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In many urban areas there are well-developed markets in the informal sector where edible herbs are sold to urban householders and commuters.<sup>6,8</sup> Thus, they are not only of dietary significance but also represent an opportunity for income generation, especially for the rural poor.<sup>9,10</sup> Additionally, their importance increases during adverse conditions, such as drought or loss of employment, and hence they play a significant safety-net role.<sup>11–13</sup> South Africa is no exception, with a number of studies having reported on the use of wild edible herbs,<sup>9,10,14</sup> although many of the early investigations had limited quantitative data on prevalence of use.<sup>15–17</sup>

Nesamvuni *et al.*<sup>10</sup> recently reported on the widespread use of wild edible herbs in Venda, based on a sample of 412 interviews. Coupled with data on the nutritional composition of some species, they stressed the value of the consumption of wild edible herbs in the diets of the rural poor. Several previous studies have also stressed the dietary importance of these wild species, based on nutritional analyses,<sup>17–20</sup> particularly for diets low in vitamins and minerals.<sup>21,22</sup>

The actual value of leafy vegetables in the diet of an individual depends upon a number of factors, including frequency of consumption, amounts eaten, freshness, and methods of preparation and cooking. Their contribution to the diets of particular sectors of society also depends on the proportion of people using wild edible herbs. Nesamvuni *et al.*<sup>10</sup> provided good data for several of these criteria. However, two essential kinds of information were not covered in depth. First, since their sample was not random but taken from respondents who had already indicated that they use wild edible herbs, the prevalence of consumption within the local communities was not determined. Second, they reported that consumption was once per week, although the actual mean and confidence intervals were not provided. This is considerably less than findings from a number of recent studies in South Africa and elsewhere.<sup>9,23–25</sup> Consequently, in this paper I summarize the findings from four recent studies at eight sites (Table 1), totalling 485 households, that provide quantitative data to address these two issues, and indicate the prevalence and direct-use value, and hence importance, of wild edible herbs in South Africa.

For each of the four investigations, households in each study village were selected randomly from aerial photographs or enumerator maps. A structured

## The prevalence of use and value of wild edible herbs in South Africa

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**T**HE PREVALENCE OF USE AND COMMERCIAL value of wild edible herbs in South Africa is examined from four recent quantitative studies at eight different sites. The use of wild edible herbs was widespread in rural communities, with over 90% of households using them in all but one sample site. Mean frequency of use in season was generally between two and five times per week, with a mean of four times across all sites. But many households consume them daily. Use in winter was less than in summer. The mass of wild edible herbs consumed ranged from 12 kg to over 130 kg per household per year. Local (farm-gate) prices ranged from R2.65 to R72 per kilogram, but were generally between R30 and R40 per kg. Direct-use value to consuming households ranged from R85 to almost R5000 across the eight sites, with a mean of R1020 per user household per year. Although harvesting of wild herbs takes time, the high gross direct-use value represents a

considerable saving on having to purchase commercial alternatives. Key species differ from place to place both in availability and use, and include both indigenous and exotic species. Commonly used genera include *Amaranthus*, *Bidens*, *Chenopodium*, *Cleome*, *Corchorus*, and *Momordica*. The use, value and trade in wild edible herbs currently receives no recognition in land and agrarian reform policies. It is imperative that this be addressed, and the relationships between rural livelihoods, use of wild edible herbs, food security, and land and resource tenure be clarified, and debated within the policy forums around different models for, and delivery of, agrarian reform and rural development.

### Introduction

The use of wild edible herbs, or wild leafy vegetables, is an important component of the diet of people throughout sub-Saharan Africa.<sup>1–7</sup> Whilst use of these herbs is most widespread amongst rural communities, it is not restricted to them.

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**Table 1.** Use (mean  $\pm$  s.e.) and commercial value of wild edible herbs in rural villages in South Africa.

Attribute	Village (province)								Mean
	Ntlini (EP)	Tidbury (EP)	Fairbairn (EP)	Mogano (LP)	Hagondo (LP)	KwaJobe (KZN)	Bushbuckridge* (LP)	Thorndale (LP)	
No. of hh sampled	40	30	40	65	54	31	180	45	
% of hh using	95	87	95	99	100	94	92	91	94.0 $\pm$ 1.5
Frequency of use in summer (times/week)	2.0 $\pm$ 0.3	3.5 $\pm$ 0.5	2.1 $\pm$ 0.2	6.7 $\pm$ 0.7	6.7 $\pm$ 0.2	3.9	2-14	3.06 $\pm$ 0.4	4.0 $\pm$ 0.8
Frequency of use in winter (times/week)	0.9 $\pm$ 0.3	2.1 $\pm$ 0.5	1.0 $\pm$ 0.2	5.3 $\pm$ 0.7	–	0.4	–	–	1.9 $\pm$ 0.9
Fresh mass used per hh per yr (kg)	12.8 $\pm$ 1.6	28.2 $\pm$ 6.9	15.0 $\pm$ 2.3	132.9 $\pm$ 23.4	22.1 $\pm$ 1.4	92.7 $\pm$ 15.8	18.4	15.4 $\pm$ 2.8 (dry mass)	45.6 $\pm$ 18.0
Local price (R/kg)	Not traded	Not traded	Not traded	34.58	33.94	2.65	40.0	72.70	36.78 $\pm$ 11.14
Annual direct-use value to user hh (R)	85	159	91	4959	751	257	737	1123.00	1020 $\pm$ 578
No. of permanent residents per hh	5.3 $\pm$ 0.4	4.2 $\pm$ 0.5	7.7 $\pm$ 0.6	4.38	5.40	7.54	–	6.28	5.83 $\pm$ 0.5
Reference	25	25	25	23	23	23	9	24	

\*These are composite results from 180 households (hh) across nine villages with 20 households per village. EP, Eastern Cape Province; LP, Limpopo Province; KZN, KwaZulu-Natal.

interview schedule was then administered. Although the general interview was targeted at the household head, he or she usually deferred to the family member responsible for collecting and cooking the wild edible herbs. The format of the interview schedule was similar for all the studies, except the one at Bushbuckridge.<sup>9</sup> Although the format was different for that study, the information relevant to this paper was the same, namely whether or not the household used wild edible herbs, frequency of use, quantities consumed, preferred species, local trade and prices. The quantity consumed per household per serving was determined by measuring the diameter of the pot used to cook the herbs and the depth to which the pot was generally filled. The unit weight of herbs per volume of pot was then determined from a number of sub-samples. Preferred species were recorded by vernacular name and then identified against voucher specimens.

### Household use of wild edible herbs in South Africa

The use of wild edible herbs was widespread in rural communities of South Africa, with over 90% of households using them in all but one sample site (Table 1). Mean frequency of use in season was

markedly higher than reported by Nesa-mvuni *et al.*,<sup>10</sup> generally being between two and five times a week, with a mean of four times across all sites. Consumption is daily for many households, including most at Hagondo, a site in Venda. Use in winter was less than in summer, although the degree differed among villages. In some areas of Limpopo Province and Mpumalanga, households dry edible herbs for use in winter, when the availability of fresh material is significantly reduced.<sup>9,23</sup> The mass of wild edible herbs consumed ranged from 12 kg to over 130 kg per household per year. Local (farm-gate) prices were generally between R30 and R40 per kg, except at KwaJobe, where the price was only R2.65 per kg, and at Thorndale, where it was over R70 per kg. The determinants of price between different markets requires further study.

The product of local price and amount consumed yields an estimate of gross direct-use value. This ranged from R85 to almost R5000 across the eight sites, with a mean of R1020 per user household per year. Although harvesting of wild herbs takes time, the high gross direct-use value represents a considerable saving on growing or purchasing commercial alternatives, assuming they were available.

Only the Eastern Cape study<sup>25</sup> quantified the time required to harvest wild edible herbs. It ranged from 2 hours 20 minutes per week at Fairbairn to 3 hours and 45 minutes per week at Tidbury. Given that the frequency of consumption was generally lower in the Eastern Cape sites, harvesting times would probably be closer to 4-5 hours a week elsewhere. Many households encourage the growth of wild edible herbs around the home-stead, which provides a fresh supply that can be easily accessed.<sup>9,26</sup> Wild species (including fruits) contributed over 30% of the annual direct-use value of all plants in home gardens in Dingleydale village in the Bushbuckridge lowveld.<sup>26</sup> Key species differ from place to place (Table 2), both in availability and use, and span both indigenous and exotic species. Commonly used genera include *Amaranthus*, *Bidens*, *Chenopodium*, *Cleome*, *Corchorus*, and *Momordica*. Individual households typically consume between five and seven species, but as many as 21 species per household has been recorded.<sup>9</sup>

### Conclusions

These recent studies indicate that wild edible herbs are extensively used by rural households in South Africa for direct consumption and income generation. This

**Table 2.** Key species of wild edible herbs ranked by local users as the most important in their area. (Vernacular names of unidentified species in bold.)

Village	Key species	Reference
Tidbury	<i>Amaranthus hybridus</i> , <i>Chenopodium album</i> , <i>Solanum nigrum</i> , <i>Taraxacum officinale</i> , <i>Urtica urens</i>	25
Fairbairn	<i>Amaranthus hybridus</i> , <i>Chenopodium album</i> , <i>Raphanus raphanistrum</i> , <i>Taraxacum officinale</i> , <i>Urtica urens</i>	25
Mogano	<i>Amaranthus hybridus</i> , <i>Cleome gynandra</i> , <i>Crotalaria</i> sp., <i>Momordica balsamina</i> , <i>Tribulus terrestris</i> , <i>Vernonia poskeana</i>	23
Hagondo	<i>Bidens pilosa</i> , <i>Corchorus tridens</i> , <b>mufungwi</b> , <b>mushhidzhi</b> , <b>nyendanyendane</b>	23
KwaJobe	<i>Amaranthus</i> sp., <i>Bidens bipinnata</i> , <i>Corchorus tridens</i> , <b>Ihlabehlabe</b> , <b>Umakhokhothwani</b>	23
Bushbuckridge *	<i>Amaranthus</i> spp., <i>Bidens</i> spp., <i>Chenopodium album</i> , <i>Cleome gynandra</i> , <i>Corchorus tridens</i> , <i>Momordica balsamina</i> , <i>Tribulus terrestris</i>	9

\*These are composite results from 180 households across nine villages with 20 households per village.

consumption has a high direct-use value representing a considerable cash saving to rural households, the poorest sector of South African society. This practice offers both opportunities to enhance food and livelihood security, as well as poses threats through unsustainable use and possible consequent loss of biodiversity. Many of these species are regarded as weeds and flourish in disturbed sites, in and around fields and homesteads. Factors affecting survival and use are thus different from those commonly considered in relation to slower growing species in the veld. Government authorities, extension personnel and development planners currently pay little heed to the use of wild resources, including edible herbs, and do not recognize their value in rural food security, diets or income generation.<sup>13</sup> Consequently, access to and use of wild plant foods is not considered in development planning nor in land and agrarian reform processes, especially in marginal and drought-prone areas.

Most of this harvesting, use and trading of edible herbs occurs within those areas of South Africa that are under communal tenure. Whilst the area of land currently under communal tenure is not large, it supports over 50% of the total population, and approximately 80% of the rural population. In the new political dispensation in South Africa, the area under communal tenure or group ownership is increasing as a result of government-sponsored resettlement from the former 'homelands' onto state and privately owned land. Additionally, there are several evolving schemes incorporating joint management agreements and institutional arrangements to allow rural communities access to and use of resources on state land even if there is no transfer of tenure rights. At the same time, the Department of Agriculture is shifting its emphasis from historical support of large-scale, intensive production systems to assisting small-scale entrepreneurs. These policy shifts and implementation of agrarian and land reform represent an opportunity to acknowledge the role of wild foods, and wild edible herbs in particular, in rural households and the economy, and therefore provide the necessary policy environment and framework to stimulate research, production and marketing activities.

The high dependence of rural households on wild resources, including wild edible herbs, suggests that the omission of these resources from land and agrarian reform initiatives has the potential to undermine the success or sustainability of

whatever policies are finally adopted.<sup>13</sup> For example, extension-officer guidelines that require rural householders and small-scale farmers to adopt mono-cropping production systems ignore preferences for wild edible herbs (>90% of households), their nutritional contribution, income generation potential, as well as the risk-spreading strategy of having more than one crop. An additional example is that there is no extension support offered for growing and enhancing production of these species, yet they may have a greater direct-use value in financial terms than maize or sorghum, crops that do receive extension advice and research support. It is imperative that this neglect be addressed and that the relationships between rural livelihoods, use of wild edible herbs, food security, and land and resource tenure be clarified and communicated within the policy forums debating different schemes for, and delivery of, agrarian reform and rural development.

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## Boost for biotechnology sector

The eGoli BIO Life Sciences Incubator was launched at its new premises in Modderfontein, Johannesburg, on 6 February. The result of a joint initiative between CSIR Bio/Chemtek, the Innovation Hub and AfricaBio, this facility is intended to stimulate the commercialization of research in the life sciences leading to new products and services by attracting technology-based firms and turning them into viable business enterprises. eGoli BIO is one of six technology incubators in a programme being supported by the Department of Science and Technology, the Department of Trade and Industry, and the European Union.

eGoli BIO aims to attract high-quality tenants by offering a technology-intensive, collaborative environment with a business infrastructure, networking opportunities, financial advice and commercial assistance. Up to 70 people can be accommodated in the newly refurbished premises.

The CEO of eGoli BIO is Paul Abrahams (pabrahams@egolibio.co.za). The first tenant to occupy the incubator is Achila BioSciences, which produces chiral chemicals that are used in the manufacture of chirally pure drugs, a growth area in the pharmaceutical industry.