



acceptability among wary consumers. In some cases, isolating and extracting insect protein is desirable to increase the protein content of a food product. However, supplementing food products with insects in such a way requires extensive knowledge of the properties of the extracted proteins. These properties include, among others, amino acid profile, thermal stability, solubility, gelling, foaming and emulsifying capacity. Separating extracted protein groups based on their solubility in solvents produces water-soluble and water-insoluble fractions, which can be used for specific applications in both the food and feed industries. Alternative methods are 108

Edible insects: future prospects for food and feed security

enzymatic processes to obtain proteins of specific chain lengths. Alternative methods for protein separation are fluidized bed chromatography and ultrafiltra

tion. At present, the cost of protein extraction is prohibitive. More research is required to further develop the process and to render it profitable and applicable for industry use. Wageningen University is conducting a programme on the sustainable production of insect proteins for human consumption (in the period 2010–2013) to further explore the possibility of extracting proteins from insects to fortify human foods. Under the project, dubbed Supro2, edible insects are reared on organic side streams, after which their proteins are separated, purified and characterized in order to tailor them for specific food products. Extracted insect proteins could also be considered in feed products, although the economic feasibility would need to be established.

Examples of promising edible insect products for human consumption SOR-Mite

(protein-enriched sorghum porridge) The “developing solutions for developing countries” competition, organized by the Institute of Food Technologists, promotes the application of food science and technology and the development of new products and processes with the aim of improving the quality of life of people in developing countries. The first prize of the competition, awarded during the Annual Food Expo in Anaheim, United States, in June 2009, went to the SOR-Mite project, a sorghum mixture enriched with termites. The nutritionally weak grain, frequently consumed in many African countries, is low in proteins and fats and lacks several essential amino acids, such as lysine. For this reason, fortifying the grain with highly nutritious flying termites (*Macrotermes* species), easily gathered at the start of the



rainy season, makes sense. The fermented mixture can be consumed as porridge at breakfast, lunch or dinner, depending on local preferences. Both raw materials are easily obtained locally (Institute of Food Technologists, 2011). Termite crackers and muffins in Kenya In the Lake Victoria region in East Africa, edible insects such as termites (Isoptera: Termitidae) and lake flies (Diptera, Chaoboridae, Chironomidae and Ephemeroptera) are abundant and provide important nutrition for both humans and livestock. Although their use is limited by their seasonal availability and high perishability, processing them with conventional cooking methods could extend their shelf life considerably and contribute to promoting entomophagy throughout the region. In a recent study carried out in the cross-border ecosystem, locally available insects were roasted, sundried, ground and mixed with other ingredients and processed into food products. Termite-based and lakefly-based crackers, muffins, meatloaf and sausages were found to have especially high potential for commercialization (Ayieko, Oriamo and Nyambuga, 2010). Buqadilla Buqadilla

is an innovative snack under development for the Dutch market. It is a spicy Mexican leguminoseous food product made of chickpeas and lesser mealworms (40 percent). It was well received in several restaurants and canteens, where the product was tested, for its taste and smooth structure.

The sustainable, healthy and exotic snack is an example of an accessible and culturally acceptable way for Western consumers to experience and appreciate edible insects as food (van Huis, van Gorp and Dicke, 2012). Crikizz Crikizz is another example of European products made with insects. Developed by Ynsect and French students, Crikizz are spicy, popped snacks based on mealworms and cassava. The mealworm composition varies from 10 to 20 percent in accordance with the product line ("classic" to "extreme"). According to focus groups, the taste is very pleasing and differs from other snacks, while the texture is as crunchy as other snacks. The prototype was made without preservatives or taste enhancers, and the high fat composition of mealworms removes the need for added fat. Crikizz won a prize in the national French contest Eco-trophéa 2012 for culinary

innovation. Processed mealworms for pet food, animal feed and human food HaoCheng Mealworm Inc. in China specializes in the farming and sale of mealworms, superworms and maggots. The farm, established in 2002, consists of 15 rearing facilities and produces 50 tonnes of living mealworms and superworms per month. HaoCheng exports 200 tonnes of dried mealworms to Australia, Europe, North America and Southeast Asia each year. The mealworms, superworms and maggots are sold live, dried, canned and in powder form. They have elevated protein content and can be used as additives for food as well as feed:

Food: Mealworm powder can be worked into bread, flour, instant noodles, pastries, biscuits, candy and condiments. The insects can also be consumed whole as meals and side dishes, or processed into medicinal supplements to fortify the human body's immune system.

Feed: Entire insects can be used as direct feeds and feed supplements for pets such as birds, dogs, cats, frogs, turtles, shrimps, scorpions, chilopods, ants, goldfish and wild animals (Hao Cheng Mealworm Inc., 2012).

Extracted fat



The removal of fat (and ash) in the production of insect products, such as insect meal, reduces the "stickiness" of the protein concentrate and prevents fatty acids (mostly unsaturated) from exposure to undesirable oxidation processes. The extracted fat can then be used for other purposes. Traditionally, the fat (e.g. oil) of some insect species is used extensively for frying meat and other food products.

Termites: processing techniques in East and West Africa

1. Winged termites are often fried in their own fat. Fried termites contain 32–38 percent protein (Tihon, 1946; Santos Oliveira et al., 1976; Nkouka, 1987).
2. In Uganda, termites are steamed in banana leaves.
3. Termites are boiled or roasted after swarming and then sun-dried or smoke-dried, or both, depending on the weather (Silow, 1983).
4. Sometimes termites are crushed with a pestle and mortar and eaten with honey (Ogutu, 1986). The fat residues of fried termites can be used to cook meat (Bequaert, 1921), a time-honoured practice among Azande and pygmies in the Democratic Republic of the Congo (Bergier, 1941).

5. Pygmies put the oil derived from frying or pressing dried termites into tubes and use it to treat their body and hair (Costermans, 1955).
6. In many East African towns and villages, sun-dried termites can be bought at local markets when in season (Osmaston, 1951; Owen, 1973).
7. In Botswana, San women harvest winged termites (*Hodotermes mossambicus*), roasting them in hot ash and sand (Nonaka, 1996).

Industrial-scale processing

There is a wealth of traditional and cultural knowledge on the uses of edible insects as food in tropical countries, yet production is largely concentrated in household and small-scale operations. In temperate countries, processing technology is virtually nonexistent because edible insects are not recognized food and feed sources. If insects are to become a useful and profitable raw material in the food and feed industries, large quantities of quality insects will need to be produced on a continuous basis. This requires the automation of both farming and processing methods, which remains a challenge for the development of the sector.

Collecting from the wild: potential threats and solutions

Threats

Insects provide essential ecosystem services such as pollination, composting, wildfire protection and pest control (Losey and Vaughan, 2006) (see Chapter 2). Edible insects, such as honeybees, dung beetles and weaver ants, eaten extensively in the tropics, perform many of these ecological services. Until recently, edible insects were a seemingly inexhaustible resource (Schabel, 2006). Yet like most natural resources, some edible insect species are in peril. Ramos Elorduy (2006) identified 14 species of edible insect under threat in Hidalgo state, Mexico, alone, including the red agave worm (*Comadia redtembacheri*) (= *Xyleutes redtembacheri*), which is used in mezcal, the Navajo reservation ant (*Liometopum apiculatum*) and the agave weevil (*Scyphophorus acupunctatus*). A number of anthropogenic factors impose threats on edible insect populations. Collection itself can result in direct competition with other predators, undermining population viability (Choo, 2008). Numerous edible insect species are prey or hosts of other insect species (such as coccinellids and parasitic wasps, respectively) and many other organisms, including birds, spiders, mammals, amphibians, reptiles and fish. The effect of reduced insect populations on their predators is unknown.

Many edible insect species are predators themselves or decomposers. A reduction in their numbers may have adverse effects on





populations of other insect species and affect ecosystem functions. Overexploitation is another serious challenge to both the current and future practice of entomophagy (Morris, 2004; Schabel, 2006), particularly if the number of collected individuals (mature and immature) exceeds regeneration capacity (Cerritos, 2009). In addition, the stability and regeneration of edible insect populations is threatened if collection practices become less selective (Latham, 2003; Illgner and Nel, 2000; Ramos Elorduy, 2006). This happens, for example, when mature insects are collected before their first mating or before they lay eggs (Cerritos, 2009). Moreover, many areas are "open-access", and increased collection efforts could threaten existing populations (Akpalu, Muchapondwa and Zikhali, 2009) (Box 4.1). Matters are further complicated by the fact that indigenous knowledge – which often includes the sustainable use of edible insects and their habitat – is gradually dissipating (Kenis et al., 2006), and inexperienced collectors sometimes resort to unsustainable collection methods (Ramos Elorduy, 2006; Choo, 2008).

Finally, like many other natural resources, damage to habitat, such as deforestation, forest degradation and pollution (e.g. through insecticides), has placed further stress on edible insect populations (Morris, 2004; Ramos Elorduy, 2006; Schabel, 2006). Host trees are often cut down to increase and facilitate the collection of insects, such as

in the case of the edible caterpillar that feeds on the leaves of the sapele tree, with obvious consequences for future harvests (Vantomme, Göhler and N'Deckere-Ziangba, 2004). Often, habitat damage results from other agricultural activities, such as logging and grazing (FAO, 2004). Effects on insects' habitat invariably influence their abundance and distribution (FAO, 2011c). For this reason, the ways in which climate change is likely to affect tropical edible insect populations is still relatively unknown. Increasing temperatures could cause certain populations to increase, although periods of extreme heat or drought could also lead to declines (Toms and Thagwana, 2005). The distribution of species may also be affected.

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		ESN/0333	BANJO, Folake M.

ESN/0334	ADEOYE, Temitope	ESN/0390	ONI, M. O.
ESN/0335	ADEROLU, I. Adeniran	ESN/0391	ADEBO Cosmos Taiwo
ESN/0336	OKORIE, Patricia Nkem	ESN/0392	OGUNGBITE, Olaniyi Charles
ESN/0337	ADEKANMI, Jeremiah O.	ESN/0393	KAYODE, Olufunke Yemisi
ESN/0338	IBITOYE, Olufisayo	ESN/0394	ADEYEMO, Aderike Christy
ESN/0339	ADETORO, Fouad	ESN/0395	AKINKUROLERE, Rotimi Oluwafemi (Late)
ESN/0340	ANOGWIH, Joy	ESN/0396	ILEKE, Kayode David
ESN/0341	ADELUSI, Stephanie	ESN/0397	ALIYU, G. Mungadi
ESN/0342	OOUOLA, Adebayo	ESN/0398	PETGRAVE, Meyer Godfrey
ESN/0343	OJO, James Adebayo	ESN/0399	ENYI, Nwanjibuaku
ESN/0344	JODA, Abiodun	ESN/0400	ADOLPHUS, Olachuku Junior
ESN/0345	JADARE, Olaniyi Olamide	ESN/0401	ISAH, Musa Dan'azumi
ESN/0346	SADIKU, Bukola Toyin	ESN/0402	NNAMEZIE, O. Nwamaka
ESN/0347	NWOSU, Luke Chinaru	ESN/0403	NWANKPA, Akachukwu Pius
ESN/0348	UDAH, Onehireba	ESN/0404	TINOK, Andrew
ESN/0349	AMUSAN, Babatunde O.	ESN/0405	ONOTU, Christopher Sunny
ESN/0350	IMOGBE, Tunde Ohiokhoya Thaddeus	ESN/0406	GARBA, Rukayya Anchau
ESN/0351	ROTIMI, Johnny	ESN/0407	AMAWULU, Ebenezer
ESN/0352	OLOMUKDRO, John Ovie	ESN/0408	OKOM, Monday Ajigah
ESN/0353	EKRAKENI, Taidi	ESN/0409	USMAN, Baba Musa
ESN/0354	OMOIGBERALE, Michael Osasele	ESN/0410	SAMUEL, Rebecca Naphtali
ESN/0355	IYARE, O. Osadolor	ESN/0411	EGBON, Ikponmwosa Nathaniel
ESN/0356	ANENI, Thomas Idemudia	ESN/0412	HAMMAN, I. Sunday
ESN/0357	OKAKA, Christopher Eghaukhwo	ESN/0413	MBAH, Ogbonnaya Ibomus
ESN/0358	EKPERUSI, Ogheneruemu Abraham	ESN/0414	OGUNDARE, Moses Odunayo
ESN/0359	OSHAKUADE, Thompson	ESN/0415	AKEWETA, Emmanuel Samsala
ESN/0360	OLOGUN, Pius Foluso	ESN/0416	KWAIFA, Nasiru Muhammed
ESN/0361	OYINLOYE, Naomi Adedoyin	ESN/0417	WAHEDI, Jasini Alexander
ESN/0362	NOUTCHA, Aline Edith	ESN/0418	UBAIDU, Mani
ESN/0363	GBARAKORO, Tambeke Norru	ESN/0419	IDACHABA, Peter Napoleon
ESN/0364	NWABUEZE, Ebere	ESN/0420	ABDULAH, Sule Ojo
ESN/0365	GEORGENILL, Chiemziele C.	ESN/0421	HABIBU, Danjuma
ESN/0366	MOHAMMED, Dalhatu Lawal	ESN/0422	BENJAMIN, Joy Enechojo
ESN/0367	AJAYI, Shindi Hassan	ESN/0423	OGAH, Emmanuel Omogo
ESN/0368	OGBEDEH, Kenedy Okwudili	ESN/0424	OKOREDIE, K.S
ESN/0369	NWOKEJI, Ephraim M.	ESN/0425	ONYIRIOHA, Caroline. U
ESN/0370	UWASOMBA, Chukwudi Festus	ESN/0426	JONAH, Alice Onyeché
ESN/0371	EHISIANYA, Collins N.	ESN/0427	UKEH, Donald. A
ESN/0372	WALI, Abdullahi A.	ESN/0428	MADUIKE, Ebrechukwu. M
ESN/0373	JATAU, Abdullahi Jatau	ESN/0429	LAW-OGBOMO, Kolawole Edomwonyi
ESN/0374	OKITA, Faith	ESN/0430	ESSIEN, Rosemary Anietie
ESN/0375	ALAYANDE, Musbaudeen Olayinka	ESN/0431	SAMBO, Fatima
ESN/0376	MUSA, Ishaku	ESN/0432	NGWAMAH, Jacob Sule
ESN/0377	MAGAJI, Turaki Bitrus	ESN/0433	NAMAN, Kasang
ESN/0378	BAWA, Livinus Yakubu	ESN/0434	VADLIA, Janet. P
ESN/0379	KWANASHIE, Adobe	ESN/0435	YELMI, Baraya Kyalá
ESN/0380	ODEWALE, Gideon Oluwasogo	ESN/0436	DALLA, Chatcham Victor
ESN/0381	OMOTOSHO, Adetutu Esther	ESN/0437	TESE, Timothy
ESN/0382	UDAH, Onehireba	ESN/0438	KABEH, Joshua Dauda
ESN/0383	AROGUNDADE, Funlola Justina	ESN/0439	ARINGBANGBA, Rufus Oluwatuyi
ESN/0384	ODEDEYI, Elizabeth Funmilayo	ESN/0440	ADETOGO, Temidayo Adekemi
ESN/0385	ABDULLAHI, Nurudeen	ESN/0441	ADANANU, Sani Adamu
ESN/0386	ADEBAYO, Raphael Abiodun	ESN/0442	ATTAH, Okau Achigili
ESN/0387	ADESINA, Jacobs Mobolade	ESN/0443	AROWOLO, Bukola Ojajoke E
ESN/0388	AFOLABI, Lawrence Adebayo	ESN/0444	OGAH, Emmanuel Ugbede
ESN/0389	OLA-SALANU, Bukola Bunmi	ESN/0445	OMOREGBE, Jude
		ESN/0446	MUSA, Wada Doka

ESN/0447	ABDULAH, Audu	ESN/0505	LAIDI, Miudeen Tella
ESN/0448	ALO, Emmanuel Babatope	ESN/0506	GAMBO, Abdullahi
ESN/0449	TAMIE, V. T.	ESN/0507	BALLA, Bitrus Elizabeth
ESN/0450	ADEYEYE, Musefiu Okunola	ESN/0508	DEGRI, Michael Mamma
ESN/0451	HUSSAINI, Adamu Ladaqs	ESN/0509	NAHUNNARO, Hyeenth
ESN/0452	QAYA, Clement Samuel	ESN/0510	YAKUBU, Appollim Iliya
ESN/0453	DUNUWEL, Danzaria Musa	ESN/0511	SULEIMAN, Mohammed
ESN/0454	USMAN, Musa	ESN/0512	AMEH, I. G.
ESN/0455	ATIYEGBE, Sylvester Richard	ESN/0513	IBRAHIM, Abdullahi
ESN/0456	ADEDUNTAN, Sunday Adeniyi	ESN/0514	ABUBAKAR, Ibrahim Anka
ESN/0457	ABIODUN, Joseph	ESN/0515	AIKI, Istifanus
ESN/0458	ADAMU, Bashir Kugu	ESN/0516	DIALOKE, Sunday Ani
ESN/0459	BELLO, Aishat Imam	ESN/0517	UTONO, Iliyasu Mohammed
ESN/0460	GAIYA, Audu Adamu	ESN/0518	AHMED, Inwa Adamu
ESN/0461	ABDULLAH, Ramatu Ado	ESN/0519	ABDULMALIK, Usman
ESN/0462	OGAR, Mabel Ungie-Ada	ESN/0520	NWUYE, Zacharista Ifeamaechi
ESN/0463	SABO, Elidad	ESN/0521	LAWAL, Fatima
ESN/0464	MUSA, Aisha Lami	ESN/0522	JIBRIN, Dahiru Mohammed
ESN/0465	USMAN, Fatima	ESN/0523	OWDLABI, Yetunde Hannah
ESN/0466	SHEHU, Maryam Ibrahim	ESN/0524	NATALA, Audu Joseph
ESN/0467	KADIRI, Onuchejo	ESN/0525	OKEKE, Ebere M. A.
ESN/0468	ABDUL, Mohammed Sarki	ESN/0526	IWUJEZE, Miriam Okwudili
ESN/0469	DATIJO, Shehu Abduljalal	ESN/0527	OBIDIGBO, Chinenye Francisca
ESN/0470	MUHAMMAD, Abdulhadi	ESN/0528	EZENWA, Patience Chinyeaka
ESN/0471	USMAN, Maryam Shehu	ESN/0529	UGWUANYI, Ifeoma Kosiosochukwu
ESN/0472	SHETTIMA, Fatima A.T	ESN/0530	OKOYE, Kingsley Chukwuebuka
ESN/0473	ABAJUE, Maduamaka Cyriacus	ESN/0531	EZIBE, Chukwuebuka Kingsley
ESN/0474	IHIONU, Godwin Chiwuikwe	ESN/0532	THEOPHILUS, Rosemary Uju
ESN/0475	TSAKMA, Usman Kabiru	ESN/0533	CHUKWUEZI, Chiamaka Elizabeth
ESN/0476	IWOMI, Faith Chinyere	ESN/0534	GAIUS, James Chukwudi
ESN/0477	EWUIM, Ugochukwu Rachael	ESN/0535	COBHAM, Akabom Edet
ESN/0478	MOGBO, Tochukwu Chinedu	ESN/0536	ASALA, Samuel Abayomi
ESN/0479	ONYIDO, Angus Ejidkeme	ESN/0537	ASALA, Shatu Wudiri
ESN/0480	ONONYE, Benjamin Uzonna	ESN/0538	EIOFOR CHARLES EIKE
ESN/0481	UGOCHUKWU, Godwin Chidozie	ESN/0539	ANJORIN, Toba Samuel
ESN/0482	NWANKWO, Edith N.	ESN/0540	SHAWULU, James Clinton
ESN/0483	OGBUSU, Vivian Onyinyechukwu	ESN/0541	FREDRICK, Christy C.
ESN/0484	NGENGBO, Uche	ESN/0542	EDACHE, Itodo James
ESN/0485	OKEKE, John Joseph	ESN/0543	GHAJI, Abdulrahman
ESN/0486	EGBUCHIE, Chukwudi Michael	ESN/0544	ONYEKANIHU, Amaka Lilian Chisom
ESN/0487	CHIMA, Gladys Nneka	ESN/0545	AJIBADE, Razaq Ola
ESN/0488	AKUNNE, Chidi Emmanuel	ESN/0546	ERHUNMWUNSE, Nosakhare Osazeze
ESN/0489	DURU, Vincent Chiagozie	ESN/0547	IFERE, Nwunenke Okareke
ESN/0490	Ukonze, Chikaodili B.	ESN/0548	DIRISU, Abdulrahman
ESN/0491	OKAFOR, Kasarachi Patricia	ESN/0549	ODO, Patrick Emeka
ESN/0492	ONAGBOLA, Ebenezer Oloyede	ESN/0550	NWEKE, Augustine
ESN/0493	EZRA, Abba	ESN/0551	OGBEBOR, Charlee Omorefe
ESN/0494	LATEEF, Saheed Adekola	ESN/0552	OKERE, Chidinma Ijeoma
ESN/0495	ABDULBAKI Mudashir Kijan	ESN/0553	EZEH, Angela Ebere
ESN/0496	ADEOTI, Omolola Folasade	ESN/0554	OMDREGIE, Anthony Osarobo
ESN/0497	KEHINDE Ezekiel Ayobami	ESN/0555	BOLUYA, James Ayuba
ESN/0498	AJIBOYE, Olalekan Gbolahan	ESN/0556	OKUNRONMU, Oluwatobiloba Olayemi
ESN/0499	ORE, Hassanat Taiwo	ESN/0557	OFORKA, Linda Chinonyelum
ESN/0500	ADELAJA, Olukayode James	ESN/0558	NWABUEZE, Ogechi Flora
ESN/0501	OLAGUNJU, Oluwasewa Dorcas	ESN/0559	EKHATOR, Osas Emmanuel
ESN/0502	IFALADE, Judith Adejoke	ESN/0560	AKPAN, Akaninyene Udoh
ESN/0503	OJUMDOLA, Olasegun Adebayo	ESN/0561	HARUNA, Sylvester Ada
ESN/0504	AIYEBUSI, Zainab Oluwakemi		



ESN/0562 ETE, John Ayodele
 ESN/0563 OBOHO, Diligent Efiang
 ESN/0564 SANI Zakariya
 ESN/0565 SAMSON, Goodwin Ukandu
 ESN/0566 JANDE, Elizabeth Hembadoon
 ESN/0567 HUSSAINI, Suwaiba
 ESN/0568 BARDE, Auwal Alhassan
 ESN/0569 ONYIH, Etim Efiang
 ESN/0570 ONYIH, Aki Etim
 ESN/0571 ALI, Cecilia Onyawole
 ESN/0572 OBI, Okechukwu Anthony
 ESN/0573 AKINSETE, Israel Oluwansola
 ESN/0574 BARNABAS, Banji Babafemi
 ESN/0575 ADENIYI, Kamoru Abdulazeez
 ESN/0576 SALIHU, Ibrahim Maikudi
 ESN/0578 SADIQ, Ibrahim
 ESN/0579 OYIBO-USMAN, Khadijat Ahuicoza
 ESN/0580 APEV, Mson John
 ESN/0581 SANI, Baba Wudil
 ESN/0582 MANYI, Manasseh Msugh-ter
 ESN/0583 IBOYI, Ojonugwa Mark
 ESN/0584 AZEEZ, Owolabi Moshood
 ESN/0585 GBATE, Mohammed
 ESN/0586 OLAYEMI, I.K.
 ESN/0587 NNAMONU, Lami
 ESN/0588 OCHEME, Faith Odije
 ESN/0589 OBADIAH, Happiness Igwe
 ESN/0590 SHEHU, Usman
 ESN/0591 MUHAMMAD, Kabir Hadiza
 ESN/0592 HARUNA, Jibril
 ESN/0593 ADEMOSU, Taiwo Oluwadamilare
 ESN/0594 LAWAL, Atinuke Favour
 ESN/0595 ADEDOJA, Opeyemi Adebayo
 ESN/0596 OWOJORI, Olugbenga John
 ESN/0597 JEGEDE, Olukayode Oluwale
 ESN/0598 ADETUTU, Elizabeth Adekemi
 ESN/0599 HASSAN, Amina
 ESN/0600 AHMED, Yusuf Abdulahi
 ESN/0601 SALEH, Muhammed
 ESN/0602 OTOKPA, Icheikan Elias
 ESN/0603 SOW, Gudzan John
 ESN/0604 ANUGWOM, Uzoma Donatus
 ESN/0605 OWOYE, Olaniyi David
 ESN/0606 AHMED, Adu-Baba
 ESN/0607 BITRUS, Solomon
 ESN/0608 BAKAM, Hinma
 ESN/0609 YAYOCK, Hosea Chigari
 ESN/0610 USMAN, Usman Shehu
 ESN/0611 MUSA, Nuradeen
 ESN/0612 UDDIN 11, Robert Omotayo
 ESN/0613 OSHAGBEMI, Eyiata Emmanuel
 ESN/0614 ARONG Gabriel
 ESN/0615 OKWECHE, Simon Idoko
 ESN/0616 IMEH Iyeme Ebong
 ESN/0617 IME Okon Udo
 ESN/0618 ABO Iso Nta
 ESN/0619 MUHAMMAD, Sadiq Ramalan

ESN/0620 MALANN, Yiola David
 ESN/0621 SOLOMON, John
 ESN/0622 OKEKE, Chinedu
 ESN/0623 OLUWAFEMI, Rufus Adebisi
 ESN/0624 EKEH, Felicia Nkechi
 ESN/0625 MEDUGU, Marcel Alexander
 ESN/0626 MOHAMMED, Shehu
 ESN/0627 AJIBADE, Oluamiyiwa Emmanuel
 ESN/0628 ONIGBANJO, Akeem
 ESN/0629 POPoola, Grace
 ESN/0630 JOSEPH, Samson Gyutorwa
 ESN/0631 DOGO, Jacob Makama
 ESN/0632 ABDULRASHID, Firdausi Ashiru
 ESN/0633 ADAMU, Hadiza Wasagu
 ESN/0634 OYENIYI, Emmanuel Ayobami
 ESN/0635 ADESINA, Femi Peter
 ESN/0636 OLATOKUNBO, Jeremiah Ayinde
 ESN/0637 LARAYETAN, Ayo Adebowale
 ESN/0638 BABALOLA, Abiodun Ibukun
 ESN/0639 OLISE, Christian Chukwu
 ESN/0640 AUDI, Auwal Hassan
 ESN/0641 SULE, Hassan
 ESN/0642 SANDA, Nafu Bala
 ESN/0643 MOHAMMED, Bintu
 ESN/0644 ALEX-ABEDO, Josephine Oluwene
 ESN/0645 UGWUEZE, Hyginus Tobechukwu
 ESN/0646 ONAH, Ikechukwu Eugene
 ESN/0647 OKWOR, Jude Ifeanyi
 ESN/0648 JACOB, Philimon
 ESN/0649 MINTA, Musa Dahiru
 ESN/0650 ODEJAYI, Adedayo Olugbenga
 ESN/0651 SALAWU, Adedayo Richard
 ESN/0652 AINA, Sulaimon Adebisi
 ESN/0653 ADESANYA, Kalejaiye Samuel
 ESN/0654 EWEDAORO, Bilikis Hyabode
 ESN/0655 ADEOTI, Adewale Opeyemi
 ESN/0656 KUDEMPEO, Christopher Temidayo
 ESN/0657 OKUNOLA, Oladimeji Seyi
 ESN/0658 EKE, Samuel Sunday
 ESN/0659 YUSUF, Garba
 ESN/0660 UKUBUIWE, Azubuike Christian
 ESN/0661 USMAN, Mohammed Doko
 ESN/0662 OBI, Pauline Uchenna
 ESN/0663 ADAMU, Muhammed
 ESN/0664 OLUMOH, Nurat Ayo
 ESN/0665 YAHAYA, Mohamed Nda
 ESN/0666 CECE, Mayaki Alhaji
 ESN/0667 UWAGBAE, Michael Aigbo
 ESN/0668 ONUJHA, Blessing
 ESN/0669 AJU-AMEH, Celine Onyawolbi
 ESN/0670 AMAECHI, Austin Amaechi
 ESN/0671 ONUH, Martin Onuh
 ESN/0672 EZIKE, N. Monica
 ESN/0673 UBA, Chinyere Peace
 ESN/0674 NWACHUKWU, Michael O.
 ESN/0675 SARUMI, Bolanle Basirat
 ESN/0676 EMERIBE Ebenezer Okechukwu
 ESN/0677 EKE, Bethel A.

