

Wild edible mushrooms from Western Tanzania



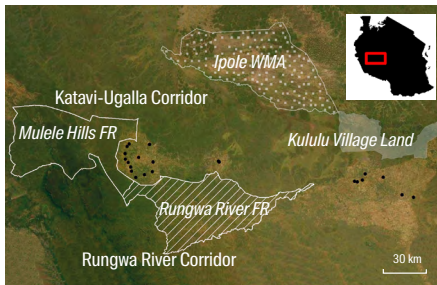
For many years the Association for the Development of Protected Areas (ADAP) has been supporting the community-based management of the Miombo woodlands of the Katavi-Ugalla and Rungwa River ecological corridors in the Mlele and Sikonge Districts in Western Tanzania. The projects aim to support local communities in establishing - together with the Tanzania Forest

Service Agency (TFS) - a Joint Forest Management in neighboring national Forest Reserves or other models of management such as Wildlife Management Areas in the Village Land. In order to improve the livelihoods and resilience of the local communities as well, the projects support the sustainable development of income-generating activities based on non-wood forest products such as honey or wild edible mushrooms, thereby inciting the local population to better conserve the Miombo ecosystems.

Extensive Miombo woodlands cover most of the two corridors. During the rainy season, large quantities of wild edible mushrooms grow in these woodlands. Since time immemorial the local people have enjoyed the tasty mushrooms with high nutritional value, which are an important part of their daily diet during the rainy season and in dried form during the off-season. More than 50 species are edible, and there is a considerable market demand for highly priced mushrooms such as chanterelles, milk caps and termite mushrooms. Therefore, ADAP supports the development of an added-value chain for the marketing of wild mushrooms in Western Tanzania.

If interested, more information is available on the ADAP website:

<https://www.adap.ch/en/>



Instructions

Sustainable harvesting

Clearing of forests and woodlands for various land-uses is the major threat to mushrooms. Traditional slash-and-burn methods (shifting cultivation) in the Miombo areas barely harms the mycorrhizal mushrooms since most trees stay alive after cutting and sprout vigorously when it becomes fallow again. When trees stay alive, their numerous mycorrhizal mushrooms also flourish. However, when trees are girdled, they as well as their mycorrhizal fungi die. Fire does not harm mushrooms directly since they occur in the dry season when mushrooms are absent (except those growing on wood), and the burning may not affect the mycelia protected in the soil. However, hot late dry season burning could kill the trees along with their mycorrhizal fungi. Disturbances to termite mounds should be minimised in view of protecting the growth of *Termitomyces*. The risk of resource degradation through over-harvesting is minimal if some guidelines (see below) are respected.

Mushroom foray

Careful mushroom picking is very important to meet high quality and hygiene standards for a successful marketing of mushrooms. Only fresh and undamaged mushrooms should be collected. Mushrooms should be cut off near the ground (instead of plucking), and the remaining soil from the base of the stipe should be cut off to keep the mushrooms clean in the container thereby avoiding any later washing. This technique does not harm the mycelium. Every mushroom should be cut in half to see if there are any maggots inside. Very young or old edible mushrooms should not be picked, and uninteresting mushrooms should not be scrunched deliberately. Mushrooms in exotic tree plantations should not be picked because some of them may be poisonous.

Identification of mushrooms

Mushrooms have to be identified carefully in order to avoid poisoning. A pleasant smell or the fact that animals are eating a specific mushroom cannot be used as a criterion to distinguish edible from poisonous. An unequivocal identification of a given mushroom species has to be based on species-specific characteristics as outlined for the depicted mushrooms.

Container

Cotton bags or weave baskets out of organic material (e.g. bamboo) which allow air circulation should be used for collecting mushrooms. Plastic bags or buckets should be banned since they prevent air circulation thereby accelerating the decomposition of the mushrooms. Stacking layers of mushrooms should be avoided since mushrooms are very delicate and can spoil quickly. The same principle should also be applied for packaging the mushrooms for transport from the collection centres to the market.

Drying techniques

Mushrooms should be cleaned and cut in slices of 3–4 mm of thickness before drying in the sun. The drying should be as rapid as possible in view of keeping most of the highly volatile flavour. Only impeccable mushrooms should be used for preservation. Fully dried mushrooms break very easily. Dried mushrooms should be preserved in a covered container to prevent them from absorbing air moisture that will accelerate spoiling of the mushrooms by microorganisms. Drying does not kill the microorganism in mushrooms, but it prevents their growth forcing them into a dormant phase. Pre-boiling kills the microorganisms but with this method mushrooms become very hard requiring a long soaking and cooking time. In addition, valuable minerals are partially lost in the disposed water.

The description of the species-specific characteristics and the brief glossary are similar to the mushroom guides for Tanzania and Zambia from Härkönen et al. (2003, 2015). Vernacular names are given in brackets.

Glossary

Cap:	the portion of a fruit body composed of both vegetative and reproductive hyphae.
Decurrent:	gills broadly attached and extend down the stipe of the mushroom.
Flesh:	sterile tissue.
Fruit body:	the overall structure of fungal tissue produced for reproduction.
Gill:	a plate-like structure on the underside of the cap having spores. Free: Not meeting the stipe, forming a circular gap around stipe.
Hypha(e):	filament made of a row of fungal cells.
Lamellula(e):	short gill which does not extend all the way from the cap margin to the stipe.
Mycelium:	the vegetative stage of the fungi, being composed of hyphae.
Mycorrhiza(e):	are fungi that associate with plant roots and form a symbiotic relationship; ectomycorrhiza(e): mycelia only on root surface of trees. Adj.: mycorrhizal.
Pseudorrhiza:	a root-like underground extension of the stipe.
Ring:	(annulus) remnant of partial veil on stipe.
Saprotroph:	obtain their nutrition from non-living organic materials. Adj.: saprotrophic.
Spore:	a reproductive propagule. Spore print: accumulation of spores as they are ejected from the cap and collected on a paper.
Stipe:	the stalk of a mushroom.
Symbiosis:	two unlike organisms that are living together with mutual benefit. Adj.: symbiotic.
Veil:	a membrane covering the gills of a developing fruit body.
Volva:	a cap-like remnant of universal veil around the base of a stipe.

Edibility

(The edibility of the mushrooms does not bind the authors.)

- * = edible species
- ** = good edible species
- *** = edible, delicious

Amanita loosei

[Ulelema]



Cap:	10–25 cm in diam. young fruit bodies hemispherical, expanding to convex or flat, surface viscid, smooth, yellowish or olivaceous brown at centre, fading to ivory towards the margin, old specimens nearly white.
Stipe:	8–18 x 2–3 cm, stout, white, fibrillose, equal and having a large, saccate, greyish-white volva; ring superior, broad, large, thin and white, upper side finely pleated.
Gills:	free, crowded, and thin, up to 20 mm broad, margin smooth or sometimes crenulate.
Flesh:	white, firm to soft in cap, up to 12 mm thick; fibrous and rather brittle in stipe, usually hollow.
Smell:	sweetish.
Taste:	sweetish, mild.
Particularities:	the fungus emerges like a white egg, before splitting at the apex to reveal the cap. Short shelf life. Ectomycorrhizal fungus.
Possibilities of confusion:	With other whitish <i>Amanita</i> species of uncertain edibility. Can be confused with the highly poisonous Death cap (<i>A. phalloides</i>), which, however, it is only growing in exotic tree plantations and never in Miombo woodlands.
Habitat:	Miombo woodlands.

Amanita tanzanica

[Umgongolo]



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Cap:	5–11 cm in diam. at first convex, becoming flat, surface bright to dark orange, becoming more ochraceous with age, silky, smooth, sticky in moist weather, margin striate.
Stipe:	8–13 x 0.5–2 cm, equal but its extreme base attenuate, surface white; above ring finely striate, below it somewhat floccose; ring superior, hanging, white, thin and very finely pleated.
Gills:	free, white, fairly crowded and thin, up to 9 mm wide, margin smooth.
Flesh:	in cap fairly firm, white but somewhat yellowish under pellicle; in stipe white, brittle-fibrous, later hollow.
Smell:	weak, sometimes slightly earth-like.
Taste:	mild, pleasant.
Particularities:	the fungus emerges like a white egg, before splitting at the apex to reveal the cap; short shelf life. Ectomycorrhizal fungus.
Possibilities of confusion:	Can be confused with <i>Amanita muscaria</i> which, however, usually has white flecks on its red cap and most important only grows in exotic tree plantations and never in Miombo woodlands.
Habitat:	Miombo woodlands.

Cantharellus addaiensis

[Kakungulumee,
Wange nyekundu]



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Cap:	1–2.5 cm in diam. very thin, funnel-shaped with expanded margin, smooth, intensively red.
Stipe:	1–3 x 0.2–0.5 cm, cylindrical or tapering downwards, smooth, same but lighter colour as cap.
Gill-folds:	decurrent, close, thin, forked but not interveined, same but lighter colour as cap.
Flesh:	in cap very thin, reddish, in stipe concolorous and fibrous.
Smell:	faint fruity.
Taste:	mild.
Particularities:	ectomycorrhizal fungus.
Habitat:	gregarious in Miombo woodlands.

Cantharellus afrocibarius

[Wange njano]



Cap:	2–6 cm in diam. thick and robust, irregular, several caps joined together and the whole entity up to 12-15 cm in diam; surface smooth, clumpy, yellow but some specimens with a white mealy bloom; edge sharp, strongly lobed and undulating.
Stipe:	pale yellow, thick, lower part buried in the soil, apically divided to short stipes.
Gill-folds:	decurrent, yellow, fairly thin and low, rather crowded, forked and interveined.
Flesh:	thick, rather soft, whitish but yellow under the surface, in stipe more tough and hollow.
Smell:	weak.
Taste:	mild.
Particularities:	ectomycorrhizal fungus.
Habitat:	gregarious in Miombo woodlands.

Cantharellus rufopunctatus

[Ungukwe]



Cap:	3–10 cm in diam. first convex, then with depressed centre and inrolled margin, pale orange to ochraceous yellow, covered with tiny scales which are pale greyish brown or concolorous with the surface.
Stipe:	5-6 x 0.5–2 cm, solid, cylindrical or tapering downwards, same colour and ornamentation with tiny scales as the cap.
Gill-folds:	decurrent, relatively close, with a few lamellulae and some forkings and interveined, orange to yolk yellow, brighter than the cap surface.
Flesh:	firm, white.
Smell:	fruity, pleasant.
Taste:	mild with slightly bitter aftertaste, excellent taste resembles the flavour of <i>Cantharellus cibarius</i> , common in Europe.
Particularities:	ectomycorrhizal fungus.
Habitat:	Miombo woodlands.

Cantharellus symoensii

[Kakungulumee /
Wange nyekundu]



Cap:	2–6 cm in diam. convex with inrolled margin when young, later funnel-shaped and slightly wavy at margin; surface bright red, with tints varying from blood red to orange or purple.
Stipe:	1.5–4 x 0.5–1.5 cm, brittle, cylindrical or tapering downwards, surface smooth, concolorous or slightly paler than gills.
Gill-folds:	decurrent, fairly thick and distant, bright yolk yellow, forked, interveined and having sometimes a few lamellulae.
Flesh:	white to pale yellow, rather tough, similar in cap and stipe.
Smell:	fruity, pleasant.
Taste:	mild.
Particularities:	ectomycorrhizal fungus.
Habitat:	Miombo woodlands.

Lactarius kabansus

[Umpalala]



Cap:	2–8 cm in diam. at first convex with a central depression, then uplifted, slightly umbilicate, margin incurved, surface blackish brown, smooth, matt.
Stipe:	2–4 x 0.5–1.5 cm, brittle, evenly thick or slightly expanded downwards, concolorous with the cap surface, dry, smooth; apex longitudinally wrinkled.
Gills:	decurrent, crowded, fairly thin, pale buff yellow, margin smooth, several lamellulae present.
Flesh:	thin, first white, but changing into pinkish on exposure to air, tube-shaped in stipe; latex watery, milky white, getting scanty in old specimens.
Smell:	weak, fruity, pleasant.
Taste:	mild.
Particularities:	ectomycorrhizal fungus; can be eaten raw.
Habitat:	Miombo woodlands, especially on sandy soils.

Lactarius xerampelinus

[Ukikova,
Usikobha]



★★

Cap:	5–12 cm in diam. at first convex with central depression, then depressed or even funnel-shaped, margin in old specimens irregular, wavy; surface dark red brown, matt, in old age cracking at margin with thin stripes in circular arrangement.
Stipe:	2–6 x 1–3 cm, cylindrical to tapering downwards, pale ochraceous, matt.
Gills:	Shortly decurrent, sub-distant, fairly thick, up to 5 mm broad, with several lamellulae of variable lengths, pale cream coloured.
Flesh:	white, solid, turning ochraceous after bruising; latex abundant, milky white.
Smell:	weak, fresh, fruity.
Taste:	mild, pleasant.
Particularities:	ectomycorrhizal fungus.
Habitat:	Miombo woodlands.

Russula hiemisilvae

[Iliminya ng'ombe]



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Cap:	5–9 cm in diam. convex to flat, margin broadly striate, at first inrolled; surface greyish violet, distinctly peeling.
Stipe:	5.5–1 cm, brittle, equal, tapering at base, white or with a faint violet tone, smooth, becoming hollow with age.
Gills:	adnexed, cream, crowded, up to 4 mm broad, fairly thin; edge smooth, concolorous.
Flesh:	white.
Smell:	odourless.
Taste:	mild.
Particularities:	ectomycorrhizal fungus.
Habitat:	Miombo woodlands.

Termitomyces *letestui*

[Uhima,
Ufumapatali]



Cap:	10 - 35 cm in diam. at first hemispherical, then convex to flattened, always having a blunt nipple-shaped knob at the centre; surface cream coloured to light brown at margin, becoming brown to sepia towards the centre; surface matt fibrillose or tomentose, becoming finely scaled or cracked in a mosaic-like manner at the centre.
Stipe:	5–15 x 1–3.5 cm, cylindrical, solid, white or whitish, tapering gradually into a long pseudorrhiza up to 1 m long; ring superior and pendant, thick, white, striate above.
Gills:	free, crowded, thin, up to 12 mm broad, with slightly crenulate edge, whitish to cream with pinkish tint.
Flesh:	white; up to 25 mm thick, in cap firm to soft, in stipe fibrous up to the knob.
Smell:	pleasant, resembling fresh groundnuts.
Taste:	mild, pleasant.
Particularities:	symbiotic life together with termites; termites cultivate the mycelium in their nests and fruit bodies can be seen arising on or near the mounds at the very beginning of the rainy season.
Habitat:	cultivated fields and edges of woodlands, near underground termite nests.

Termitomyces microcarpus

[Kansolele]



- Cap:** 1 - 3 cm in diam.
at first campanulate, then convex to flattened with a small, obtuse, knot-shaped apex; white, cream or pale grey coloured, surface striate and splitting at the edge.
- Stipe:** 2–6 x 0.1–0.2 cm, equal, no ring, often curved, white; lacking a pseudorrhiza but with a tuberos swelling at the base tightly attached to sand.
- Gills:** free, moderately crowded, at first white, turning pinkish.
- Flesh:** white, thin, soft in cap, fibrous in stipe.
- Smell:** pleasant, resembling fresh groundnuts.
- Taste:** mild, pleasant.
- Particularities:** symbiotic life together with termites; termites cultivate the mycelium in their nests and fruit bodies can be seen arising on or near the mounds at the very beginning of the rainy season.
- Habitat:** cultivated fields and edges of woodlands, near underground termite nests.

Clavulina albiramea

[Umwenda,
Ukalezuu]



★★

Fruit body:

2-4 cm tall.

soft, fragile and flexible, growing gregariously on soil, broom or bush-like; basal part close to substrate erect, white, single or a few arising from common base, which is often slightly swollen.

Branches:

1-3 mm thick, upright and fairly tightly packed, cylindrical or a little flat, cream coloured, with smooth surface; branch apices sharp, brownish, often divided into 3-5 terminal tips which may be serrate.

Smell:

not observed.

Taste:

slightly bitter.

Particularities:

saprotrophic nutrition.

Habitat:

shady Miombo woodlands on sandy soils.

Mushroom hunting



Nutritious wild mushrooms are an important part of the diet for the local people living near woodlands. Mushrooms grow only during the rainy season which coincides with the time when food shortages occur. It is the women who are the most knowledgeable about the different species and their uses.

Market



The good taste and nutritious value of wild mushrooms is also appreciated by people living in the urban centers of Western Tanzania. They are available on different markets (*Cantharellus symoensii*, *Lactarius kabansus*, and *Cantharellus rufopunctatus* sold at Tabora market).

Extensive Miombo woodlands

More than 100 macro fungi have been recorded in the Katavi-Ugalla and Rungwa River ecological corridors. This high diversity is caused by the symbiosis between the roots of Miombo tree species (most of them are ectomycorrhizal) and mushroom mycelia and is also the reason why these delicious mushroom species grow exclusively in the wild and cannot be cultivated.

Produced in July 2021 in cooperation with:



Uyoga mwitu unaoliwa na binadamu magharibi mwa Tanzania

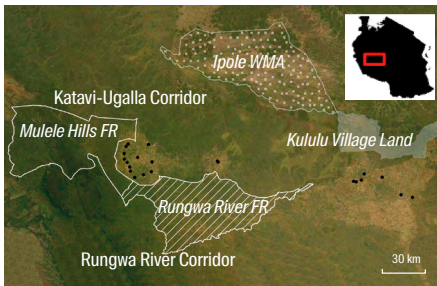


Kwa miaka mingi sasa, ADAP, kupitia miradi yake, imekua ikisaidia uhifadhi shirikishi wa misitu ya Miombo inayounda maeneo ya shoroba za Katavi-Ugalla na Mto Rungwa katika Wilaya za Mlele na Sikonge magharibi mwa Tanzania. Miradi hiyo inalenga kusaidia jamii katika kuanzisha usimamizi wa pamoja kati ya jamii husika kwa kushirikiana na serikari kupitia Wakala wa Huduma

za Misitu. Usimamizi huu unaweza kuwa kwenye muundo wa Usimamizi wa Pamoja (JFM) kati ya wakala wa huduma za misitu (TFS) na vijiji vinavyozunguka misitu ya serikari au muundo mwingine kama vile WMA yani maeno yaliyo kwenye hifadhi za jumuiya za wanyama pori. Ili kuboresha kipato na maisha ya watu, miradi inasaidia maendeleo endelevu ya shughuli za kujipatia kipato kutokana na mazao ya misitu kama vile ufugaji wa nyuki na ukusanyaji wa uyoga mwitu, na hivyo kuhamasisha jamii husika kuhusu namna bora ya kutunza mifumo ya kiikolojia ya misitu ya Miombo.

Shoroba za Katavi-Ugalla na Mto Rungwa kwa sehemu kubwa zimeundwa na misitu ya Miombo. Wakati wa masika, viwango vikubwa vya uyoga mwitu huota katika maeneo haya. Toka enzi na enzi, jamii zinazozunguka misitu hii zimekua zikifurahia uyoga mwitu wenye ladha na lishe bora ambao ni sehemu muhimu ya chakula chao cha kila siku hususani wakati wa masika na mara chache wakati wa kiangazi. Zaidi ya aina 50 za uyoga mwitu ni chakula cha binadamu, na kuna hitaji mkubwa wa uyoga kama vile Ungukwe, Wange, Ukikova, Umpalala na uhima kwenye masoko. Kwa kuzingatia hilo, ADAP inasaidia kuendeleza mnyororo wa thamani ili kutangaza bidhaa hii kwenye masoko na kuongeza ununuzi wa uyoga mwitu magharibi mwa Tanzania.

Kwa maelezo zaidi tembelea tovuti yetu ya ADAP: <https://www.adap.ch/en/>



Maelezo

Uvunaji endelevu

Kukata miti hovyoy kwenye misitu kwa matumizi mbalimbali ya binadamu ni tishio kubwa kwa uyoga mwitu. Mbinu za jadi za kufyeka na kuchoma (kilimo cha kuhamahama) katika maeneo ya Miombo haziathiri maotea ya uyoga mwitu kwenye mizizi ya miti (*mycorrhizal*) kwa vile miti mingi hubaki hai baada ya kukatwa na kuchipua kwa nguvu baada ya kuangushwa. Wakati miti inabaki hai, uyoga unao chipua kwenye miti (*mycorrhizal*) pia hukua. Hata hivyo, maotea ya uyoga mwitu kwenye mizizi ya miti (*mycorrhizal*) hufa kufuatia kufa kwa miti kwa sababu huishi maisha ya kutegemeana. Moto haudhuru uyoga moja kwa moja kwa vile hutokea wakati wa kiangazi wakati ambao uyoga mwitu hauchipui isipokuwa ule unao-otea juu ya kuni, ambapo uchomaji unaweza kuathiri mycelia iliyohifadhiwa kwenye udongo. Hata hivyo, uchomaji moto mwishoni mwa msimu wa kiangazi unaweza kuua miti pamoja na maotea yake ya uyoga (*mycorrhizal*). Uharibifu kwenye vichuguu vya mchwa unapaswa kupunguzwa ili kulinda ukuaji wa uyoga mwitu unao-otea kwenye vichuguu (*Termitomyces*). Hatari ya kuharibika kwa maliasili kupitia uvunaji kupita kiasi ni ndogo ikiwa baadhi ya miongozo (tazama hapa chini) itazingatiwa.

Uvunaji wa Uyoga mwitu

Kuvuna uyoga kwa uangalifu ni muhimu sana ili kufikia viwango vya ubora wa juu na usafi unao kubarika na kukidhi viwango vya masoko. Wakusanya uyoga wanapaswa kuhakikisha kua uyoga safi tu na wenye ubora unaohitajika ndio pekee unapaswa kukusanywa. Uyoga unapaswa kukatwa kwenye shina karibu na ardhi (badala ya kung'oa), na udongo uliobaki kwenye kitako cha shina unapaswa kuondolewa tayari kwa kuweka kwenye chombo na hivyo kuepuka kuosha baadaye. Mbinu hii haiathiri mycelium. Kila uyoga unapaswa kupasuriwa katikati ili kuona kama kuna funza ndani. Uyoga mdogo sana au uliokomaa sana haupaswi kuchumwa, na uyoga usiovuia haupaswi kuharibiwa kwa makusudi. Uyoga katika mashamba ya miti ya kupandwa haupaswi kuchumwa kwa sababu baadhi unaweza kuwa na sumu.

Kubainisha Uyoga

Uyoga unapaswa kubainishwa kwa uangalifu ili kuzuia kuvuna uyoga wenye sumu. Harufu ya kupendeza au kitendo cha wanyama kula aina fulani ya uyoga haiwezi kutumika kama kigezo cha kutofautisha chakula na sumu. Ubainisho usio na shaka wa aina fulani ya uyoga unapaswa kuzingatia sifa maalum za aina au jamii kama ilivyoainishwa kwa uyoga ulioonyeshwa.

Chombo

Mifuko ya pamba au vikapu vya kusuka kutoka kwenye mimea (kama mianzi) ambayo inaruhusu mzunguko wa hewa itumike kukusanya uyoga mwitu. Mifuko ya plastiki au ndoo zinapaswa kuepukwa kwa vile zinazuia mzunguko wa hewa na hivyo kuongeza kasi ya kuoza kwa uyoga. Kuweka pamoja tabaka za uyoga kunapaswa kuepukwa kwa kuwa uyoga ni dhaifu sana na unaweza kuharibika haraka. Kanuni hiyo hiyo inapaswa pia kutumika katika kufungasha uyoga kwa ajili ya kusafirishwa kutoka vituo vya kukusanya hadi sokoni.

Mbinu za kukausha

Uyoga mwitu unapaswa kusafishwa na kukatwa vipande vipande vya unene wa mm 3–4 kabla ya kukausha kwenye jua. Ukaushaji unapaswa kuwa wa haraka iwezekanavyo ili kutunza ladha yake. Uyoga unaofaa peke yake ndio unapaswa kukaushwa tayari kwa kuhifadhiwa. Uyoga mkavu kupindukia huvunjika kwa urahisi sana. Uyoga mkavu unapaswa kuhifadhiwa kwenye chombo kilichofunikwa ili kuzuia kunyonya unyevu wa hewa ambao unaweza kuharakisha kuoza. Kukausha hakuuwi viumbe waozeshaji katika uyoga, lakini inazuia ukuaji wao. Kuchemsha kunauwa vijidudu lakini kwa njia hii uyoga huwa mgumu sana unaohitaji kuloweka na kupikwa kwa muda mrefu zaidi. Aidha, madini yenye thamani hupotea kwa kiwango fulani katika maji yanayomwagwa baada ya kuchemsha.

Maelezo ya sifa mahususi za aina au jamii na faharasa fupi ni sawa na yale ya miongozo ya uyoga kwa Tanzania na Zambia iliyo tolewa na Härkönen et al. (2003, 2015). Majina ya kienyeji yako kwenye mabano.

Faharasa

Kofia:	sehemu ya uyoga inayojumuisha mmea na hyphae ya uzazi.
Nyama:	sehemu ya uyoga inayoundwa na tishu zisizo husika na uzazi.
Matamvua:	muundo unaofanana na sahani kwenye sehemu ya chini ya kofia yenye mbegu.
Hypha(e):	ni sehemu inayounda mycelium na inatengenezwa kwa safu ya seli za uyoga.
Mycelium:	ni sehemu ya uyoga, inayojumuisha hyphae.
Lamellula(e):	ni matamvua mafupi ambayo hayaenei kote kutoka kwenye ukingo wa kofia.
Mycorrhiza(e):	ni maotea ya uyoga ambayo huungana na mizizi ya mimea na kuunda uhusiano ambao kila kiumbe kinafaidika.
Pseudorrhiza:	sehemu ya uyoga inayo zama chini ya ardhi kama mzizi wa shina.
Pete:	masalio ya pazia au sehemu ya uyoga inayofunika shina yenye umbo la pete.
Spora:	sehemu ya uzazi ya uyoga. Kwa kwaida mkusanyiko wa spora hutolewa kutoka kwenye kofia tayari kwa uzazi.
Shina:	huundwa na bua la uyoga.
Veil:	utando unaofunika gamba la mwili wa uyoga unaochipua.
Volva:	sehemu ya uyoga yenye umbo kama kofia karibu na kitako cha uyoga.

Uliwaji

(Uliwaji wa uyoga haufungamanishwi na waandishi.)

* = uyoga unaoliwa na binadamu

** = uyoga mzuri unaoliwa na binadamu

*** = unaliwa na nimitamu sana

Amanita loosei

[Ulelema]



Kofia:	kipenyo sm 10–25. uyoga mchanga unakua na umbo la nusu duara, na hutanuka kutengeneza nundu, au bapa, uso ulogubikwa, laini, rangi ya manjano au kahawia katikati na hufifia kua krimu yenye weupe kuelekea kenye kingo, sampuli zilizo zeeka huelekea rangi nyeupe.
Shina:	sm 8–18 x 2–3, nene, jeupe, minofu yenye nyuzinyuzi, ina usawa na umbo kama kifuniko kikubwa, rangi nyeupe yenye kijivu, ina pete kwa juu, imetanuka, nyeupe na nyembamba, upande wa juu unaujazo kiasi.
Matamvua:	ni membamba na yamebanana, upana hadi mm 20, kingo laini wakati mwingine ncha zenye mabonde kiasi.
Nyama:	nyeupe, imara na laini kwenye kofia, unene hadi mm 12; minofu yenye nyuzinyuzi na inanepa kwenye shina, daima ina utupu au shimo katikati.
Harufu:	harufu nzuri.
Ladha:	ni tamu kiasi.
Sifa ya ziada:	uyoga huu huchipua kama yai jeupe, kabla ya kugawanyika kwenye ncha kufanya kofia, unaoza upesi. hupatikana kama maotea kwenye mizizi ya miti (<i>ectomycorrhizal</i>).
Uwezekano wa kuchanganywa	unaweza kuchanganya na aina nyingine zenye rangi nyeupe kwenye kundi la <i>Amanita</i> ambazo huenda lisiwe chakula cha binadamu. Pia inaweza kuchanganywa na uyoga wenye sumu kali unaojulikana kisayansi, <i>A. phalloides</i> . Ingawaje uyoga huu wenye sumu humea kwenye misitu ya kupandwa na sio kwenye misitu ya Miombo.
Uoto:	misitu ya Miombo.

Amanita tanzanica

[Umgongolo]



*

Kofia:	kipenyo sm 5–11, kwenye sehemu ya mbele ya uso, huwa bapa kadri unavo kua, uso ng'aavu, rangi ya machungwa-giza, rangi hubadirika kutoka manjano hadi kahawia kadri navyokua, uso uliogubikwa hususani kwenye maeneo yenye hali ya unyevunyevu, kingo zinamwonekano wenye chane.
Shina:	sm 8–13 x 0.5–2, linausawa lakini sehemu za katiko ni nyembamba kiasi, uso mweupe; minofu yenye nyuzi nyuzi kiasi juu ya pete, kwa kawaida uyoga unamanyoya kwa chini na pete nyeupe inayo ning'inia kwa juu, limefunikwa na ngozi nyembamba.
Matamvua:	meupe, membamba na yamebanana kiasi, upana hadi mm 9, kingo laini.
Nyama:	ni imara kiasi kwenye kofia, rangi nyeupe na manjano kiasi baada ya gamba la mwanzo; rangi nyeupe kwenye shina, inanepa na utupu au shimo katikati sio kali wakati mwingine harufu kama ya ardhi.
Harufu:	ladhha nzuri na utamu wa kati.
Sifa ya ziada:	uyoga huu huchipua kama yai jeupe, kabla ya kugawanyika kwenye ncha kufanya kofia, unaoza upesi. hupatikana kama maotea kwenye mizizi ya miti (ectomycorrhizal).
Uwezekano wa kuchanganywa	inaweza kuchanganywa na Amanita muscaria, ambayo kwa kawaida, ina doa jeupe kwenye kofia yake nyekundu, na hustawi maeneo yenye misitu ya kupandwa na sio Misitu ya Miombo.
Uoto:	misitu ya Miombo.

Cantharellus addaiensis

[Kakungulumee,
Wange nyekundu]



★

- Kofia:** kipenyo sm 1–2.5. nyembamba na umbo kama keni ya mafuta, ina kingo zillizo tanuka, laini, rangi nyekundu.
- Shina:** sm 1–3 x 0.2–0.5, mche duara, iliyochongoka kuelekea chini, laini, rangi ya mng'aro kama kwenye kofia.
- Matamvua:** membamba yamebanana na yanaenea kuelekea ncha kutoka sehemu yanapo ungana na shina, hayapishani lakini yanaunda vipago, yana mng'aro kama ule wa kofia.
- Nyama:** nyembamba sana eneo la kofia, nyekundu, minofu yenye nyuzinyuzi kwenye shina na inaungana na kofia.
- Harufu:** harufu yenye kuchoma na kukufanya uhsi kutopumua vizuri.
- Ladha:** ladha ya kati.
- Sifa ya ziada:** hupatikana kama maotea kwenye mizizi ya miti (*ectomycorrhizal*).
- Uoto:** uyoga unaota kwa kurundikana kwenye misitu ya Miombo.

Cantharellus afrocibarius

[Wange njano]



- Kofia:** kipenyo sm 2–6. pana na imara, haina umbo maalum, ni sawa na kofia kadhaa zilizo unganishwa pamoja kutengeneza kofia moja yenye kipenyo cha sm 12–15, uso laini, huota kwa kurundikana, rangi ya manjano ingawa baadhi ya sampuli huonekana kama maua meupe, ncha zilizochongoka.
- Shina:** manjano iliopauka, nene, sehemu ya chini inazama ardhini, inagawanyika kwenye ncha kutengeneza vishina vifupi.
- Matamvua:** membamba kiasi, rangi ya manjano, yamebanana na yanaenea kuelekea ncha kutoka sehemu yanapo ungana na shina, yanabanana, yanapishana au kutengeneza kipago.
- Nyama:** nene, laini, nyeupe na rangi ya manjano chini ya uso wa uyoga, ni imara na ina-utupu au shimo katikati ya shina.
- Harufu:** sio kali.
- Ladha:** utamu wa wastani.
- Sifa ya ziada:** hupatikana kama maotea kwenye mizizi ya miti (*ectomycorrhizal*).
- Uoto:** uyoga unaota kwa kurundikana kwenye misitu ya Miombo.

Cantharellus rufopunctatus

[Ungukwe]



- Kofia:** kipenyo cha sm 3–10 na unyongofu wa kati kwenye uso wa mbele, kingo zilizio kunjamana kwa ndani, rangi inabadirika kutoka machungwa mpauko hadi kahawia, inagubikwa na magamba yenye rangi ya kahawia iliyochangamana na kijivu mpauko.
- Shina:** sm 5–6 x 0.5–2, yabisi, mcheduara uliochongoka kuelekea chini, una magamba madogomadogo na rangi yakufanana na ile ya kofia.
- Matamvua:** yamebanana na yanaenea kuelekea ncha kutoka sehemu yanapo ungana na shina, yana lamellulae kiasi, yanapishana na kuunda vipago, rangi inabadirika kutoka ya chungwa hadi manjano ilio kolea, matamvua yanang'ara kuliko uso wa kofia.
- Nyama:** Imara na nyeupe.
- Harufu:** harufu nzuri kama ya tunda.
- Ladha:** utamu wa wastani, na uchungu kisi baada ya kuonja, ladha pia ufanana na ile ya *Cantharellus cibarius*, inayopatikana kwa wingi katika bara la Ulaya.
- Sifa ya ziada:** hupatikana kama maotea kwenye mizizi ya miti (*ectomycorrhizal*).
- Uoto:** misitu ya Miombo.

Cantharellus symoensii

[Kakungulumee /
Wange nyekundu]



Kofia:

kipenyo cha sm 2–6, uso wa juu una kingo zilizo kunjamana kwa ndani kwa uyoga mchanga, na baadae hufanana na umbo la keni ya mafuta, na mawimbi kiasi kwenye kingo, rangi nyekundu ya kung'ara kwenye uso yenye kuchangamana na mabaka yanayo badirika toka rangi nyekundu hadi machungwa au zambarau.

Shina:

sm 1.5–4 x 0.5–1.5, linanepa, umbo la mcheduara wakati mwingine unaochongoka, uso laini, rangi inapauka zaidi kuliko matamvua, linaungana na kofia.

Matamvua:

hayabanani, ni manene kiasi na yanaenea kuelekea ncha kutoka sehemu yanapo ungana na shina, rangi ya manjano iliyoiva, yanapishana na kuunda vipago, na wakati mwingine yana lamellulae kiasi.

rangi inabadirika kutoka nyeupe hadi manjano mpauko, imara, sehemu za kofia na shina zinafanana.

Nyama:

harufu nzuri kama ya tunda.

Ladha:

utamu wa wastani.

Sifa ya ziada:

hupatikana kama maotea kwenye mizizi ya miti (*ectomycorrhizal*).

Uoto:

misitu ya Miombo.

Lactarius kabansus

[Umpalala]



Kofia:	kipenyo cha sm 2–8. kofia inapatika kwa juu kidogo kutoka ardhini, inaunyongofu wa kati kwenye uso wa mbele, kingo zenye kupindia ndani, laini yenye uso wa rangi ya hudhurungi giza.
Shina:	sm 2–4 x 0.5–1.5, shina gumu kiasi lenye kunepa, lina ujazo unaongezeka kiasi kuelekea chini, linaungana na sehemu ya chini ya kofia kavu, laini; na minofu yenye kusinyaa kelekea incha ya shina.
Matamvua:	yamebanana na yanaenea kuelekea kingo kutoka sehemu yanapo ungana na shina, membamba kiasi, rangi ya manjano iliypauka, kingo laini, na ina lamellulae kadhaa.
Nyama:	nyembamba, nyeupe, lakini hubadirika na kuwa waridi inapoelekea hewa, ina umbo la mirija kwenye bua; hutoa majimaji kama maziwa, na yanayopungua kadri sampuli zinavoendelea kukauka.
Harufu:	harufu siyo kali lakini ni nzuri yenye kupendeza.
Ladha:	ina utamu wa kawaida.
Sifa ya ziada:	maotea ya uyoga kwenye mizizi ya miti (<i>ectomycorrhizal</i>); yanaweza kuliwa yakiwa mabichi.
Uoto:	misitu ya Miombo, hususani kwenye ardhi yenye kichanga.

Lactarius xerampelinus

[Ukikova,
Usikobha]



★★

Kofia:	Kipenyo cha sm 5–12, na unyongofu wa kati kwenye uso wa mbele, kisha hupungua kidogo kama keni ya mafuta, umbo lisilo maalumu kwenye kingo katika sampuli za zamani, ni kama nyavu; uso wa kahawia nyekundu iliyokolea, hupasuka pembeni na kuwa na michirizi yenye mpangilio wa umbo la mviringo.
Shina:	Mche duara, sm 2–6 x 1–3, na iliochongoka kuelekea chini, rangi ya manjano isiyokolea.
Matamvua:	mafupi kiasi kutoka sehemu yanapo ungana na shina, nene kiasi, hadi mm 5 kwa upana, na yenye lamellulae kadhaa zinazo tofautiana urefu, rangi ya krimu mpauko.
Nyama:	nyeupe, imara, rangi hugeuka kua ya manjano isiyokolea baada ya michu-buko; majimaji mengi, rangi ya maziwa.
Harufu:	harufu ya tunda bichi isiyo kari.
Ladha:	tamu kiasi.
Sifa ya ziada:	hupatikana kama maotea kwenye mizizi ya miti (<i>ectomycorrhizal</i>).
Uoto:	misitu ya Miombo.

Russula hiemisilvae

[Iliminya ng'ombe]



*

Kofia:	kipenyo sm 5–9, uso ulojikunja au bapa, kingo pana, uso wa rangi ya hudhurungi ya kijivu, inayochubuka.
Shina:	sm 5.5–1, gumu lenye kunepa, linausawa, limechongoka kwenye kitako, jeupe lenye urujuani ilio fifia, laini, linapata shimo katikati kadri umri unavo ongezeka.
Matamvua:	yamebanana na yamejishikiza kwenye shina, rangi ya krimu, upana hadi mm 4, membamba kiasi; ncha laini, yana rangi ya kufanana.
Nyama:	nyeupe
Harufu:	haina harufu.
Ladha:	tamu kiasi.
Sifa ya ziada:	hupatikana kama maotea kwenye mizizi ya miti (<i>ectomycorrhizal</i>).
Uoto:	misitu ya Miombo.

Termitomyces *letestui*

[Uhima,
Ufumapatali]



Kofia:	kipenyo cha sm 10–35, kwenye sehemu ya mbele, inabonyea au bapa kiasi, daima huwa butu na kifundo cha umbo la chuchu katikati; uso rangi ya Krimu au kahawia isiyokolea kwenye kingo, inakuwa kahawia hadi nyekundu-kahawia kuelekea katikati, uso wenye nyuzinyuzi au kufunikwa na nywele, kuwa na mizani laini.
Shina:	sm 5–15 x 1–3.5, mche duara, yabisi, jeupe, linachongoka kuelekea sehemu inayounda mzizi (pseudorrhiza) hadi kufikia urefu wa mita 1; ni pana, lina pete kwa juu inayoning'inia jeupe, lina manyoya kwa juu.
Matamvua:	yamebanana, membamba, upana hadi mm 12, ncha zenye mabonde kiasi, rangi nyeupe au krimu yenye mabaka ya-pink.
Nyama:	nyeupe; hadi upana wa mm 25, kwenye kofia ni imara na laini, kwenye shina inaweza kuundwa na nyuzi nyuzi au fundo.
Harufu:	harufu nzuri, inayofanana na ya karanga mbichi.
Ladha:	ni tamu kiasi.
Sifa ya ziada:	kuna maisha ya mwigiliano kati ya uyoga wa aina hii na mchwa wanao tambaa kwenye vichuguu; mchwa huchimbua mizizi ya uyoga kwenye vichuguu na wakati mwingine maotea ya uyoga yanaweza onekana yakichomoza jirani na vichuguu mwanzoni kabisa mwa msimu wa mvua. maeneo yaliyolimwa au incha za misitu, jirani na vichuguu hai.
Uoto:	

Termitomyces microcarpus

[Kansolele]



Kofia:	kipenyo sm 1–3, ina tumbo mwanzoni, ikifuatiwa na unyongofu au bapa, ndogo, butu, kama fundo lenye ncha iliyo chongoka, nyeupe; rangi ya kijivu-mpauko, uso wenye manyoya au kugawika kwenye ncha.
Shina:	sm 2–6 x 0.1–0.2, lina usawa, hakuna pete, mara nyingi hujikunja, nyeupe; isiyo na mizizi lakini hutengeneza umbo kama kiasi kwenye kitako kinacho jishikiza ardhini.
Matamvua:	yamebanana kiasi, mwanzoni meupe, na baadae hubadiriwa kua ya pinki.
Nyama:	nyeupe, nyembamba, laini kwenye kofia, ina-nyuzinyuzi kwenye shina.
Harufu:	harufu nzuri, inafanana na karanga mbichi.
Ladha:	tamu kiasi, ladha ya kati.
Sifa ya ziada:	kuna maisha ya mwigiliano kati ya uyoga wa aina hii na mchwa wanao tambaa kwenye vichuguu; mchwa huchimbua mizizi ya uyoga kwenye vichuguu.
Uoto:	maeneo yaliyolimwa au incha za misitu, jirani na vichuguu hai.

Clavulina albiramea

[Umwenda,
Ukalezuu]



★★

Kofia:

urefu wa sm 2–4, laini, huota kwa kurundikana ardhini, kama kichaka, eneo la kitako huiuka kutokea lilipojishikiza, nyeupe, maotea kadhaa toka kwenye shina moja ambalo kwa kawaida huvimba kiasi.

Matawi:

upana wa mm 1–3, kuelekea juu na yamebanana kiasi, mche mraba au bapa kiasi, rangi ya krimu, yenye uso laini, matawi yenye ncha zilizochongoka, rangi ya urujuani, mara nyingi hugawanyika katika sehemu tatu na wakati mwingine kuwa na umbo kama msumeno.

Harufu:

hakuna harufu.

Ladha:

chungu kiasi.

Sifa ya ziada:

hupata chakula chake kutoka kwenye maozo ardhini.

Uoto:

kwenye vivuli vya misitu ya Miombo, ardhi ya kichanga.

Ukusanyaji wa uyoga mwitu



Uyoga mwitu ni sehemu muhimu ya lishe kwa wenyeji wanaoishi kando ya misitu ya miombo. Uyoga mwitu hustawi wakati wa msimu wa mvua kipindi ambacho maeneo mengi yanakua na uhaba wa chakula. Kwa kwaida wanawake wana ujuzi zaidi kuhusu aina na matumizi mbalimbali ya uyoga mwitu.

Masoko



Uyoga mwingi unapendwa zaidi na watu wanaoishi katika maeneo ya mijini, magharibi mwa Tanzania kutokana na lishe na ladha yake nzuri. Unapatikana katika masoko tofauti kwa mfano aina ya Kakungulume au Wange nyekundu, Umpalala, na Ungukwe hupatikana katika soko la Tabora.

Uyoga mwitu kwenye misitu ya Miombo magharibi mwa Tanzania

Zaidi ya aina 100 za uyoga mwitu zilipatikana katika maeneo ya shoroba za Katavi-Ugalla na Mto Rungwa. Uwepo wa aina nyingi za uyoga mwitu unasababishwa na mwingiliano wa mizizi ya miti na ile ya uyoga (mycorrhizal), jambo hili pia husababisha uyoga wa aina hizi uote kwenye mapori na misitu peke yake na sio kuoteshwa kwa kilimo.

Imeandaliwa July 2021 kwa kushirikiana na:

