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SWEETPOTATO CULTIVARS GROWN BY ETHNOLINGUISTIC GROUPS IN NORTHERN PHILIPPINES

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ABSTRACT

Sweetpotato (*Ipomoea batatas*) is a traditional crop among ethnolinguistic groups in Northern Philippines. Sweetpotato as supplemental food of the family has a big role in the food system and the overall culture of ethnolinguistic groups. The study was carried out in Northern Philippines to document and identify the sweetpotato cultivars grown by different ethnolinguistic groups in the area. Documentation was done in three phases which included secondary data gathering, key informant interview and workshops and field visits among 13 indigenous peoples including two major ethnic groups from the selected municipalities. There were 179 sweetpotato cultivars identified and grown by the ethnolinguistic groups-99 are traditional and 80 were introduced cultivars. Ninety-four of these are commonly planted and claimed as presently abundant and maintained in the area, hence, posing no danger of becoming extinct. Sixty-three cultivars grown 50 years ago are considered endangered or rarely planted by the ethnolinguistic groups. Twenty-two cultivars are considered locally extinct due to replacement of superior cultivars, preference of households such as early maturing but low yielding, long maturing varieties, yield degeneration due to pest and disease occurrence and poor culinary acceptability. However, using these as criteria in selecting their preferences led to the loss of late maturing or good characteristics of the crop.

Keywords: *cultivars, ethnolinguistic groups, sweetpotato, Northern Philippines*

INTRODUCTION

Sweetpotato (*Ipomoea batatas*) is also known locally as *ubbi* (*Kalanguya*), *bella* (*Bugkalot*), *tugui* or *palay* (*Bago*), *kamote* (*Kapampangan/ Ilocano*), *kamoteng gapang* (*Aeta*), *baynaw* (*Buhid-Mangyan*), *wakay* (*Ivatan*), *gaselang* (*Biga-Kalinga*), *katila* (*Masadiit-Tingguian*), *dokto* (*Ibaloi*), *lokto* (*Kankana-ey*), *kantila* (*Isnegs*), *ubih* (*Iyattuka*) and *tugi or ubi* (*Applai-Kankana-ey*). Sweetpotato ranks number one among the root crops grown by the *Ivatans*, *Kalanguyas* and *Applai-Kankana-ey* farmers (Gayao *et al*., 2014).

Among the ethnolinguistic groups, sweetpotato is the number one alternate crop to rice because of its multiple uses and because of the crop's suitability for priming harvest that could be maintained up to three years. Every household has this crop in their farm as food supplement. The storage roots are used as food, source of cash and as gifts and barter goods. The young shoots are used as viand that can be prepared in several ways. Both storage roots and vines are used as animal feeds. Recently, the storage roots and young shoots have been processed into veggie noodles, breads, cookies and other products. It is considered as a traditional crop especially among *Aetas* and *Mangyans*, as animal feeds among *Applai-Kankana-eys*, and an important rootcrop to the *Iyattukas* especially during the *uy-uy* tradition (big wedding celebration). Among the *Kalanguya*, *Ilocano* and *Kapampangan* farmers, sweetpotato is considered a cash crop because of its high market demand. The sweetpotato also became a symbol for low social status.

Varying formation has been derived from the documentation of the diverse uses and specific attributes of sweetpotatoes. In 1990, there were

168 local names of common cultivars grown in the provinces of Benguet, Ifugao, Mountain Province and Nueva Vizcaya. Then in 1992, 885 were collected by the Northern Philippines Root Crops Research and Training Center-Benguet State University where 759 accessions (25.82%) were characterized by possible duplicates based on first priority characters such as twining, plant type, vein pigmentation, mature leaf shape, foliage color and abaxial vein pigmentation (Baucas *et al*., 1990).

Changing livelihood and dietary patterns however, are changing the landscape of sweetpotato production and utilization. Anent to this is the change in varieties, genetic erosion and depletion of traditional cultivars. The availability of staple rice and preference of younger generation has also decreased the demand for sweetpotato.

This study therefore aims to document and identify the sweetpotato cultivars grown by different ethnolinguistic groups of the Northern Philippines.

METHODOLOGY

Sites and Key Informants

Selection of sites was based on secondary information that identified the presence of rootcrops and the ethnolinguistic groups producing them. This was validated by local government units (LGUs) and partner institutions/researchers. Identification of key informants for the workshop was done by local partners based on experiences in growing/eating rootcrops, age, residency and familiarity with village life.

The fiifteen selected ethnolinguistic groups of indigenous peoples were the *Ibalois, Bagos, Aetas, Ivatans, Isnegs, Buhid-Mangyans, Biga-Kalingas, Bugkalots, Kalanguyas, Masadiit-Tingguians, Iyattukas, Kankana-eys, Applai-Kankana-eys* while the two major ethnic groups were *Kapampangan* and *Ilocano* (Table 1).

Tools/Techniques Employed

Participatory data gathering approach was employed in three phases:

Phase 1 involved gathering of secondary data (production statistics on roots and tubers and ethnolinguistic groups) from published and unpublished researches, literatures or records of provincial and municipal units, Bureau of Agricultural Statistics (BAS), National Commission on Indigenous Peoples (NCIP), *etc*. as a basis for identifying sites, ethnolinguistic groups and collaborating agencies/ researchers.

Phase II was a key informant workshop. The key informants (KI's) were informed of the project rationale and objectives. The participants were requested to utilize various tools in gathering data such as story -telling, use of pictures and cue cards. A detailed interview guide was used to steer the informal interview-workshop.

Phase III consisted of field visits and community walk-through to verify secondary information. Picture-taking and field observations were done after the workshop. Narrative description, photos or illustrations gave detailed information of their sweetpotato conservation and collection. Tables were used to summarize data gathered.

RESULTS AND DISCUSSION

Number of Sweetpotato Cultivars

A total of 179 sweetpotato cultivars were identified by the different ethnolinguistic groups of Northern Philippines (Table 2). The *Kalanguya* farmers in Ambaguio, Nueva Vizcaya had the highest number of cultivars (33) known and grown in the Northern Philippines. Ambaguio ranked second in terms of area planted with sweetpotato (467.58 ha; Nueva Vizcaya provincial development and physical framework plan, 2007-2013). Sweetpotato is thus now a cash crop and has high market demand among the *Kalanguya*. The *Ivatans* of Batanes ranked second with 21 sweetpotato cultivars. Sweetpotato ranks number one among the root crops grown for households consumption by the *Ivatans*. The *Bago* farmers in Sudipen, and Sugpon mentioned 19 cultivars. The *Mangyans* in Mindoro had identified the least (3) cultivars grown.

Table 1.Ethnolinguistic groups, location and number of key informants interviewed in Northern Philippines

Ethnolinguistic Groups/ Respondents	Province/Study Sites	Number of Key Informants
Ibalois	Tuba,Benguet	3
Bagos	Sugpon, Ilocos Sur	8
	Sudipen, La Union	3
Aetas	Porac, Pampanga	15
	Bamban, Tarlac	16
Ivatans	Basco, Batanes	4
Isnegs	Conner, Apayao	15
Buhid-Mangyans	San Jose, Occidental Mindoro	13
Biga-Kalingas	Tanudan, Kalinga	14
Bugkalots	Belance, NuevaVizcaya	12
Kalanguyas	Ambaguio, Nueva Vizcaya	32
Masadiit-Tingguians	Bucloc, Abra	10
Iyattukas	Asipulo, Ifugao	4
Kankana-eys	Sagpat, Kibungan	10
Applai-Kankana-eys	Bauko, Mountain Province	5
Kapampangans	Porac, Pampanga and Capas,Tarlac	12
Ilocanos	Paniqui, Tarlac	8
TOTAL		**184**

Table 2. Number of sweetpotato cultivars grown by ethnolinguistic groups in Northern Philippines

Local Name of Sweetpotato	Number of Ccultivars Grown	Ethnolinguistic Groups
Ubbi	32	*Kalanguya*
Wakay	21	*Ivatan*
Tugui or Palay	19	*Bago*
Lokto	14	*Kankana-ey*
Tugi or Ubi	13	*Applai-Kankana-ey*
Dokto	13	*Ibaloi*
Kamote	13	*Ilocano/Kapampangan*
Ubih	12	*Iyattuka*
Gaselang	11	*Biga-Kalinga*
KamotengGapang	8	*Aeta*
Bella	7	*Bugkalot*
Katila	7	*Masadiit-Tingguian*
Kantila	5	*Isneg*
Baynaw	3	*Buhid-angyan*
TOTAL	**179**	

Inventory of Sweetpotato Cultivars

An inventory of sweetpotato cultivars grown by the ethnolinguistic groups is shown in Table 3. Of the 179 cultivars identified, 99 are considered traditional and 80 are introduced cultivars.

Generally, sweetpotato cultivars grown by farmers are identified through different names from different areas. Cultivars were named after their place of origin and the person who introduced the cultivar.

Categories of Sweetpotato

Sweetpotatoes are grouped into three categories: 1) commonly grown (abundant and widely grown by most farmers in the locality); 2) endangered/ rare (few and rarely planted by few farmers); and 3) lost/extinct (no longer exist in the locality). These categories are based on farmers' assessment.

Commonly grown cultivars. A total of 94 traditional and introduced sweetpotato cultivars have been grown by the ethnolinguistic groups in Northern Philippines over several decades as claimed by the farmers.

Ivatans. Nineteen cultivars have been grown by the Ivatans in Batanes where some have been planted 40 years ago. Others were introduced cultivars such as *Desnila/ Nila, Luwas,Samurangan,Vilyoga, Apak-manok, Buhbuhan, JK 25, Kabuco, Lubang, Lukbungan, Marinias, Malitin, NayDA, Paula, Pitang, Texas, Uga, Valena,* and unknown cultivar(violet-fleshed).

Iyattukas. The *Iyattukas* in Asipulo, Ifugao identified 11 cultivars they commonly cultivate. Of these cultivars, five are yellow-fleshed (*Chesa, Gayyadek, Ibagyu, Itbuy,* and *Molikka*), three cultivars are white-fleshed (*Kalbuoy, Punchi* and *Sampidu*) and one unknown cultivar planted for its vegetative use (Figure 2). The other two cultivars are the *Lupeet* and *Imelda*. The *Lupeet* cultivar is usually gathered for pig feed, while the *Imelda* cultivar is planted for ornamental purposes.

Biga-Kalingas. Figure 3 shows the cultivars commonly planted by Biga-Kalinga farmers in Tanudan, Kalinga. The 10 identified cultivars were distinguished and differentiated based their fleshed colors, root structures, leaf colors, palatability (taste) and maturity. Six of these cultivars are unknown. Two cultivars are orange fleshed, two with white flesh, one with yellow flesh and one cultivar with violet flesh. The four other cultivars are *Binato* (white and violet flesh) and two cultivars of *Miracle* with yellow and violet-flesh.

Aetas. There were nine cultivars of sweetpotato commonly grown by *Aeta* farmers in Central Luzon. These include *Kagunaw, Kanaka, Murado Old, Pukapok* and *Sekler*. Three cultivars are newly introduced and widely grown by the *Aeta* farmers namely: *Super bureau, Taiwan* and *Murado New,* named so because of its early maturing and marketability.

Applai-Kankana-eys. The *Applai-Kankana-ey* farmers from Bauko, Mountain Province identified nine traditional cultivars they commonly plant (Figure 4). These are the *Alla-at, Mansali,* two cultivars of *Alusi-is, Kentegan* and *Gallading*. The three newly introduced cultivars are the *Biit Turning, Imported* and *Manila* which are harvested after 3.5 to 5 months.

Bagos. The *Bago* farmers in Sudipen, La Union and Sugpon, Ilocos Sur identified seven commonly grown cultivars. These include the red skinned cultivars (*Aringay, Pangasinanor Yegyeg, Urelisor Mamon and Viscaya*), the high yielding cultivar *Amsitan*, the sweet tasting *Amianan*, and the drought/heat tolerant *Labkang*.

Ilocanos/Kapampangans. The Province of Tarlac which is the commercial growing area for sweetpotato in Central Luzon has only five cultivars commonly grown by the *Ilocano* and *Kapampangan* farmers. *Kapampangan* farmers in Sta. Juliana, Capas, Tarlac grow the *Superbureau, Taiwan, Kinerots/Kinarot, Bentong* and *Ube* cultivars while the *Ilocano* farmers in Paniqui, Tarlac plant the *Superbureau, Taiwan* and *de Colores* cultivars. According to these farmers, *Superbureau* and *Taiwan* cultivars are widely planted. This could be attributed to the high marketability of the variety and availability of quality planting materials, *i.e*. first, second and third generation vine cuttings.

Table 3. Inventory of sweetpotato cultivars grown by ethnolinguistic groups in Northern Philippines

Ethnolinguistic Groups	Traditional Cultivars	Introduced Cultivars
Kalanguya	*Kamandag, Iyobi, Bitnakan, Motmot, Puntilaki,PuntiBii, Halpido, Gihhey, Payaga, Kagitkit, Motling, Tokano,Balitungeg, Biit, Hallikap, Kalbooy, Tuklong, Kulingey,Pinalyok, Illoboy, Dakwag, Pihhoy, Heng-ewan, Gayuden, Kuyeyep,Indanggoh, Uyapo,Bangkodel, Appagong*	*Hawaii Swerte Manila Kapangan*
Ivatan	*Standing Vilyoga or Velluga*	*Apak-manok, Buhbuhan, Kabuco/ Cavoco/Cabuso, Paula, Lubang, Lukbungan, Marinias, Malitin, Luwas, Nila or Desnila, Samurangan, JK-25,nayDA,Pitang, Texas, Uga, Valena, Benito,1 unknown variety (violet)*
Bago	*Kalbooy, Kwansit, Sumabela, Ilocano or Pakak, Amianan, Amsitan, Balballa, Enasi, Labkang, Sokoowan,Mamon or Urelis, Usigay, Bokol or Bokot*	*Aringay,Bagsol, Bokot New, Haponita, Pangasinan or Yegyeg, Viscaya*
Kankana-ey	*Tocano, Komindal, Kopiyes, Kalbooy, Dalaydayan, Bayani, Pitayan*	*Miracle, Ilocano or Pakak, Tagalog, Sta. Fe, Sappido or Kanga, Manila,Kiangan*
Applai-Kankana-ey	*Alla-at, Mansali,Alusi-is, Kentegan, Gallading,Labosan, Kalbooy, E-ewey*	*Biit Turning, Imported, Pappapaya, Winalila, Manila*
Ibaloi	*Kalbo-oy, Kerajan, Mamatis Tambuaring, Wagwag, Acufal, Motnen*	*Mamon, TresColores, Kiangan,KinmalumbasaorKawitan, Sampero, Samping*
Ilocano/ Kapampangan	*Dolorong, Cordagol*	*Superbureau, Taiwan, Bentong, Kinerots or Kinarot, Purong Ube, De Colores, Ube de Colores, Mangaldan, VISCA-3, Los Banos, Unknown (violet flesh)*
Iyattuka	*Kalbu-uy, Chesa, Gayyadek, Ibagyu, Itbuy, Luppeet, Molikka, Punchi,Malabing*	*Imelda Sampidu 1 unknown (all green)*
Biga-Kalinga	*Binato(3 types-white, orange &violet flesh)*	*Miracle (2 type- yellow and violet flesh), 6 Unknown (2 type of orange flesh, 2 type of white flesh, 1 yellow flesh and 1 mixed violet-white flesh)*
Aeta	*Kagunaw Kanaka Murado-old Pukapok Sekler*	*Superbureau Taiwan, Muradonew*
Bugkalot	*Kalbooy, Ungkalan, Magaan, Menilaan, Gilayan*	*Swerte Kuli-it*
Masadiit-Tingguian	*Parparya Malagampang Makita Binasar*	*Miracle Ninanong Unknown (1)*
Isneg	*Biit (2 types) Bayag*	*2 Unknown (violet and white)*
Buhid-Mangyan	*Reynas Pangapanga*	*Imelda*

Pitang, popularly planted by the Ivatans

Apakmanok *Malitin*

Figure 1. Sweetpotato cultivars grown by the *Ivatan* farmers in Basco, Batanes

Gayyadek *Molikka* *Punchi*

Ibagyu

Imelda

Sampido

Itbuy

Kalbu-oy

Unknown variety

Figure 2. Sweetpotato cultivars grown by the *Iyattuka* farmers in Asipulo, Ifugao

Binato (white-flesh)

Unknown cultivar (Orange-flesh)

Miracle (yellow-flesh) Unknown cultivar (White-flesh)

Figure 3. Common cultivars of sweetpotato planted by the *Biga-Kalinga* farmers in Tanudan, Kalinga

Alla-at

Mansali

Alusi-is

Kentegan

Gallading

Imported

Biit Turning *Manila*

Figure 4. Sweetpotato cultivars grown by the *Applai-Kankana-ey* farmers in Bauko, Mountain Province

Figure 5. *Urelis* or *Mamon* cultivar commonly grown by the *Bagos* in Sugpon, Ilocos Sur

Kalanguyas. *Kalanguya* farmers in Ambaguio, Nueva Vizcaya, identified five cultivars which they commonly plant namely: *Hawaii, Swerte, Manila, Kamandag* and *Iyobi*. The *Hawaii* and *Swerte* cultivars are widely grown due to high market price (Figure 6).

Kankana-eys. The *Kankana-ey* farmers in Sagpat, Kibungan also mentioned five commonly grown cultivars, the *Kalbooy, Miracle, Ilocano* or *Pakak, Tagalog* and *Sta. Fe*.

Isnegs. The *Isneg* farmers in Talifugo, Conner, Apayao commonly grow sweetpotato cultivars namely: *Bayag* (late maturing), 2 unknown cultivars (Violet and White-flesh color) and 2 varieties of *Biit* (early maturing). These cultivars are abundant in the area and tend to regrow in fallowed farms also known as *nagtawil* in the *Isneg's* local language.

Masadiit-Tingguians. In Abra, the *Makita* is the most widely grown sweetpotato cultivar by the *Tingguian* farmers which matures in seven month and is favored for its vegetative use. Other cultivars grown are *Parparya, Miracle* (early maturing at 3-4 months) and the *Ninanong* (introduced cultivar by *Nanong* from Kalinga) (Figure 7).

Buhid-Mangyans. The *Buhid-Mangyans* in Mindoro identified three commonly grown sweetpotato cultivars namely *Imelda, Panga-panga* and *Reynas*. *Imelda* is a newly introduced variety and is accordingly suitable in low-lying areas. On the other hand, *Panga-panga* and *Reynas* are traditional cultivars which are still commonly planted in the community.

Ibaloi. The *Ibaloi* farmers in Taloy Sur, Tuba, Benguet have commonly grown the *Mamon* and *Tres Colores* sweet potato varieties (Figure 8) for over 50 years.

Hawaii *Swerte*

Figure 6. Common sweetpotato cultivars/varieties grown in Ambaguio and Belance, NuevaVizcaya

Bugkalots. The *Bugkalots* in Belance, Nueva Vizcaya identified two early maturing cultivars (3-4 months) namely the *Kuli-it* and the *Swerte* which they commonly grow.

Endangered/rare cultivars. As shown in Table 4, 63 listed sweetpotato cultivars are considered endangered or rare but are still being grown by the ethnolinguistic groups in northern Philippines. Among the ethnolinguistic groups, the *Kalanguya* farmers identified the most number (28) of endangered crop.

In Taloy Sur, Tuba, only nine cultivars were identified as endangered. Five of these are traditional cultivars (*Kalbooy, Kerajan, Mamatis, Tambuaring, Wagwag*) while the other four were introduced crops (*Kiangan, Kinmalumbasa/ Kawitan, Sampero* and *Sampang)* to the community. According to *Ibaloi* farmers, the arrival of high yielding sweetpotato varieties and the low yield of traditional varieties threatens the availabilty of planting materials for other cultivars. Further, low-yielding varieties are usually planted for household consumption among the *Ibaloi* farmers.

Table 4 shows the six endangered sweetpotato cultivars planted by the *Kankana-ey* farmers. Four were traditional cultivars (*Tocano, Komindal, Kiangan* and *Kopiyes*) and two were introduced cultivars (*Kanga* or *Sappido* and *Manila)*.

In Porac, Pampanga, 10% of *Kapampangan* farmers planted *Superbureau* and *Taiwan* cultivars. On the other hand, *Purong Ube*, an endangered cultivar, was found to be planted only in Capas, Tarlac. Moreover, few *Ilocano* farmers in Paniqui, Tarlac plant *Ube-de Colores* and *Kinerots* varieties due to low market demand.

In Bauko, Mountain Province, the *Applai-Kankanaey* farmers identified the *Labosan, Kalbooy, Winalila* and *Pappapaya* cultivars being planted in the area (Figure 11). The *Kalbooy* cultivar however, is not planted consecutively in the same area as this has caused growth cracks and skin discoloration to the rootcrop.

The *Bugkalots, Ivatans* and *Masadiit-Tingguians* mentioned three endangered sweetpotato cultivars namely: *Kalbooy, Standing* and *Malagampang*.

Lost/Extinct cultivars. Table 4 shows twenty-two (22) out of 179 cultivars from those being planted by the ethnolinguistic groups of Northern Philippines which have been found to be extinct and needs immediate conservation.

Bentong, a sweetpotato cultivar commonly grown by *Kapampangan* farmers in Capas, Tarlac is among the six cultivars already lost. The other lost/ extinct cultivars include *Mangaldan, Dolorong, Cordagol, Los Banos* and *Visca-3*. The loss of these cultivars can be attributed to lack of planting materials and low market demand for these storage roots.

The *Bugkalots* in Belance, Nueva Vizcaya

claimed that four traditional cultivars were already lost namely: *Unkalan, Magaan, Menilaan* and *Gilayan*. The arrival or introduction of new planting materials, early maturing cultivars and disease occurrence are the common reasons for the cultivar losses.

On the other hand, there were three lost/extinct cultivars identified by the *Kankana-ey* farmers in Sagpat, Kibungan, Benguet. The lost cultivars were *Dalaydayan, Bayani* and *Pitayan*. The reason for the extinction was the crop's agronomic characteristics such as early maturing but low yielding, late maturing and high yielding but with low palatability.

The *Bago, Ibaloi* and *Masadiit-Tingguian* farmers identified two cultivars that had become extinct. These are the *Bokol* or *Bokot*, *Porsiana, Acufal, Motnen, Binasar* and one unknown cultivar. Moreover, the *Ivatan, Biga-Kalinga, Iyattuka* and *Applai-Kankanaey* farmers each mentioned one lost cultivar. These are *Benito, Binato Orange, Malabing* and the *E-ewey* cultivar, respectively. The loss of cultivars could be attributed to the arrival of new planting materials, yield degeneration and low palatability. Moreover, in the Traditional Roots and Tubers Knowledge (TRK) series report, the reported 31 cultivars being planted by *Hanunuo* and *Buhid-Mangyans* were no longer mentioned during the workshop. Likewise, the 24 sweetpotato cultivars documented and collected in Benguet by the Northern Philippines Root Crops Research and Training Center in Benguet State University, particularly from the municipalities of Sablan, Tuba, Kapangan, Atok, Buguias, Kabayan, Bokod, Bakun, Mankayan and Kibungan have no longer been mentioned. This might have been lost or renamed.

Parparya

Ninanong

Figure 7. Cultivars of sweetpotato planted by the *Masadiit-Tingguians* in Bucloc, Abra

Figure 8. Cultivars commonly grown by the *Kankanaey* and *Ibaloi* farmers in Benguet

Figure 9. Endangered sweetpotato cultivars in Ambaguio, Nueva Vizcaya

Balballa

Figure 10. Endangered cultivar of sweetpotato grown by *Bago* Farmers

Labosan *Kalbo-oy* *Winalila*

Figure 11. Endangered sweetpotato cultivars grown by *Applai-Kankanaey* farmers in Bauko, Mountain Province

Figure 12. Lost/Extinct cultivars grown in Benguet

Table 4. Categories of sweetpotato cultivars/varieties in Northern Philippines

ETHNOLINGUISTIC GROUPS	COMMON CULTIVARS	ENDANGERED/ RARE CULTIVARS	LOST/EXTINCT CULTIVARS
Kalanguya	*1. Hawaii* *2. Swerte* *3. Manila* *4. Kamandag* *5. Iyobi*	*1. Bitnakan* *2. Motmot* *3. Punti Laki* *4. Punti Bii* *5. Halpido* *6. Gihhey* *7. Payaga* *8. Kapangan* *9. Kagitkit* *10. Motling* *11. Tokano* *12. Balitungeg* *13. Uyapo* *14. Bangkodel* *15. Biit* *16. Hallikap* *17. Kalbooy* *18. Tuklong* *19. Kulingey* *20. Pinalyok* *21. Illoboy* *22. Dakwag* *23. Appagong* *24. Pihhoy* *25. Heng-ewan* *26. Gayuden* *27. Kuyeyep* *28. Indanggoh*	-
Bugkalot	*1. Kuli-it* *2. Swerte*	*1. Kalbooy*	*1. Ungkalan* *2. Magaan* *3. Menilaan* *4. Gilayan*
Bago	*1. Aringay* *2. Pangasinan or Yegyeg* *3. Urelis or Mamon* *4. Vizcaya* *5. Amianan* *6. Amsitan* *7. Labkang*	*1. Balballa* *2. Enasi* *3. Haponita* *4. Kalbooy* *5. Sokoowan* *6. Sumabela* *7. Usigay* *8. Bagsol* *9. Bokot* (New) *10. Kwansit*	*1. Bokol or Bokot* *2. Porsiana*
Ilocano/ Kapampangan	*1. Superbureau* *2. Taiwan* *3. Kinerots/ Kinarot* *4. Bentong* *5. De Colores*	*1. Purongube* *2. Ubeng-de Colores* *3. Unknown* (1)	*1. Mangaldan* *2. Dolorong* *3. Cordagol* *4. Los Banos* *5. Vizca-3*

Aeta	*1. Kagunaw* *2. Kanaka* *3. Murado Old* *4. Pukapok* *5. Sekler* *6. Superbureau* *7. Taiwan* *8. Murado New*	-	-
Mangyan	*1. Imelda* *2. Pangapanga* *3. Reynas*	-	-
Ivatan	*1. Luwas* *2. Nila/Desnila* *3. Samurangan* *4. Vilyoga/Velluga* *5. Apak-manok* *6. Buhbuhan* *7. JK-25* *8. Kabuco/ Cavoco/ Cabuso* *9. Paula* *10. Lubang* *11. Lukbungan* *12. Marinias* *13. Malitin* *14. nayDA* *15. Pitang* *16. Texas* *17. Uga* *18. Valena* *19. Violet*	*Standing*	*Benito*
Biga-Kalinga	*1. Unnamed (Orange flesh)* *2. Unnamed (Orange flesh)* *3. Unnamed (White flesh)* *4. Unnamed (White flesh)* *5. Binato white* *6. Yellow* *7. Miracle yellow* *8. Miracle violet* *9. Binato violet* *10. Mixed violet-white*	-	*Binato Orange*
Masadiit-Tingguian	*1. Parparya* *2. Miracle* *3. Ninanong* *4. Makita*	*Malagampang*	*1. Binasar* *2. Unnamed*

Ibaloi	*1. Mamon* *2. TresColores*	*1. Kalbooy* *2. Kerajan* *3. Mamatis* *4. Tambuaring* *5. Wagwag* *6. Kiangan* *7. Kinmalumbasa/Kawitan* *8. Sampero* *9. Sampang*	*1. Acufal* *2. Motnen*
Kankanaey	*1. Kalbooy* *2. Miracle* *3. Ilocano or Pakak* *4. Tagalog* *5. Sta. Fe*	*1. Tocano* *2. Komindal* *3. Kiangan* *4. Kopiyes* *5. Kanga or Sappido* *6. Manila*	*1. Dalaydayan* *2. Bayani* *3. Pitayan*
Isneg	*1. Bayag* *2. Violet* *3. White* *4. Biit (small roots)* *5. Biit (big roots)*	-	-
Iyattuka	*1. Chesa* *2. Gayyadek* *3. Ibagyu* *4. Molikka* *5. Itbuy* *6. Punchi* *7. Sampidu* *8. Kalbu-oy* *9. Unnamed* *10. Luppeet* *11. Imelda*	-	*Malabing*
Applai-Kankanaey	*1. Alla-at* *2. Mansali* *3. Alusi-is* *4. Kentegan* *5. Gallading* *6. Imported* *7. Biit Turning* *8. Manila*	*1. Labosan* *2. Kalbooy* *3. Parparya* *4. Winalila*	*E-ewey*
Total	*94*	*63*	*22*

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

There were 179 sweetpotato cultivars identified and have been grown for more than 50 years by the ethnolinguistic groups in Northern Philippines. This indicates the importance of sweetpotato as food and cash crop.

The survey results showed that the ethnolinguistic groups have their own sweetpotato preferences and choices. Accordingly, from the 179 cultivars identified, 100 are traditional and 79 are introduced cultivars.

The survey results also showed that 94 cultivars are widely planted, 63 are endangered or rarely planted and 22 were already lost/extinct.

Of the 94 commonly grown cultivars, the *Ivatans* had 19 mixed varieties of sweetpotatoes which have different shapes, skin, flesh colors and cooking characteristics. The *Iyattukas* in Asipulo, Ifugao have grown five yellow fleshed cultivars, three white fleshed, one unknown variety for vegetable tops and two inedible cultivars for ornamental purposes. Ten cultivars of different plant, storage root and maturity characteristics were also planted by the *Biga-Kalingas*. The *Aetas* in Central Luzon mentioned five traditional cultivars and three introduced high yielding, early maturing and marketable cultivars as cash crops. Eight traditional cultivars are grown by the *Applai-Kankana-eys* of Mountain Province.

Further, the *Bagos* in La Union and Ilocos Sur mentioned seven red-skin cultivars, one high-yielding called *Amsitan*, the sweet type *Amianan* and the *Labkang* drought/heat tolerant cultivars. The *Kapampangan* farmers in Tarlac mainly produce the six introduced high yielding and market-preferred cultivars including planting materials. The *Kalanguyas* in Nueva Vizcaya maintained five cultivars while the *Kankana-eys* in Benguet mentioned another five types. The *Isnegs* in Apayao revealed five abundant cultivars with violet and white flesh, and two *Biit* cultivars that can easily regenerate even in fallowed farms. The *Masadiit-Tingguians* in Abra have grown four cultivars while the *Buhid-Mangyans* mentioned three traditional but commonly grown cultivars. The *Ibalois* in Benguet grow the 50-year old known *Mamon* and *Tres Colores* which were collected and evaluated by NPRCRTC-Benguet State University researchers and re-introduced to them. Lastly, the *Bugkalots* in Nueva Vizcaya mentioned the *Kuliit* and *Swerte* cultivars.

From the 63 endangered cultivars, 28 of them are being planted by the *Kalanguya* farmers, 10 by the *Bago* farmers, nine by the *Ibaloi* tribes, six by the *Kankanaeys*, five in Central Luzon, four by the *Applai-Kankana-eys* and one each by the *Bugkalots*, *Ivatans* and *Masadiit-Tingguians*. The 22 lost cultivars were caused by low yield, lack/ low marketability, introduction of new and early maturing varieties, may have been renamed, genetic degeneration due to pest and diseases incidence and lack of good agricultural management.

Among the lost cultivars are those from the *Kapampangan* and *Ilocano* group with six cultivars. Accordingly, they preferred the introduced high yielding and high market demand cultivars compared to the traditional ones. Four cultivars were considered lost by the *Bugkalots* in Nueva Vizcaya due to lack of planting materials, three from the Benguet *Kankana-ey* tribes which is due to low yield, late maturity and low palatability, two from the *Bagos* of La Union and Ilocos Sur, *Masadiit-Tinguians* from Abra and Benguet *Ibalois*, while one each from the *Ivatans*, *Biga-Kalingas*, *Iyattukas* and *Applai-Kankana-eys*. Another reason for the lost cultivars may be attributed to the unmentioned previous NPRCRTC-BSU documentation of sweetpotato cultivars from Benguet municipalities which may have been renamed.

Recommendations

For the conservation of the 179 identified sweetpotato cultivars, it is recommended that the traditional and widely planted high yielding cultivars including endangered/rare cultivars undergo standard methods for identification of duplicates in collections by using morphological

characterization. The *in-situ* conservation of the cultivars may be undertaken by skilled/ trained farmers and be backed-up by an *ex-situ* conservation through collection and evaluation obythe R&D sector. Establishing a community seed bank managed by the locals using farmers' traditional practices is recommended to ensure the sustainability of supply of planting materials. Programs to empower and build capacity among the ethnolinguistic groups, are recommended to increase awareness and develop responsible action towards storage crops. Development of strategies and policies towards the agricultural systems of the communities may be among the key factors for addressing the problems on loss of varieties.

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