive agriculture with direct seeding pre-germinated, use of fertilizers and herbicides (Propanil – 2,4-D or Londax). The main problems encountered by farmers are the Poaceae and Cyperaceae, weed due to poor cultivation or to lack of equipment and service providers inadequate.
- the upstream region, with a low-intensity agriculture rice transplanted without the use of herbicide. Manual weeding is usually too late. Farmers are waiting for the big weed before removal because they use to feed livestock.

There is currently an increase in the problem due to perennial weeds in the case of continuous cultures of rice. It then recommends a break with a regular dry farming.

Species are fairly well known in Senegal through the work of NARS, but encountered a major problem of confusion with the use of vernacular names. The AFROweeds database should allow us to clarify this information and to print the fact sheets on species for distribution to farmers.

We can distribute this tool at the level of NGOs present in Senegal. "

A practical manual for irrigated rice has just been published, which is a product of SAED, AfricaRice and ISRA, with a chapter on weed control that will supply the platform AFROweeds. A reciprocal link is made between the website SAED (<http://www.saed.se>) and AFROWeeds platform.

Daouda Diara, Office du Niger, Niono, Mali

Opinion: "The Office du Niger oversees 70 years of experience and 90,000 ha of irrigated rice where water control is total. We practice two growing seasons of rice per year. The main problems relate to

the perennial wild rice (*Oryza longistaminata*) and aquatic plants that grow in irrigation systems. Large scale farms (private) 100-200 ha, direct seeding is used. Currently, *Eichhornia crassipes* is becoming less important than *Salvinia molesta* which is invading the tertiary irrigation network. The fight against aquatic plants is the largest budget item in the Office du Niger.

The problem is that farmers do not want to ensure the fight in the channels. The species also develop and produce seeds distributed by the water into the plots.

The platform and tools AFROweeds will be very useful for advisers who all have access to their computer and can relay information to farmers. "

Daouda will organize meetings with farmers and extension to inform them about the AFROweeds tools. Following this summary we had a discussion on the use of herbicides and biological control (against water weeds). It was suggested that this kind of discussion could be continued or started through the forum page on our collaborative platform.

7 General discussions

Many weed problems relate to species groups and not individual species. It would be interesting to propose discussions and recommendations in relation to the functional groups of species such as:

- Annual small Poaceae (*colona Echinochloa, Digitaria spp. Dactyloctenium spp*)
- Annual large Poaceae (*Rottboellia conchinchinensis, Echinochloa pyramidalis, Sorghum verticilliflorum ...*)
- Perennial Poaceae (*Panicum repens ...*)
- Annual broadleaf weeds (*Sphenoclea zeylanica, Lindernia spp.*)
- Dicotyledons climbers (*Ipomoea aquatica*)
- Floating species (*Azolla spp. Pistia stratiotes, Eichhornia crassipes ...*)
- Parasite species (*Striga aspera, Rhamphicarpa fistulosa*)

Thus, we can recommend and regularly update the AFROWeeds platform (group Management of weed infestations) with control methods focused on functional groups and each species will be linked to a particular functional group.

Interest analysis of the platform and tools AFROweeds

Friday Ekemele, Nigeria. There are many extension services in Nigeria for whom this tool would be helpful. I will inform them. We can also provide a reciprocal link to the website of the Weed Science Society of Nigeria.

Israel Dzomekou, Ghana. What is much appreciated in the process of this platform is the direct link between the information managed in the database which is made immediately accessible to everyone on the species fact sheets from the website and collaborative platform. The comments made on the platform can then feed the database.

Assemien Koutou, Côte d'Ivoire. We can manage on the platform a specific sub-network for various departments of Côte d'Ivoire to exchange information at the country level and, secondly, at the whole of Africa.

Maryam Mariko, Benin. If you have an identification problem with a weed, you can take photos and create an album in the group "Botanical identification" and ask the entire community to recognize species and provide information. This makes the research much easier.

Jonne Rodenburg, Tanzania. For this platform to achieve its objective we need technicians and farmers can access information but we also need they contribute in sharing their knowledge with other members of the platform.

Training partners to the use of the collaborative platform

Half a day was spent in learning and training partners in the use of the collaborative platform of AFROweeds. The workshop participants were able to familiarize themselves with this Web-2 tool. They registered themselves and are now able to use the various tools available (participation in a working group, consultation of pages and files, comments on an object, create photo album, launch and participate in a discussion, etc.)..

They can now use the platform to contribute to its operation and its animation and feed the system with documents, knowledge and questions.

On the other hand, once they return to their country and their institution, participants aim to present this platform to other stakeholders in the rice, interested in managing weed infestations to expand the community.

The day of June 30 was devoted to the identification of many photos collected by the AfricaRice team and a training session to capture and manage information in the database. The AfricaRice team will preferably manage the synthesis of species information in English, while the CIRAD team will manage the species information in French. The data is regularly exported from each of the databases to generate fact sheets for information on species available from the website, the collaborative platform and the IDAO identification system.

Programme of future activities

The coordination team Cirad-AfricaRice continues its work of feeding and use of the tools (website, collaborative platform, system identification, information system ...).

This set of tools will be really interesting and useful to players only if they participate in their operation, and contribute to the provision of information and knowledge about species and their management. Now, it is the dynamism and commitment of community members that will allow the AFROweeds project to achieve its goal: a platform for exchange and information on weeds of rice in Africa.

Concerning the collection of information and pictures on the species, relatively few items were sent by partners to date (Benin, Côte d'Ivoire, Mali). During the workshop some partners have provided photos taken on the field.

Currently, twenty species of the initial list does not yet have an illustration and nearly 60 species do not possess yet consolidated information.

These species are a priority and all partners should strive to send CIRAD or AfricaRice information they have. The list of these species was distributed to participants.

The recommendations and weeding practices in different countries must be synthesized and incorporated into the database and the platform in the form of documents updated regularly.

All information on species should be collected and integrated into the database by February 2012 so we can test the operability and efficacy of the various tools before the final project workshop in September 2012.

AfricaRice will organize training workshops on the use of AFROweeds tools in Tanzania.

A presentation of the project and tools will be made on the occasion of the 10th conference of the African Society of Agronomy in Maputo, Mozambique in September 2011.

Visibility actions

Flyers presenting the Afroweeds project in French and English were distributed to workshop participants so that they can distribute through their professional network in their country.



AFROweeds brochure in English

Interviews with different coordinators or participants were performed by the communication service to AfricaRice and are available online from the first page of the AfricaRice website:

<http://www.africarice.org/>

or directly at

<http://vodpod.com/africarice/africarice>

Field surveys, collection and testing of tools for access to information

Two collection days were held (01-02/07) by Emmanuel Codjo Anago, head of the RRC Mono and Couffo, in rice field from the Come region and with the help of Athanasius Lokonon rice farmer in Zinvié.

In each region, two sites were visited, around Come (Todjonoukouin and Codji-Haham) and around Zinvié (Dokomey and Gbodje).

It was an opportunity to collect many pictures and herbarium specimens.



Collecting botanical samples and photos at Todjonoukouin (© T. Le Bourgeois, N. Bakker-Cirad)



Collecting botanical samples and photos at Codji-Hahamé (© P. Marnotte, P. Grard, T. Le Bourgeois-Cirad)



Collecting botanical samples and photos at Dokomey (©T. Le Bourgeois, N. Bakker, P. Grard-Cirad)



Collecting botanical samples and photos at Gbodje (©P. Grard, P. Marnotte, N. Bakker-Cirad)

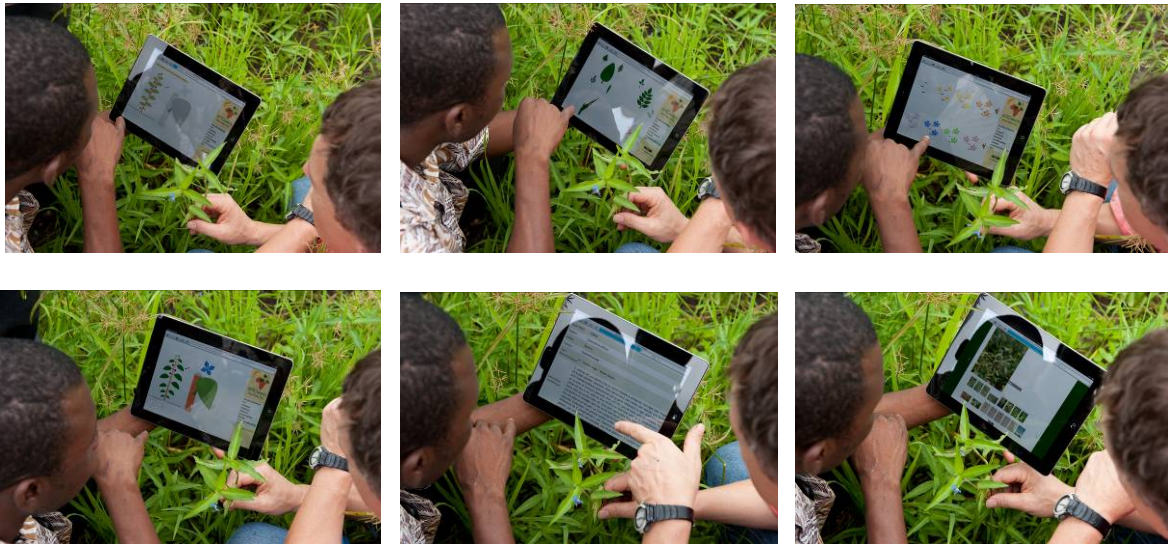
In total, several hundred photos on 65 weed species were collected as well as dozens of herbarium specimens to feed the database and AfricaRice herbarium.

On the other hand, we were able to test in real conditions the use of information and identification tools of the AFROweeds project directly into the rice fields. Indeed, it is now possible to use the online identification system IDAO with a tablet computer equipped with a 3G smart phone with Internet access and direct access to fact sheets on species is possible. You can also check out the collaborative platform.

Various tests, quite successful, were made in the rice field in the region of Todjonoukouin Comé with agents of the CRR Mono and Couffo.



Using the Tools project AFROweeds directly into a rice field in Benin for the identification of a weed and access to information on the species using a tablet computer equipped with a 3G chip Internet phone (©P. Marnotte, N. Bakker-Cirad)



Steps of the identification of *Commelina diffusa* and access to information in the field by E. Anago Codjo responsible for CRR Couffo Mono and using project tools AFROweeds tablet computer and a 3G + (©P. Grad-Cirad)



Web site access AFROweeds from a rice field in the Como area (Benin) from a tablet computer 3G + (©T. Le Bourgeois-Cirad)

The tools developed in the AFROweeds project are userfriendly directly in the field with the new tablet computers and smartphones. Access time is reasonable. Loading the summary information of the species is slowed by the distribution map of the photos. It was therefore planned to make optional the display of this map to speed up the loading of the plug. This type of device is still little used in the public domain, but smart phones are increasingly used in Africa with chips Internet.

Administrative aspects of the AFROweeds project

Several meetings were held at the AfricaRice Centre between scientific and administrative teams from CIRAD and AfricaRice for an update on the technical and the administrative and financial monitoring of the AFROweeds project.

Technical aspects:

An operating and progress point was made on the different actions and different tools of the project:

- The Pl@ntNote software used to manage the database in developed by CIRAD, is so far local and single-user. Therefore, most of the data was entered by the CIRAD team. A multi-user version should be available in June 2011 but its development was delayed. It was therefore decided that AfricaRice now utilize the current copy of the database and feed it with all of its data (photos, herbarium specimens, species information). AfricaRice will in priority update information on the species in English, while the CIRAD will update in French. AfricaRice will send to CIRAD the updated copy of the database two times a month for CIRAD can export the new information and update the fact sheets of the species available from the website of the collaborative platform and the identification system. Once a multi-user and online version of the software Pl@ntNote is available, the partners can work simultaneously on a common database.
- The different tabs of the website AFROweeds were analyzed to propose improvements in implementation and content of the pages.
- The collaborative platform for Web-2 was developed from the software Elgg (social networking software Open Source). The various tools of the collaborative platform of AFROweeds were presented and discussed.
- The identification system has been redeveloped IDAO SVG and updated for the needs of the AFROweeds project. It is functional to 80% and can identify 120 species of the AFROweeds project. It can be used via Internet from the project website or the collaborative platform (working IDAO or Botanique).

Administrative aspects:

Thomas Le Bourgeois discussed all the remarks made by the EU Commission, Mr. Den Ouden concerning the first narrative and financial report of the project AFROweeds. He explained that the EU is very strict in relation to the justification of expenses.

Regarding the narrative:

Need to explain precisely any changes in the actions with the actions announced schedule changes and delays in hiring project staff.

Concerning the Financial Report:

It had to be revised seven times following comments and requests for corrections or clarifications from Mr Den Ouden. The main points were:

- Respect for the presentation format of the financial report.
 - The details of the agents on a mission, the place of mission, the exact correspondence between the dates of tasks and the number of mission days, the use of correct values of per diem in accordance with the European scale based on the date of mission (if the per diem to the date of the assignment is higher than at the signing of the contract is that of signing the contract to be used if not that at the time of the mission).
 - It is not possible to charge for meals while we ask for per diems. This has particularly been met for the first workshop participants.
 - Compliance with the expenses in the right budget lines.
 - Some expenses were charged as they did not correspond to activities of the Afroweeds project.
 - The ineligibility of certain expenses.
 - Per diems given to the invited people at the first workshop in Cotonou had to be explained.
-
- EU will pay each year after approval of the annual report (financial and technical) 80% of the total 85% (the total is a sum of what EU-ACP, CIRAD and AfricaRice are pooling together for the whole project). The remaining 20% will be reimbursed upon project completion and after having received and accepted the full and approved financial and technical reports.
-
- A financial audit will be conducted at the end of the project.
-
- The provision "Reserve for Contingencies (5%)" can be used after a reasoned request and agreement of Mr. den Ouden of the EU.

The EU was asked to re-allocate a portion of the amount of salary of the research assistant and technician from AfricaRice not used during the first year to allow African partners to participate at the second workshop. This request was granted which allowed to invite 11 partners at the second workshop of the project.

CIRAD has obtained the discharge of the EU Commission in May 2011 instead of late December 2010, which delayed (four months) the second payment.

Thomas Le Bourgeois attended the meetings of EU-ACP S & T (October 2010) to discuss project management. Many project representatives complained about the rigid rules of management and operation of these projects. The answer was that it was the rule imposed and it was not possible to change them. The next time the rules call for projects will likely be different and less rigid. Thomas Le Bourgeois also recalled the requirements of the European Union for the management of a European project.

Thomas Le Bourgeois and Nora Bakker presented the 2011 budget of the project AFROweeds. Nora Bakker, assistant project management provided an update with its counterparts in the Management Service of AfricaRice on monitoring project management and formatting of accounting documents.

- Presentation of the European rules (ACP S&T) AFROweeds project management to Sadikou Akram, an accountant.

- Remarks on the proofs of the first financial report of expenses.
- Analysis of the first financial report and supporting documents by type of expenditure and time sheets.

The method for the approximation of the timesheets, the days of per diem and evidence relating to the missions was explained to the accountant.

- Introduction to the method of verification made to Sadikou Akram, an accountant.
- Analysis of the estimated budget for the second year.
- Delivery of documents: the first year financial report with the remarks, the second budget year and rules.
- Summary of meeting with Leny Medenilla responsible for contract management and supervisor of Sadikou Akram, an accountant.

Conclusion

The second workshop of the AFROweeds project hold in Cotonou, Benin allowed further progress of the project:

- Involve extension people in the project;
- Integrate actors from new countries (Rwanda, Mozambique);
- Introduce new tools for collaborative work and train actors to use them;
- Linking the AFROWeeds project and other current projects working on the crop pests (Divecosys) or on rice development (Saed, Crrmc);
- Collect new information in the field in partnership with extension agents;
- Plan future actions;
- Most importantly, strengthen the links between the project partners and enable them to communicate more easily and effectively with new tools of the collaborative platform of the project AFROWeeds.

This workshop was conducted in the financial envelope provided.

From an administrative stand point, the mission of N. Bakker has an audit and review with partner AfricaRice ont expectations and rules of the European Union in financial management and justification of the project. This was very useful for the efficient administration of the project.

Acknowledgement

The project coordinators of AFROweeds acknowledge Dr. T. Kumashiro (representative of the Director of AfricaRice) in giving an opening speech to welcome all participants and present the objectives of the workshop. They thank the European Union (ACP Secretariat -Science and Technology Programme) in funding the project AfroWeeds through the tender of 2008 9th European Development Fund.

They also thank AfricaRice for hosting the workshop and organization of field trips, with a special thak to Ms. Carine Kan for her assistance in preparing this workshop and her availability during the course of it.

Appendix 1: List of attendees**Second workshop of the AfroWeeds project****Cotonou 28-29 June 2011**

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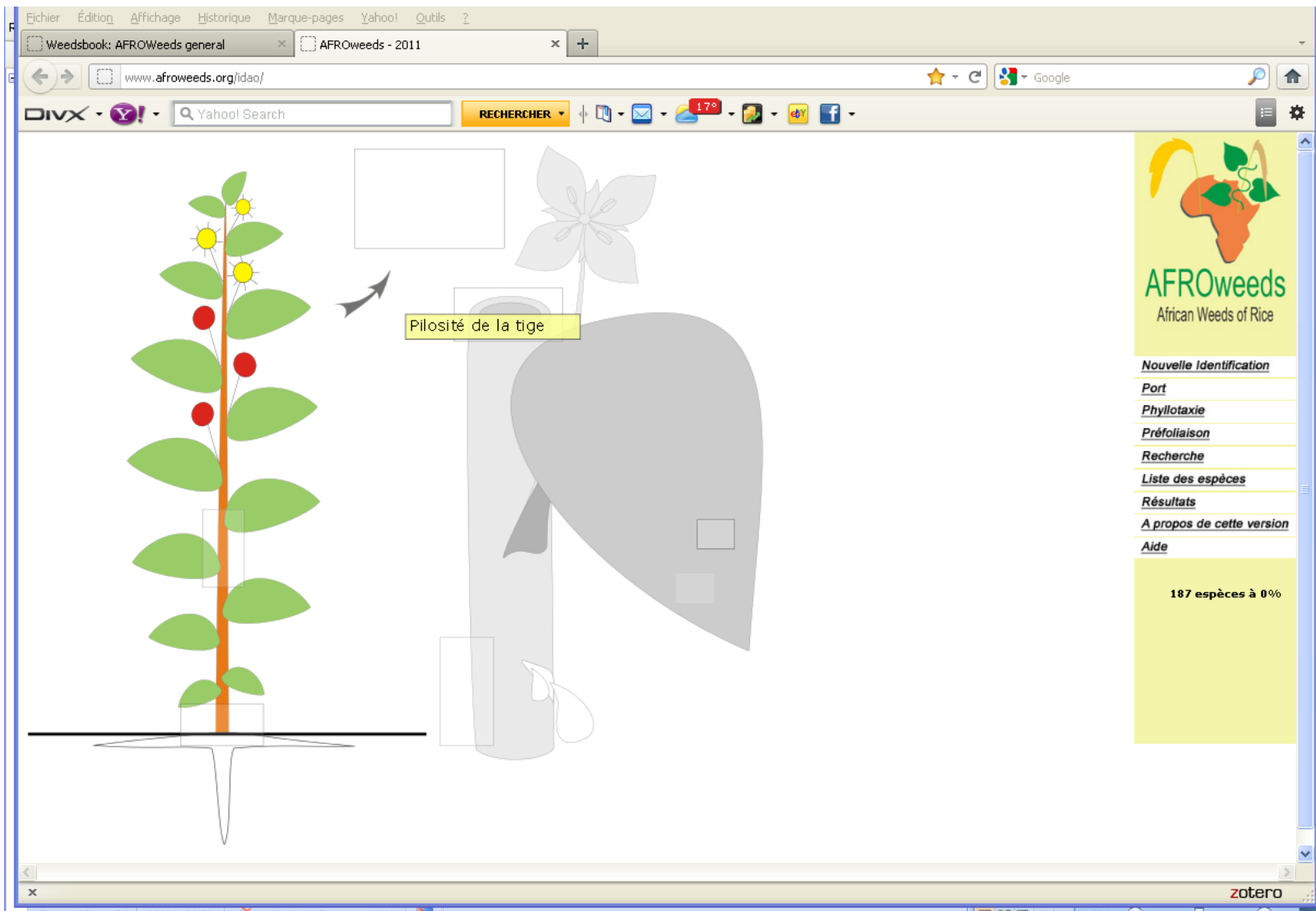
APPENDIX 5

Presentation of the IDAO SVG system of AFROweeds

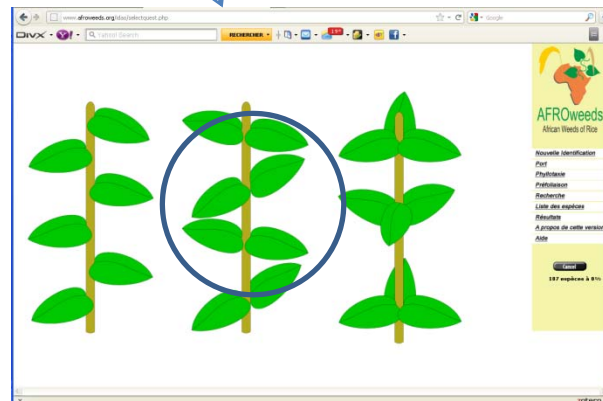
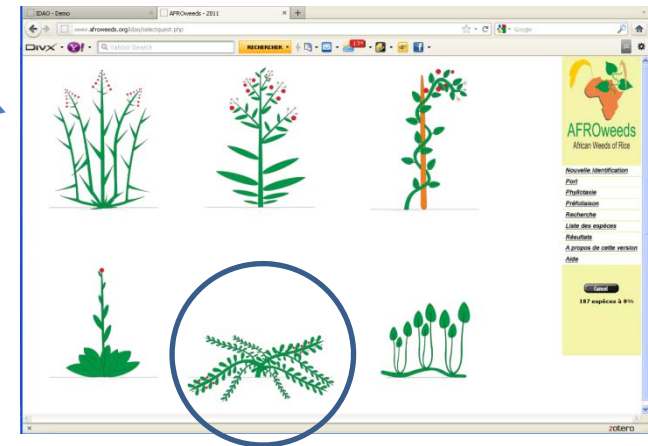
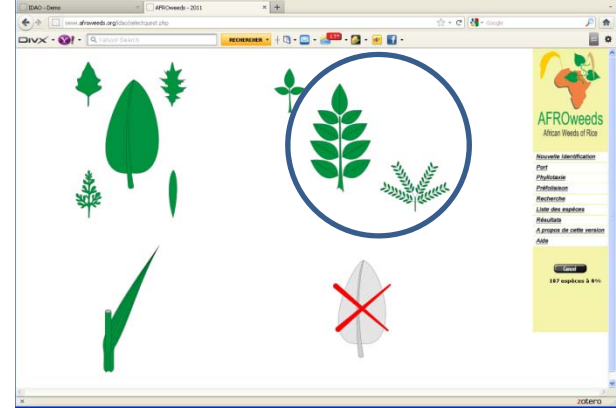
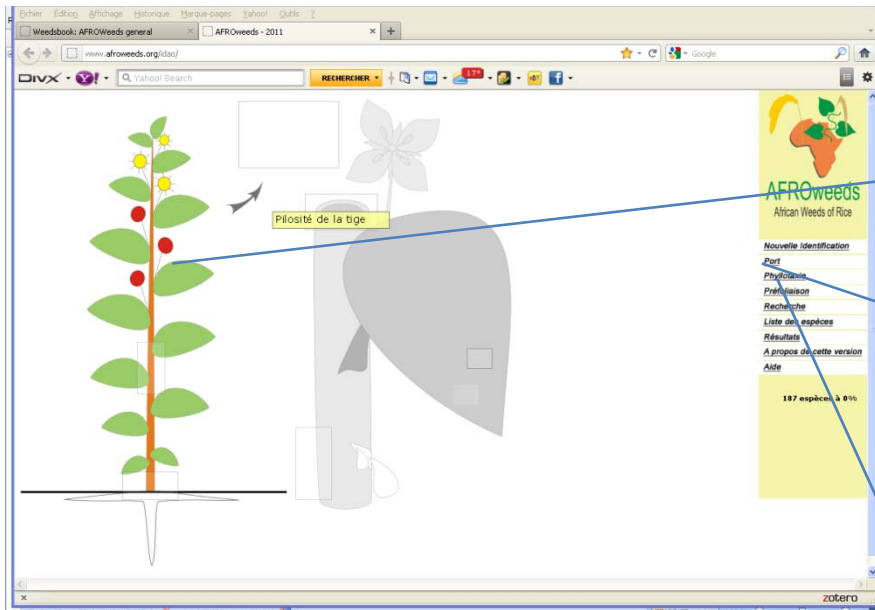


The AFROweeds identification system using IDAO SVG





Home page of the AFROweeds identification system using IDAO SVG



Directly by clicking on the identikit, the user can choose the characters he wants to describe such as « leaf type, habit, phylotaxy... » and for each character the modality corresponding to the species he has to identify

www.afroweeds.org/dao/redrawdefault.php

RECHERCHER

Yahool Search

AFROweeds
African Weeds of Rice

Nouvelle Identification

Port

Phyllotaxie

Préfoliation

Recherche

Liste des espèces

Résultats

A propos de cette version

Aide

2 espèces à 67%

zotero

Each time a character is described, the identikit is updated resembling more and more to the species portrait. Probabilities are calculated for all the species to possess the combination of characters entered

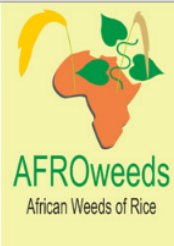
IDA0 - Demo AFROweeds - 2011

www.afroweeds.org/ida0/results.php

Montpellier - 19°, Partly Cloudy

Liste des espèces 95 %

Nom d'espèce	Pourcentage	Erreurs
Mimosa pudica	67%	View
Tribulus terrestris	67%	View
Alternanthera nodiflora R.Br.	33%	View
Alternanthera pungens H.B.K.	33%	View
Alternanthera sessilis (L.) R.Br. ex DC.	33%	View
Alvsiarpus rugosus	33%	View
Bidens pilosa	33%	View
Boerhavia diffusa	33%	View
Coldenia procumbens L.	33%	View
Commelina benghalensis	33%	View
Commelina diffusa	33%	View
Crotalaria qorensis	33%	View
Dactyloctenium aegyptium	33%	View
Digitaria horizontalis	33%	View



Nouvelle Identification

Port

Phylotaxie

Préfoliaison

Recherche

Liste des espèces

Résultats

A propos de cette version

Aide

Back

2 espèces à 67%

zotero

Species are listed according to their probability
 By click on a species name you get the species information HTML page



Home | Activities | Resources | Downloads | Contacts

Retour

Code EPPD TRBTE

Espèce *Tribulus terrestris*

Auteur L.

Famille Tribulaceae

Type Malherbologique 01- Feuilles large / Broad leaves

Description synthétique *T. terrestris* est une espèce rampante à feuilles composées, paripennées et opposées; les deux feuilles d'une même paire sont de taille différente. L'ensemble de la plante est hispide. Les fleurs sont solitaires, placées à l'aisselle des feuilles courtes. Elles sont de couleur jaune. Le fruit est constitué de 5 segments disposés en étoile et ornés de fortes dents épineuses divergentes.

Description Cotyledons Les cotylédons sont oblongs, émarginés au sommet. Ils sont marqués par 3 nervures partant de la base. Le pétiote est long de 5 mm et le limbe mesure 7 à 10 mm de long et 3 mm de large.

Description Premières Feuilles Les premières feuilles sont composées et opposées. Elles portent 3 ou 4 paires de folioles hispides.

Description Aspect Le port est prostré, l'extrémité des axes pouvant être parfois redressée. La plante est généralement ramifiée dès la base en plusieurs axes radiaux, ce qui lui permet de se développer en tache. Chaque axe mesure 30 à 60 cm de long mais peut atteindre plus de 2 m en conditions favorables.

Description Appareil Souterrain La racine est pivotante et abondamment ramifiée en racines secondaires fibreuses. Elle peut atteindre plus de 1 m de profondeur.

Description Tige La tige est cylindrique, finement striée longitudinalement. Elle est de couleur verte à rouge. Elle est couverte d'une forte pubescence d'un mélange de poils longs et courts de couleur blanche.

Description Feuille Les feuilles sont composées et opposées. A chaque paire de feuilles, l'une est moins développée que l'autre. Les plus grandes feuilles mesurent jusqu'à 6 cm de long. De chaque côté de la base du pétiole, se trouve une stipule foliacée linéaire de 3 mm de long, couverte de longs poils blancs, et rapidement caduque. Le pétiole est court (6 à 8 mm). Les feuilles sont paripennées, portant 5 à 8 paires de folioles opposées. Les folioles terminales sont plus petites que celles de la base du rachis. Elles mesurent 5 à 10 mm de long et 2 à 4 mm de large. Elles sont subsessiles, de forme oblongue et asymétriques à la base. La marge est entière. La face inférieure est plus densément pubescente que la face supérieure.

Example of a species information HTML page

Description Fruit durs à maturité. Chaque segment est indéhiscient et glabre à légèrement pubescent. Il est orné à mi-hauteur de 2 fortes dents épineuses et divergentes, et porte à la base 2 petites pointes. Il peut présenter une crête dorsale plus ou moins tuberculeuse. Chaque segment contient 3 à 5 graines.

Description Graine Les graines sont fusiformes au sommet pointu. Elles sont longues de 2,5 mm et sont de couleur claire.

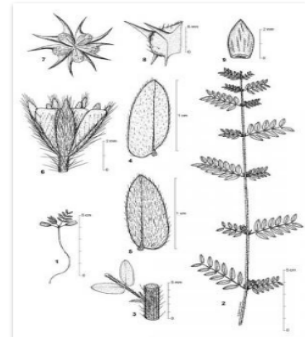
Biologie *T. terrestris* est une espèce annuelle. Elle se multiplie uniquement par graines. Un individu peut produire près de 1 000 graines. La dissémination des segments de fruits est en grande partie assurée par les animaux, les hommes et les véhicules. Quelle que soit la façon dont un fruit est posé sur le sol, les épines sont disposées de telle sorte qu'il y en a toujours une dressée, susceptible de se planter dans un creux de sabot, une semelle, un pied ou un pneu.

Région D'origine Cette espèce est originaire du pourtour méditerranéen.

Répartition Mondiale Elle est actuellement répandue dans toutes les régions tropicales et tempérées chaudes du monde, comprises entre 47 degrés de latitude nord et 35 degrés de latitude sud.

Bibliographie Le Bourgeois, T., Merlier, H. 1995. Adventrop - Les adventices d'Afrique soudano-sahélienne. Cirad, Montpellier, France.

Bases de données en ligne [KewGarden](#) [Mobot](#) [Ipni](#) [Jstor](#) [ThePlantList](#) [Gbiif](#) [EOL](#) [Mnhn](#) [Google Images](#) [LifeMapper](#)



APPENDIX 6

VISIBILITY ACTIONS AND COMMUNICATON

6.1. Photo of the second workshop Cotonou – Benin June 2011



6.2. Abstract of the AFROweeds project in the CGIAR SP-IPM newsletter Issue 8. September 2011

AFROweeds: A collaborative and participative online network to enhance weed science capacities in Africa

Weed competition causes high yield losses in African crop production systems. Conservative estimates show that, even for rice alone, weeds already cost the economies of sub-Saharan Africa nearly US\$1.5 billion annually. For subsistence farmers in SSA, there is only a limited range of affordable and effective control strategies. Due to the diversity of weed species, the complexity of crop – weed ecology and associated environmental and management interactions, as well as the socio-economic constraints of subsistence farming in Africa, few effective weed control strategies have been developed so far. Moreover, even the limited number of control strategies, or component technologies currently

available face limited dissemination and adoption among the rice farmer communities in SSA. The above described situation is largely the result of the sub-optimal capacities of agricultural research and development (R&D) organizations in SSA. The region has an extremely low ratio of trained weed scientists per farmer. Conversely, in the absence of weed scientists, students, R&D professionals or farmers looking for information on weeds, found that reliable, comprehensive and comprehensible sources are scanty and scattered.

The EU-ACP funded Afroweeds is an initiative of CIRAD and Africa Rice Center (AfricaRice) to link European and African botanists and weed scientists with the objective of enhancing the regional capacities in these fields of expertise. Afroweeds is a network for professionals and students, aimed at sharing knowledge on rice weeds. The *modus operandi* of Afroweeds is an open-access website. This online platform enables members to exchange information, discuss relevant issues, and have access to an increasingly extensive library of photos and information on weed species and management.

The most eye-catching features of the Afroweeds collaborative platform are the extremely user-friendly weed species identification tools. They encompass image recognition software and a multiple-choice program (called 'plant robot') using schematic drawings of plant organs (e.g., leaves, flowers). Identification results can be cross-checked with a rich gallery of photos of field-growing or herbarium specimen and information on ecology and biology; the Afroweeds data base can also be consulted for effective management options. The strength of the Afroweeds collaborative site further lies in the fact that information and concerns can easily be shared with the other members of community for feed-back. By facilitating such exchange between those who are otherwise isolated from one another, Afroweeds contributes to spreading and enhancing knowledge on rice weeds and best weed management practices to improve the productivity of African rice-based cropping systems.

Visit the [project website](#) for more information on this project or contact [Jonne Rodenburg](#)

6.3: Abstract of the talk at the 10th African Crop Science Society Conference 9-14 October 2011, Maputo - Mozambique

AFROWEEDS – A COLLABORATIVE AND PARTICIPATIVE ONLINE NETWORK TO ENHANCE WEED SCIENCE CAPACITIES IN AFRICA

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Weed competition cause high yield losses in African crop production systems. Conservative estimates show that even for rice alone weeds cost economies of sub-Saharan Africa (SSA) already a near \$1.5 billion per year. For subsistence farmers in SSA there is only a limited range of affordable and effective control strategies. Due to the diversity of weed species, the complexity of crop – weed ecology and associated environmental and management interactions, as well as the socio-economic constraints of subsistence farming in Africa, few effective weed control strategies are developed so far. Moreover, even the limited number of control strategies, or component technologies currently available face limited dissemination and adoption among the (rice) farmer communities in SSA. The above described situation is largely the result of the sub-optimal capacities of agricultural research and development (R&D) organizations in SSA. The region has an extremely low ratio of trained weed scientists per farmer. Conversely, in the absence of weed scientists, students, R&D professionals or farmers looking for information on weeds, reliable, comprehensive and comprehensible sources are scant and scattered. The EU-ACP funded Afroweeds is an initiative of CIRAD and Africa Rice Center (AfricaRice) to link European and African botanists and weed scientists with the objective to enhance the regional capacities in these fields of expertise. Afroweeds is a network for professionals and students aimed at sharing knowledge on rice weeds. The *modes operandi* of Afroweeds is an open-access website (<http://www.afroweeds.org/network>). This online platform enables members to exchange information, discuss relevant issues and to access an increasingly extensive library of information and photos on weed species and management. The most eye-catching features of the Afroweeds collaborative platform are the extremely user-friendly weed species identification tools. They encompass image recognition software and a multiple-choice program (called 'plant robot') using schematic drawings of plant organs (e.g. leaves, flowers). Identification results can be cross-checked with a rich gallery of photos of fieldgrowing or herbarium specimen and information on ecology and biology, while the Afroweeds data base can also be consulted for effective management options. The strength of the Afroweeds collaborative site further lies in the fact that information and concerns can easily be shared with the other members of community for feed-back. By facilitating such exchange between actors who are otherwise isolated from each other, Afroweeds contributes towards spreading and enhancing knowledge on rice weeds and best weed management practices to improve the productivity of African rice-based cropping systems.

Keywords: Africa, rice, knowledge base, online platform, identification tools

6.4: Proposal for a African Weed Science Network

Proposal for an AWSN

We propose an association of weed scientists working in Africa called “African Weed Science Network” (AWSN). The AWSN will primarily work through a website. The website will feature a comprehensive database of weed scientists in Africa with names, addresses and professional profiles and will enable any interested individual to quickly assess ‘who-does-what-and-where’.

The website will further consist of pages containing relevant information on events (e.g. workshops, conferences), capacity building opportunities (e.g. scholarship information), calls for funding, (new) publications and discussion fora. In addition the website could contain a weed species database with photos and identification tools and information on management, similar to the one created by AFROweeds (<http://www.afroweeds.org>). As an additional feature, the AWSN could disseminate a regular newsletter (for instance 2 times a year). The AWSN will link with the Southern African Weed Science Society (<http://www.weeds.org.za/>) to make use of the existing weed scientist database for Southern Africa. The same can be done with other national societies like the one of Nigeria (WSSN). The AWSN will initially operate under the umbrella of the already existing African Crop Science Society (ACSS; <http://www.acss.ws/>). The ACSS, organizes bi-annual conferences and the AWSN can organize a one-day workshop as part of the larger conference to present weed science papers, exchange and discuss progress in weed research, funding and capacity building opportunities and any other relevant AWSN issues. This is a low-cost construction that would enable the AWSN to come together at least one time every two years and to create a critical mass for weed science during the ACSS conferences. The next ACSS conference will be in 2013 in Cameroon.

AWSN working group

To investigate the optimum *modus operandi* and funding opportunities for the AWSN and to establish the actual network, a working group composed of six members has been proposed:

- Gualbert Gbèhounou (FAO, Italy)
- David Ojo (NIHORT, Nigeria)
- Hottensiah Mwangi (KARI, Kenya)
- Lum Fontem (Univ. of Buea, Cameroon)
- Elbé Hugo (ARC, South Africa)
- Jonne Rodenburg (AfricaRice, Tanzania; Coordinator)

The Terms of Reference (ToR) of the working group are:

1. To fine tune the proposal of the modus operandi of the AWSN.
2. To constitute a database of African weed scientists (who, what and where)
3. To recruit members and to generate publicity and institutional support.
4. To investigate funding opportunities.
5. To establish a Memorandum of Understanding (MoU) with the ACSS.
6. To obtain a web domain for the AWSN and to establish a website.
7. To appoint a steering committee of 4-6 members and to establish ToR of the committee to ensure a good start of the AWSN.
8. To appoint an editor for the newsletter and the website.
9. To launch the AWSN.

6.5: Brochure of the AFROweeds project in English



Axis: Support to Management of research activities and reinforcement of research quality

Result: Research results better capitalized and disseminated

Duration of the Project: 36 months

Start date: October 16th 2009

FOR MORE Information :

<http://www.afroweeds.org>

CONTACTS...

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AfricaRice:
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 M. Gerald Kyalo, Weed Scientist,
 E-mail: G.Kyalo@cgiar.org

Participating Institutions...

African Weeds of Rice (AFROweeds)



cirad
 French Agricultural Research Centre for International Development (CIRAD), France



AfricaRice
 Africa Rice Center (CGIAR), Benin



A project funded by the ACP Science and Technology Programme.
 An ACP-EU co-operation programme in the field of science and technology





Challenge...

Rice is one of the main cereals consumed in Africa and the rate of consumption is steadily increasing. Major concerns for the regional rice sector are that rice production does not keep up with increasing consumption rates and that rice prices on the international market are increasing. Moreover, rice-cropping systems suffer from significant production losses due to weed infestations.

Focus...

The project will contribute to the productivity of rice-cropping systems in sub-Saharan Africa by creating a science and technology network that will foster appropriate weed management practices among the farming, extension and research community. More specifically, the project will consolidate the interdisciplinary approach of existing scientific knowledge on weed management by building an ICT knowledge base on weeds of West and East African lowland rice-cropping systems and enhance the exploitation and dissemination of best weed management practices in rice-cropping systems of west and east Africa.

Rationale...

Integrated weed management is considered one of the most attractive options for crop protection, whereby a suitable choice of compatible measures (cultural, mechanical, biological and chemical) keeps the weed population at manageable levels. To be effective, integrated weed management should build on knowledge of weed biology and ecology.

Materials and Methods...

The specific objectives are the consolidation of existing scientific knowledge on weed management by building an ICT based Science and Technology network on weed management of rice cropping systems and the dissemination of best weed management practices in rice-cropping systems of West and East Africa. The action aims to build a comprehensive knowledge base for the West and East-African weed species of irrigated and rain-fed lowland rice. The action will also engage in an interdisciplinary process of building and disseminating the knowledge base on weeds among the stakeholders.

A project website has been launched to disseminate project description and scientific information on the weeds of rice. It will provide space for collaborative work between project partners through several tools such as a discussion forum, a mailing list, a document repository and access to the knowledge database of rice weed species. Existing knowledge on rice weed identification and control for the selected weed species is gathered in the AFROWeeds knowledge database. All the documents and information related to the weed species (descriptions, photos, drawings and scans) will be prepared and integrated into the AFROWeeds website. Local training sessions in the participating countries with agronomists, students and extensionists will be organized.

Expected Results...

- ✓ AFROWeeds website.
- ✓ Functional and comprehensive electronic knowledge base on weeds of African rice-cropping systems.
- ✓ Identification and information tools available through the AFROWeeds Website
- ✓ CD-ROM for weed species identification.
- ✓ Field guide for species identification and information.
- ✓ Network of African weed scientists.



6.6: Brochure of the AFROweeds project in French

Axe 3 : Gestion des activités de recherche et amélioration de la qualité des recherches

Résultat 4 : Amélioration de l'exploitation et de la diffusion des résultats des recherches

Durée du Projet : 36 mois

Début : 16 octobre 2009

http://www.afroweeds.org



Pour plus d'information:





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CONTACTS...

Adventices du Riz en Afrique (AFROweeds)

Institutions partenaires...



Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), France



Centre du riz pour l'Afrique (CGIAR), Bénin



Un projet financé par le programme ACP S. & T.
Un programme de coopération ACP-EU dans le domaine des sciences et technologies






Défi ...

Le riz est une des céréales les plus consommées en Afrique et son taux de consommation croît régulièrement. La principale préoccupation au plan régional est le fait que sa production n'augmente pas en rapport avec sa consommation, tandis que les prix sur le marché international augmentent. En outre, la riziculture subit des pertes significatives du fait de l'infestation par les adventices.

Gros plan sur ...

Le projet contribuera à améliorer la productivité des systèmes rizicoles en Afrique sub-saharienne par la création d'un réseau scientifique et technologique qui favorisera des pratiques de gestion appropriées des adventices au sein d'une communauté d'agriculteurs, d'agents de développement et de chercheurs. Plus particulièrement, le projet consolidera l'approche interdisciplinaire des connaissances scientifiques existantes sur la gestion des enherbements par la création d'une base de données ICT sur les adventices du riz irrigué et de bas-fonds d'Afrique de l'Ouest et de l'Est.

Justification ...

La gestion intégrée des adventices est considérée comme l'option la plus pertinente en protection de la culture, au travers d'un choix de mesures appropriées (culturelles, mécaniques, biologiques et chimiques) permettant de maintenir l'enherbement en dessous du seuil de nuisibilité.

Matériel et Méthodes...

Un site Web a été lancé pour présenter le projet et diffuser l'information sur les adventices du riz. Il est associé à un espace collaboratif pour les partenaires du projet mettant à disposition différents outils tels qu'un forum de discussion, un catalogue de documents et l'accès à la base de données des connaissances sur les espèces de mauvaises herbes du riz, un partage de photos, etc. Les connaissances disponibles sur l'identification des mauvaises herbes du riz et sur la lutte contre ces espèces sont rassemblées dans la base de connaissances AFROweeds. Tous les documents et toute l'information concernant les adventices (descriptions, illustrations) seront intégrés au site AFROweeds. Des ateliers ainsi que des sessions de formation sont organisés localement dans les pays partenaires avec des agronomes, des étudiants et des développeurs.

Résultats attendus...

- ✓ Un site Web et un espace collaboratif AFROweeds.
- ✓ Une base de données détaillée et fonctionnelle des connaissances sur les adventices du riz en Afrique.
- ✓ Des outils d'identification et d'information disponibles sur le site Web AFROweeds.
- ✓ Un CD-ROM sur l'identification des espèces de mauvaises herbes.
- ✓ Un guide de terrain pour l'identification et l'information sur les espèces.
- ✓ Un réseau des malherbologues africains.

Pour être efficace, la lutte intégrée contre une mauvaise herbe doit s'appuyer sur la connaissance de sa biologie et de son écologie. Les objectifs spécifiques du projet sont le renforcement des connaissances actuelles sur la gestion des mauvaises herbes par la création d'un réseau ICT scientifique et technique sur les adventices du riz et la diffusion des meilleures méthodes de gestion des enherbements dans les systèmes de culture du riz en Afrique de l'Ouest et de l'Est. Le but du travail est de créer une base de connaissances détaillée sur les mauvaises herbes du riz irrigué et de bas-fonds en Afrique. Le travail s'engagera aussi dans un processus interdisciplinaire de création et de diffusion de base de connaissance sur les mauvaises herbes au sein des partenaires.

