

User Needs Survey Report

Reporting the results from a survey conducted in February 2009

Nick Pasiecznik

With contributions from
Carolin Bothe-Tews
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Cover photo: Children selling *Vitellaria paradoxa* in Burkina Faso. Credit: B. Belem/Centre National de Semences Forestières.



Crops for the Future

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March 2009

Crops for the Future is the working name for:

The International Centre for Underutilised Crops (ICUC), Colombo, Sri Lanka (www.icuc-iwmi.org)

&

The Global Facilitation Unit for Underutilized Species (GFU), Rome, Italy (www.underutilized-species.org)

INTRODUCTION

“Crops for the Future” is an autonomous global organisation, born on 30 November 2008. It evolved from the International Centre for Underutilised Crops (ICUC) with headquarters in Colombo, Sri Lanka, and the Global Facilitation Unit for Underutilized Species (GFU) based in Rome, Italy. The entity will continue the strong links established by its parent organisations with national and international partners.

Its mission is to collect, synthesize and promote knowledge on neglected and underutilised plant species for the benefit of the poor and the environment. Both of the parent organisations had similar mandates and activities, each maintaining their own websites, information bases and news services (www.icuc-iwmi.org and www.underutilized-species.org), which are to be merged into a single web-based knowledge portal for underutilised crops.

This process provided an excellent opportunity to reassess the needs of the research and development community who use information on underutilised plants, so that the resulting web-based portal would best fit the requirements of those that would depend upon it. A short survey was designed by the Crops for the Future team comprising of nine principal questions, and a further nine optional questions. Responses were either by tick-box (with four options: very important, important, of some value/interest, irrelevant), or writing text answers, either for specific questions, or to the ‘Others, please specify’ category.

The survey was sent to 2179 individuals on the ICUC and GFU contact lists on 1 February 2009, and the survey was closed on 3 March. Exactly 300 responses had been received in total, being a response rate of 14% to the emails sent, excluding those who responded directly. This is considered to be a good response, where 10% is often considered to be a reasonable goal for such unsolicited email or postal surveys, thus indicating that the topic was of special interest to many.

Our sincere thanks go, of course, to these 300 respondents who spent some of their valuable time in completing all or part of the survey. We believe that with this information, the resulting Crops for the Future knowledge portal will better meet the needs of its future users.

The survey itself is appended to this report, and the survey summary, giving all the numerical data from the tick-box questions, is available on request.

RESULTS

1. Please give examples of questions you would like the website to answer? e.g. “Where can I find seeds of species X?” – “What is the nutritive value of the fruit and leaves of species Y?” – “What underutilised crops already grow or could grow in country Z?” – “....”

At least one question was suggested by 72% (216) of the respondents. Some statements were deleted, and others which included multiple questions were separated, and after editing, a total of 440 different questions were analysed. Any mention of specific species, countries or regions was treated simply as “species X” or country Y”. However, those species that were mentioned specifically are included in the species list in question 14. Questions were grouped subjectively when considered to be the same or similar in meaning, and are ordered by their respective frequency. A total of 22 separate topics or example questions were identified, of which 8 had a frequency significantly higher than the remaining 14 example questions.

Of primary importance:

1. What underutilised crops grow or could grow in country (region, agroecosystem, etc.) X? (n=55)
2. Where can I obtain seed (germplasm, cuttings, improved material, etc.) of species X? (n=52)
3. What are the uses (local, cultural, medicinal, special, etc.) of crop X? (n=41)
4. Where can I find experts (institutes, producers, suppliers, etc.) of crop X? (n=40)
5. Where can I find information (general, specific – see below) on crop X? (n=40)
6. What is the nutritive value of (certain plant parts or products from) species X? (n=38)
7. What are the agronomic requirements (how/where do I grow, yields, etc.) of crop X? (n=36)
8. What is the economic (commercial) value and market potential of crop X? (n=30)

Of secondary importance:

1. Where does information exist on domestication (breeding, genetics, etc.) of crop X? (n=15)
2. Where can I find lists of underutilised species for searching or general consultation? (n=15)
3. What community initiatives exist for supporting the development of crop X, Y, etc.? (n=13)
4. What are the constraints to developing the use and value of underutilised crops? (n=10)
5. What opportunities are available for funding (training, conferences, etc.)? (n=9)
6. What information is there on processing (post-harvest) technologies? (n=8)
7. Where can I find reliable taxonomic information (and related to common names)? (n=8)
8. What underutilised crops are endangered and how can they best be conserved? (n=7)
9. What about intellectual property rights and other legislation (germplasm transfer)? (n=7)
10. How can I offer my knowledge to the underutilised crop community? (n=6)
11. What is the definition of an ‘underutilised crop’ and related terms? (n=5)
12. What underutilised crops may become invasive? (n=3)
13. How will Crops for the Future assist in the development of underutilised crops? (n=2)
14. Where can I find pictures of underutilised crops? (n=1)

Some specific points raised in certain questions also merit recognition. For example, regarding requirements for seed, several questions related to a desire for an exchange of either seed between farmers or genetic material amongst institutes. Some of those demanding information on experts and institutions also wanted to know of specific local communities growing certain crops, companies involved in producing or marketing products from underutilised crops, government bodies with an active interest, current research and development projects, and existing email discussion groups.

In those grouped into wanting general information, there was a wide range of specific demands, from training and extension materials to bibliographies and scientific literature. On-line sources were often demanded, as were case studies and conference proceedings, but a common theme was a need for reliable, authoritative research publications and reference lists, which was also repeated in those requesting taxonomic information. It appears the occurrence of unverified or inaccurate information, often web-based, is seen as a constraint by many who demand knowledge on underutilised crops. The date of last revision was also requested to be noted on species datasheets.

Amongst questions on uses, most (30) related to local and cultural uses, a few (6) on medicinal uses, one on wood/fuel and the others were general. One wanted to find recipes on how to cook the crops, and one wanted to know how to predict potential future uses. Several of those asking for agronomic data specifically demanded information on intercropping and possible crop mixtures. Of questions of secondary importance there was little of specific interest.

2. What types of underutilised crops are most important to you?

This question had a 91% response rate (274 respondents). Six specific crop types were listed: (a) food and beverage crops, (b) fodder crops, (c) plants for fibre, fuel and building materials, (d) medicinal/aromatic plants, (e) plants for environmental services, (f) ornamental plants, with an additional 'Other' category. These are ranked below, based on the percentage of respondents who considered them very important.

1. Food and beverage crops	80%
2. Medicinal/aromatic plants	51%
3. Plants for environmental services	32%
4. Plants for fibre, fuel and building materials	29%
5. Fodder crops	28%
6. Ornamental plants	8%

If the categories 'very important' and 'important' are combined there is no change to the relative ranking, with the following results are obtained; food and beverage plants 97%, medicinal/aromatic plants 85%, plants for environmental services 78%, fibre, fuel and building materials 71%, fodder crops 68%, and ornamental plants 39%. Only ornamental plants appeared to be deemed inappropriate for consideration as underutilised crops in this survey based on the low scores, and 20% of respondents also considering them irrelevant, whereas no other crop type scored more than 4% for irrelevant.

Of the 61 respondents who included "others", 55 specified what types of "other" crops they considered worthy of inclusion. Of these, many were at least semi-synonymous with one of the six principal categories listed, such as biofuels, herbs and spices, oil crops, shade, etc, though a few interesting crop types were noted that did not appear to fit with the six types listed. Others did fit but were listed as others for other reasons, such as mushrooms (a food but not strictly a plant) and aquatic or marine plants (where only the habitat is different). However, there were exceptions, such as (a) plants with cultural/spiritual/social uses, (b) plants for live fencing or control of problem animals, (c) crop wild relatives, and (d) plants for biopesticides, dyes, tannins, cosmetics and other industrial chemical extracts.

3. Which topics are of importance to you?

This question had a 92% response rate (275 respondents), with a list of 12 topics provided to select from, in addition to an additional ‘others’ option. However, although differences between them did not appear highly significant, an approximate trend became apparent. As with question 2, the following list ranks the topics in terms of the percentage of respondents who considered each as ‘very important’ amongst the four choices available. No topic moves by more than one position in the ranking if figures for ‘very important’ and ‘important’ are combined (only three pairs swap places), thus it can be taken that the table below is an accurate representation of the results. All of the comments listed under ‘others’ were either statements, or topics that could be included in one of the 12 categories listed.

1. Livelihoods; poverty reduction, income generation	76%
2. Human health; nutrition, food security, medicinal plants	73%
3. Conservation; biodiversity, genetic resources conservation	66%
4. Environmental; climate change, agro-ecology, ecology, etc.	46%
5. Post-harvest activities; processing/value-adding, marketing	45%
6. Production of natural resources; crops, forestry, aquaculture, fodder/livestock	39%
7. Plant breeding; crop improvement, molecular marker analysis	37%
8. Communication; extension, training, documentation, public awareness, etc.	34%
9. Policy; legal issues, intellectual property rights, trade agreements, etc.	33%
10. Trade; local, national, international, private sector, socio-economics	30%
11. Human culture issues; cultural diversity, ethnobotany	28%
12. Invasive species management and plant protection	17%

The most important two topics relate to human livelihoods, poverty, income generation, human health, nutrition and food security, and these scored 95% and 96% respectively if figures for ‘very important’ and ‘important’ are combined. Conservation and biodiversity was ranked a close third with 91% if both very important and important were combined. Then with the exception of invasive species management and plant protection, which is the topic evidently considered by far the least important topic of those listed, all of the others show similarities in the results. Within this middle group however, environmental issues maintain a consistent fourth place independent of which of the two ranks are applied, followed by the agronomical ‘group’ of three topics, production, post-harvest and plant breeding. Slightly less important are the topics of communication and policy, with trade and culture consistently taking tenth and eleventh place respectively.

4. For what purposes do you mainly use information on underutilised crops?

This question had a response rate of 88% (263 respondents), with 16 types of purpose to be selected from besides ‘others’. Following the same criteria as for question 3, the following ranking resulted, of purposes potential users considered as ‘very important’. Again, there are no significant changes in ranks if figures for ‘important’ are combined with ‘very important’, with no purpose moving more than two places in the ranking, allowing an approximate analysis of the relative value of users’ information needs related to the purpose it is required for. In both analyses, three relatively distinct ‘groups’ of purposes remain unchanged, being the top five, the second five, and the bottom six.

1. For general and up-to date information on certain underutilised species	53%
2. For lists of underutilised species for a particular use	37%
3. For lists of underutilised species for a particular country/region	35%
4. For references and other sources of information e.g. case studies	35%
5. As a source of relevant projects	35%
6. As a teaching/training tool	32%
7. As an aid to identify underutilised crops	27%
8. For producing educational and training materials	24%
9. As a source of related internet sites	22%
10. As a source of contacts	21%
11. As an aid for developing policy	19%
12. As an aid for local/national planning	17%
13. For producing promotional materials	16%
14. For producing extension leaflets	15%
15. As a source of pictures	8%
16. As a source of maps	6%

General and up-to-date information on underutilised crops is significantly the most important information users need, followed by the requirement for lists of species for particular uses, countries or regions, and other information such as references, case studies and projects. The second group of purposes comprises the need for information for teaching, training and species identification, and as a source of further websites or contacts. The least important needs include those for information for policy and planning purposes, producing extension and promotional materials, and finally as a source of pictures and maps. Importantly also, relatively high numbers of respondents noted some purposes as irrelevant, especially 22% as a source of pictures and for promotional materials, 18% as a source of maps and for producing extension leaflets, and 15%, 14% and 12% for planning, developing policy and producing educational materials, respectively.

In addition, a number of the 28 additional purposes provided as ‘others’ proved of interest. These included several who wanted to help their local communities ("to help vulnerable agricultural communities", "identify good practices", "conserve them in my native region", "for in-situ conservation and breeding"), or themselves ("so I can grow them and sell the fruits", "for my own forest and land management objectives", "for production", "business development"), while some others had specific research needs ("to identify needs for applied research on a certain underutilized crop in a certain area", "taxonomy - genus, family, to know similar, related species", "editing technical texts").

5. Where do you currently search for underutilised crop information?

This question had a response rate of 87% (261 respondents), with a list of 13 categories of sources of underutilised crop information to select from. Following the same criteria as for questions 2 and 3, the following ranking of information sources resulted, of those considered as ‘very important’. There are again no significant changes in ranks if figures for ‘important’ are combined with ‘very important’, with no source moving more than two places with the exception of conferences/meetings which rose four places in importance. This once again allows an analysis of the relative value of users’ information source, and four groups remain unchanged in both analyses, being the top three, second three, next four, and the bottom three.

1. Internet search engines (e.g. Google)	72%
2. Internet databases (e.g. GFU, PROSEA, Wikipedia, Ecoport, etc.)	55%
3. Scientific journals – electronic	44%
4. Scientific journals – print	35%
5. Personal contacts	35%
6. Books – printed publications	32%
7. Conference proceedings	26%
8. Institute (in-house) databases	24%
9. Abstracts/bibliographies	24%
10. Conferences/meetings	23%
11. CD-Rom databases	12%
12. Grey literature/unpublished reports	13%
13. Private companies/dealers	4%

The internet is consistently and significantly the principal source of information on underutilised crops, with general search engines being the most used, followed by specific databases and on-line scientific journals. The second most important group includes print journals, books and other printed publications, along with personal contacts. The third group comprises various sources including conference meetings and their proceedings, abstracts, bibliographies and other in-house databases. The least important sources of information are databases on CD-rom, grey literature, and private companies.

Of the few people who suggested ‘other’ sources of information, over half agreed in principle that an important source was local knowledge. They noted for example: "from tribes and farmers and NGOs - local sources - which can be useful at macro level", "elderly people in the community", "interviews", "indigenous knowledge sources", "field visits to farmers on the project sites", and "questionnaires and surveys, interaction with the local communities".

6. Provide the names of any particularly important sources of information (e.g. specific databases, books, journals, proceedings, etc.)

165 respondents (55%) offered at least one particularly important source of information, though many offered several, and a number of the on-line resources were repeated. The following is a selected list of 50 of the on-line databases mentioned, in alphabetical order, with corrected and verified links. Each was included by only one or two respondents, rarely more, which provides an indication of the large number of different information sources available via the internet, and the list is obviously far from being exhaustive. With few exceptions, all are also free access. There was also a long list of different individual books and journals, often very specific, which are not included here for reasons of space.

1. 203.64.245.173/avgris
2. aamps.org
3. actahort.org/index.htm
4. africancrops.net
5. aginternetwork.org/en/agricola
6. agricola.nal.usda.gov (subscription)
7. agro.biodiver.se
8. ajfand.net/Index.html
9. ajol.info
10. aluka.org/action/doBrowse?sa=1&sa_sel=

11. ars-grin.gov/npgs/
12. big-flora.de (in German)
13. bioversityinternational.org
14. bioversityinternational.org/Information_Sources/Species_Databases/New_World_Fruits_Database/index.asp
15. cabi.org
16. cabi.org/datapage.asp?iDocID=165 (subscription)
17. cip.org
18. database.prota.org/search.htm
19. ecoport.org
20. eldis.org
21. eppo.org
22. fao.org
23. fao.org/forestry/23947/en/
24. foodplantsinternational.com/index.php?sec=home
25. hear.org/gcw
26. hort.purdue.edu/newcrop
27. icis.cgiar.org/icis/index.php/Main_Page
28. icrisat.org
29. icuc-iwmi.org
30. ildis.org
31. isiknowledge.com (subscription)
32. issg.org/database/welcome prosea.org
33. kew.org/ceb/sepasal
34. leisa.info
35. moringanews.org
36. napralert.org
37. pgrforum.org/index.htm
38. phytotradeafrica.com
39. plants.usda.gov
40. planttreaty.org
41. rain-tree.com/plants.htm
42. sciencedirect.com (partly subscription)
43. tropicalforages.info
44. tropicalplant.nier.go.kr/html/introduction01.html
45. underutilized-species.org
46. unifi.it/project/ueresgen29/netdbase/db1.htm
47. worldagroforestry.org
48. worldagroforestry.org/sites/TreeDBS/Aft.asp
49. worldagroforestry.org/Sites/TreeDBS/tssd/treesd.htm
50. zdsf.ch (in German)

7. How important would a CD-rom version of an Underutilised Crops Database be to you?

This question attracted a 78% response rate, and of the 235 respondents, 41% considered a CD-rom of an Underutilised Crops Database would be very important to them, 28% thought it would be important to them, 21% thought it would be of some value, and 11% considered that it would be irrelevant. These results, however, somewhat contradict those from question 5 which asked for current sources of information on underutilised crops, where only 12% said CD-rom databases were very important, 22% said important, 42% said they were of some value/interest, and 23% said they were irrelevant.

However, 189 respondents (80%) offered reasons for their decision, who fell in to two clearly demarcated camps. The 'pro-CD-rom' camp stated problems with internet access in their country, either infrequent or of low band width, and that a CD was a reliable means of accessing the information quickly. They also noted that it could be taken with them along with their laptop to the

field or home at the weekend, or lent out to others who had no access to the internet. The ‘no need for a CD-rom’ camp had a principal issue with it either being unnecessary as they had excellent internet connectivity, but also that web-based versions could/would be regularly updated and they could be assured of having the most recent information available, and CD-ROMs would become dated and the information would eventually become obsolete.

8. Have you ever visited the existing websites of ICUC (www.icuc-iwmi.org) and GFU (www.underutilized-species.org)?

Of the 234 respondents to this question, 61% said they had visited the ICUC and GFU websites, whereas 39% said they had not.

9. If your answer to question 8 was yes,

- **What parts of the GFU website are most useful to you? Please specify:**
- **What parts of the ICUC website are most useful to you? Please specify:**
- **Which parts would you remove from the GFU website? Please specify:**
- **Which parts would you remove from the ICUC website? Please specify:**

With only 110 respondents in total, this question elicited the lowest response rate of all nine questions comprising the first part of the survey. The first pair of questions (which parts of GFU/ICUC websites are most useful) was answered by 106 and 88 people respectively, though many less offered an answer to the second pair of questions (which parts would you remove...), with 67 and 61 respondents respectively.

In answering which parts of GFU/ICUC websites are most useful, 10-15 respondents just stated ‘most’, ‘all’ or ‘nothing specific’, but a number of those that did offer suggestions gave multiple responses, there being 122 different person-comments for the GFU website and 72 for the ICUC website, which were divided into topics with the following frequency of responses.

<i>Most useful parts of the websites</i>	<i>GFU</i>	<i>ICUC</i>
1. General publications (incl. archives)	36	31
2. GFU/ICUC publications (case studies, research reports, etc.)	13	12
3. Funding sources (donors, grants, calls, scholarships, etc.)	23	7
4. Upcoming events (training, conferences, etc., generally)	19	9
5. ICUC News/ GFU monthly updates (specifically)	7	8
6. Contacts (database and in general)	17	2
7. Ongoing project information	7	2
8. Recipes utilising underutilised crops	0	1

There is clearly some overlap in the use of the terms, as for example funding sources and calls for proposals may appear in the news service, as could upcoming events, but the above is based on the respondents’ words used. In general terms, users appeared to appreciate both websites most for the publications available, in particular the case studies on the GFU website, and the monographs, research reports, extension material and information on processing on the ICUC website. The GFU website was also appreciated for its contacts/experts database and the list of potential funding sources. The two news services also received praise and recognition.

For the second pair of questions (which parts would you remove...), almost all respondents made no suggestions, simply stating ‘nothing’, none’, ‘nothing specific’ or the equivalent, with one respondent summing up his/her view by stating “I think all parts give me some idea of what is going-on, hence I would recommend to keep all of them”. Of the few specific comments, one respondent suggested removing “general descriptions about awareness” from both sites. Another noted for the GFU site “the clutter, there's too much on offer on the front page" and for the ICUC site, "nothing, but rather would add to it.". Another said of the ICUC site “the home page should be more innovative and attractive”, and another complained of both that “information for congresses I always got after the deadline...can we do that better...give a sign ahead of time of the deadline because I need flexible time to request to my work”. However, others noted for the GFU site “nothing specific, in fact I got a very good impression the first time I entered, a very professional and well run website”, and “none - it is an excellent website”.

10. On the following page you find 8 additional but optional questions. We would be happy if you chose to continue the survey as it would be valuable to know interests and specialisations, and understand how we could work together in this initiative. Please make your choice what to do next:

Of the 231 respondents who answered this question, 85% of them, or 197 respondents in total, accepted to continue with the survey. However, it is clear that as three of the following questions were answered by more than 200 people, some of those who skipped the question still continued with the survey!

11. Which agroecological zone(s) are you interested in most?

There were 209 respondents to this question. The following table indicates the percentage of respondents who considered the ten selected agroecological zones either very important, or alternatively, very important or important. As with previous questions, the ranking would hardly change, and the relative importance of the zones to potential users is evident.

	<i>Very important</i>	<i>Very important OR Important</i>
1. Tropical	77%	94%
2. Sub-tropical	62%	95%
3. Semi-arid	52%	85%
4. Arid	43%	77%
5. Warm	41%	78%
6. Humid	33%	68%
7. Temperate	28%	57%
8. Sub-humid	24%	72%
9. Warm-cool	17%	53%
10. Cool	10%	41%

Tropical and sub-tropical zones are clearly considered more important than warm-cool and cool temperate zones in terms of underutilised crop information needs, warm zones being intermediate. Also, arid and semi-arid zones are considered more important than humid and sub-humid zones, It is also worth noting that 19% of respondents considered cool zones irrelevant, 15% for warm-cool zones, and 12% for temperate zones.

12. Which geographic regions are most important to you?

There were 207 respondents to this question. The following table indicates the percentage of respondents who considered the 12 selected geographical regions zones either very important, or alternatively, very important or important. The top four regions retain their position under either ranking, whereas the next two, the Sahel and South America would have reversed position. Following these, the other regions show variable results and little significant difference, with the exception of North America which is clearly considered as the least important by respondents.

	<i>Very important</i>	<i>Very important OR Important</i>
1. Asia	54%	79%
2. East Africa	50%	78%
3. West Africa	45%	73%
4. Southern Africa	38%	68%
5. Sahel	28%	58%
6. South America	26%	63%
7. Pacific islands	23%	48%
8. Europe	23%	47%
9. Australasia	21%	50%
10. Northern Africa	20%	57%
11. Central America/Caribbean	20%	56%
12. North America	11%	33%

However, the results may have been different had Asia been divided into five separate regions, e.g. temperate Asia, the Middle East, Central Asia, South Asia, and East and South East Asia, as Africa had been in this survey. Nonetheless, both continents appear in general to attract the most interest from respondents, with little difference amongst the other regions. Only North America, however, appears to be particularly devoid of interest regarding underutilised species, with 33% of respondents considering it irrelevant.

13. In what countries have you particular experience?

There were 188 respondents who marked at least one country where they have particular experience, though the drop-down list of 'countries' also included a large number of islands, some uninhabited, and at least ten that have no vegetation whatsoever, being entirely submerged at high tide. A total of 268 geographical options were offered, far in excess of the 192 countries recognised by the United Nations. The results appear to be too specific to have great significance to the analysis regarding this underutilised crops user needs survey, in addition to the general region data obtained in question 12.

Nonetheless, the countries noted by most respondents as where they have expertise, reflect in many cases the list of where respondents reside (see question 18), though with some notable additions in this case. The list of countries where most respondents noted expertise was headed by India (n=50), followed by Kenya (30), Tanzania (23), Ethiopia (21), Uganda (15), Nigeria (13), the USA (13), Germany (12), Cameroon (11) and the UK (11).

Others with lower scores include: (10) Ghana, Italy, Peru; (9) Bolivia, Brazil, Nepal, South Africa; (8) China, Indonesia, Malawi, Malaysia, Sri Lanka, Thailand; (7) Argentina, Benin, Burkina Faso, Ecuador, Mali, the Netherlands, Syria, Vietnam; (6) Australia, Botswana, DR Congo, Israel, the Philippines, Zimbabwe; (5) Bangladesh, Colombia, Cote D'Ivoire, Fiji, France, Namibia, Senegal, Zambia.

However, on a regional level (excluding Europe and the USA), but counting only these countries that have a score of five or more, an indication of regional experience can be obtained.

Eastern Africa, n=89 (Ethiopia, Kenya, Tanzania and Uganda);
 South Asia, n=72 (Bangladesh, India, Nepal and Sri Lanka);
 South America, n=47 (Argentina, Bolivia, Brazil, Colombia, Ecuador, Peru)
 West Africa, n=46 (Benin, Cameroon, Cote D'Ivoire, Ghana and Nigeria)
 South East Asia, n=45 (China, Indonesia, Malaysia, Philippines, Thailand, Vietnam)
 Southern Africa, n=38 (Botswana, Malawi, Namibia, South Africa, Zambia, Zimbabwe)
 The Sahel, n=19 (Burkina Faso, Mali, Senegal)

Although being only an approximation data from countries with lower scores have not been included in this regional analysis, it appears there is a concentration of respondent experience particularly in Eastern Africa, followed by South Asia. Another group having similar values includes most of the other regions, with the exception of the Sahel where relatively few respondents stated any experience, possibly due to the current anglophone bias of GFU and ICUC.

14. Your current/recent species specialisations: List species names (scientific and common) or plant groups (e.g. fibre crops, brassicas).

There were 173 respondents to this question, and most provided multiple answers. Some provided scientific names and common names whereas others gave only the common names. This question did not specify 'only underutilised species', so many also included commonly cultivated crops in their lists of species specialisations. About 50 broad categories of plant groups were provided by the respondents, e.g. hulled wheats, minor millets, mangrove species, edible orchids, bamboos and rattans, etc., and some also limited these to the specific countries in which they work, e.g. African wild fruits, Andean grains, Ethiopian tuber crops, etc. To list all of these fully with frequencies is considered here to offer little value in analysing future user needs. However, the scientific names of 200 underutilised crops provided are given, to indicate the breadth of knowledge within the community of experts who responded to this question. The scientific names have not been verified.

- | | | |
|------------------------------------|---|----------------------------------|
| 1. <i>Aberia gardneri</i> | 14. <i>Amaranthus hypochondriacus</i> | 27. <i>Asparagus acutifolius</i> |
| 2. <i>Acacia senegal</i> | 15. <i>Amaranthus</i> spp. | 28. <i>Atriplex</i> spp. |
| 3. <i>Acacia tumida</i> | 16. <i>Amorphophallus paeoniifolius</i> | 29. <i>Averrhoa carambola</i> |
| 4. <i>Adansonia digitata</i> | 17. <i>Annona atemoya</i> | 30. <i>Azadiracta indica</i> |
| 5. <i>Aegel marmelos</i> | 18. <i>Annona cherimoya</i> | 31. <i>Barringtonia procera</i> |
| 6. <i>Azelia africana</i> | 19. <i>Annona reticulata</i> | 32. <i>Barringtonia</i> spp. |
| 7. <i>Agave</i> spp. | 20. <i>Annona squamosa</i> | 33. <i>Bauhinia petersiana</i> |
| 8. <i>Allanblackia stuhlmannii</i> | 21. <i>Arachis pintoi</i> | 34. <i>Bauhinia thonningii</i> |
| 9. <i>Allanblackia ulugurensis</i> | 22. <i>Arbutus unedo</i> | 35. <i>Bixa orellana</i> |
| 10. <i>Allium ampeloprasum</i> | 23. <i>Arracacia xanthorrhiza</i> | 36. <i>Blighia sapida</i> |
| 11. <i>Alocasia</i> spp. | 24. <i>Artocarpus altilis</i> | 37. <i>Boerhavia</i> spp. |
| 12. <i>Alternanthera</i> spp. | 25. <i>Artocarpus integrifolia</i> | 38. <i>Borassus aethiopicum</i> |
| 13. <i>Amaranthus blitum</i> | 26. <i>Artocarpus</i> spp. | 39. <i>Borassus flabellifer</i> |

40. *Boscia senegalensis*
41. *Brassica carinata*
42. *Canarium* spp.
43. *Canna* spp.
44. *Capparis spinosa*
45. *Capsicum* spp.
46. *Carica* spp.
47. *Carissa karonda*
48. *Carthamus tinctorius*
49. *Carya illinoensis*
50. *Ceratotheca* spp.
51. *Chenopodium bonus-henricus*
52. *Chenopodium quinoa*
53. *Chenopodium* spp.
54. *Cleome gynandra*
55. *Cleome* spp.
56. *Coccinia abyssinica*
57. *Cola lateritia*
58. *Cola lepidota*
59. *Cola pachycarpa*
60. *Colocasia esculenta*
61. *Colocasia* spp.
62. *Colophospermum mopane*
63. *Corchorus olitorius*
64. *Corchorus* spp.
65. *Crataegus azarolus*
66. *Crotalaria brevidens*
67. *Crotalaria ochroleuca*
68. *Cucumis metuliferus*
69. *Cucurbita ficifolia*
70. *Cyphomandra betacea*
71. *Cyrtosperma* spp.
72. *Dacryodes edulis*
73. *Digitaria exilis*
74. *Dimocarpus longan*
75. *Dioscorea* spp.
76. *Diospyros lotus*
77. *Durio zibethinus*
78. *Echinochloa* spp.
79. *Elaeocarpus* spp.
80. *Elaeocarpus serratus*
81. *Eleusine coracana*
82. *Emblica officinalis*
83. *Ensete ventricosum*
84. *Eugenia cauliflora*
85. *Feronia limonia*
86. *Flacourtia* spp.
87. *Garcinia kola*
88. *Garcinia mangostana*
89. *Gnetum africanum*
90. *Grewia asiatica*
91. *Guizotia abyssinica*
92. *Guizotia* spp.
93. *Hibiscus sabdariffa*
94. *Hippophae rhamnoides*
95. *Hippophae salicifolia*
96. *Hippophae tibetiana*
97. *Hoodia* spp.
98. *Inocarpus fagifer*
99. *Irvingia gabonensis*
100. *Isatis tinctoria*
101. *Jatropha curcas*
102. *Khaya senegalensis*
103. *Kigelia africana*
104. *Landolphia* spp.
105. *Lansium domesticum*
106. *Lathyrus cicera*
107. *Lathyrus ochrus*
108. *Lathyrus sativus*
109. *Lathyrus* spp.
110. *Laurus nobilis*
111. *Lepidium meyenii*
112. *Leucaena* spp.
113. *Maerua pseudopetulosa*
114. *Melicocoss bijugatus*
115. *Melilotus* spp.
116. *Mespilus germanica*
117. *Momordica charantia*
118. *Morinda citrifolia*
119. *Moringa oleifera*
120. *Moringa peregrina*
121. *Moringa stenopetala*
122. *Mucuna pruriens*
123. *Nephelium mutabile*
124. *Nephelium lappaceum*
125. *Opuntia* spp.
126. *Oxalis tuberosa*
127. *Pachyrhizus ahipa*
128. *Pandanus tectorius*
129. *Panicum* spp.
130. *Passiflora* spp.
131. *Pelargonium* spp.
132. *Perilla* spp.
133. *Phyllanthus* spp.
134. *Piper methysticum*
135. *Pistacia lentiscus*
136. *Plectranthus edulis*
137. *Pongamia* spp.
138. *Pouteria caimito*
139. *Pouteria sapota*
140. *Prosopis* spp.
141. *Pterocarpus erinaceus*
142. *Punica granatum*
143. *Reseda luteola*
144. *Ricinodendron heudelotii*
145. *Rubus apetalus*
146. *Saba senegalensis*
147. *Santalum austrocaledonicum*
148. *Schinziophyton rautanenii*
149. *Sclerocarya birrea*
150. *Senna obtusifolia*
151. *Sesbania grandiflora*
152. *Sesbania rostrata*
153. *Setaria* spp.
154. *Simarouba glauca*
155. *Simmondsia chinensis*
156. *Smallanthus sonchifolius*
157. *Solanum americanum*
158. *Solanum nigrum*
159. *Solanum scabrum*
160. *Solanum* spp.
161. *Solanum villosum*
162. *Sphenostylis stenocarpa*
163. *Spondias cytherea*
164. *Strophanthus kombe*
165. *Strychnos* spp.
166. *Stylosanthes* spp.
167. *Syzygium cumini*
168. *Tamarindus indica*
169. *Telfairia occidentalis*
170. *Telfairia* spp.
171. *Telfairia occidentalis*
172. *Terfezia pfeilii*
173. *Terminalia* spp.
174. *Tetracarpidium conophorum*
175. *Theobroma grandiflorum*
176. *Tirmania* spp.
177. *Toona sinensis*
178. *Treculia africana*
179. *Trichilia emetica*
180. *Triticum dicoccon*
181. *Tylosema esculentum*
182. *Ullucus tuberosus*
183. *Urtica dioica*
184. *Vangueria infausta*
185. *Vepris glandulosa*
186. *Vernonia galamonsis*
187. *Vernonia* spp.
188. *Vetiveria zizanioides*
189. *Vicia narbonensis*
190. *Vigna angularis*
191. *Vigna* spp.
192. *Vigna subterranea*
193. *Vitellaria paradoxa*
194. *Vitis vinifera* ssp. *silvestris*
195. *Voaganga africana*
196. *Ximenia americana*
197. *Ximenia caffra*
198. *Ximenia* spp.
199. *Zizyphus mauritiana*
200. *Zizyphus* spp.

All the specialist knowledge, however, on specific species and plant groups, has been stored for potential future reference when the database is being constructed.

15. Species specialisations of your organisation (if different from above): List species names (scientific and common) or plant groups (e.g. fibre crops, brassicas).

Only 75 people responded to this question, possibly because there was no (or little difference) between species specialisations of the respondent and their institute, and the results appeared the least valuable of all the questions asked in the survey. Many of the responses included very broad topics, and many involved commonly cultivated crops. There were only very few exceptions where another expert in an institute was researching a different underutilised crop than the respondent to the survey, i.e. the respondent was working on *Vitellaria paradoxa* but another colleague specialised in *Parkia biglobosa*. However, in almost all other instances this additional information appears to be of limited value.

16. If approached, would you assist in database construction?

- **No, due to lack of time and/or specialist knowledge**
- **If yes – on what species, species groups or topics? Please specify....**
- **If yes – what services may you be willing to render? e.g. by becoming a ‘partner’, generating ideas, providing information, writing datasheets, reviewing datasheets, testing prototype databases. Please specify.....**

Of the 172 respondents to this question, 68 of them (40%) said they would not be able to assist in database construction, most of stating specifically why, mostly due to lack of time or specialist knowledge. Some also answered ‘yes’ and ‘no’, confusing the statistics. However, 100 respondents clearly stated a willingness to assist in some way, most of them offering multiple services. Using the categories suggested in the question, the following numbers of experts stated an offer of helping in the construction of the forthcoming Underutilised Crops Database, each also stating on which species, genera, families or crop type they would be willing to work on/with regarding provision of information and writing/reviewing datasheets.

1. Becoming a ‘partner’	n=38
2. Generating ideas	n=55
3. Providing information	n=55
4. Writing datasheets	n=27
5. Reviewing datasheets	n=43
6. Testing prototype databases	n=22

It is thus clear that there is a significant body of expertise in the world on a wide range of underutilised crops that are willing and able to become an official or legal partner in the project, and to offer their time to assist in generating ideas during the design phase of the database, and in writing and reviewing datasheets, and eventually, in testing the prototype databases. It appears unnecessary at this stage to go into further details as to which crops and crop types help is available for though this data is stored for future reference.

17. New information related to underutilised crops, such as jobs, courses, calls, publications, etc. will be posted on the cropsforthefuture.org blog as they arise. Would you additionally like to receive a monthly email summary of these postings? This digest would also include updates on development of the Crops for the Future database and website.

Of the 195 respondents to this question, i.e. 99% of those who decided to continue to the end of the survey, 92% or a total of 179 respondents stated that they would wish to receive a monthly digest from Crops for the Future, whereas only 8% declined. It is thus apparent that a vast majority would appreciate receiving the latest news via a regular email bulletin.

18. Finally, please enter your contact details (optional) to facilitate future interaction. Certainly none of the data will be published or used beyond Crops for the Future.

Over 200 respondents agreed to fill in their personal details (name, organisation, postal and email address), i.e. some 70% of all those who completed all or part of the survey. Over 100 included a website URL, and 64 included their skype name. However, it was possible to elucidate the country of residence of 220 of the survey respondents (73%) including the use of cities or organisations where the country had been omitted. Respondents came from a total of 60 different countries, from all the continents around the world. The breakdown for these was as follows:

- | | |
|--------------------|--|
| 1. Asia | 73 respondents from 20 different countries |
| 2. Africa | 63 respondents from 19 different countries |
| 3. Europe | 53 respondents from 10 different countries |
| 4. The Americas | 25 respondents from 7 different countries |
| 5. Oceania/Pacific | 6 respondents from 4 different countries |

Divided by individual country India had 30, by far the highest number of named respondents. Other countries with three or more respondents were: Italy (18), Kenya (14), the USA (12), Ethiopia (8), Nigeria (7), Germany (6), the UK (6), France (5), the Netherlands (5), Sri Lanka (5), Belgium (4), Cameroon (4), Switzerland (4), Australia (3), Bangladesh (3), Colombia (3), Egypt (3), Israel (3), Malaysia (3), Nepal (3) and Zambia (3).

There were 196 positive responses recorded for the organisation where respondents worked. These were divided between nine different organisation types, with a breakdown as follows:

- | | |
|---|------|
| 1. Universities | n=49 |
| 2. National research institutes | n=42 |
| 3. NGOs | n=34 |
| 4. International research institutes (all CG centres) | n=22 |
| 5. Private companies | n=19 |
| 6. Independent consultants | n=12 |
| 7. Government departments (e.g. Min of Ag.) | n=9 |
| 8. International agencies (FAO, IDRC, IUCN, GFAR) | n=7 |
| 9. Botanical gardens | n=2 |

It is clear that the most interest came from universities, national research institutes, and NGOs. With only relatively few from government departments or other international agencies.

CONCLUSIONS

The number of respondents, at 300, was considered high for a survey of this type, and allowed the results to be robust enough to make firm decisions regarding the way forward for an underutilised species information portal. The response percentage was 14% based on emails sent out, better than the 10% often considered 'good' for an email questionnaire.

The results as summarised in this report provide ample and quantitative information on the wants and needs of the underutilised species community. Using this data, staff at Crops for the Future will now begin to formulate the design of the databases, software and other information technology tools that will form a part of the pending 'one stop shop' for knowledge on underutilised species.

Thanks to all those that contributed.



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