

ベトナム北東部におけるイネ遺伝資源の探索収集

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Collaborative Exploration for Collecting Rice Genetic Resources in Northeast Vietnam

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Summary

The objectives of this trip were to collect traditional rice varieties from north-eastern provinces of Vietnam. The provinces of Lang Son, Gao Bang, Bac Thai and Tuyen Quang were visited between 7th and 30th November. Despite the predominance of improved varieties and also hybrid rice (from China and Taiwan) in lowland rice fields the team successfully collected 131 varieties mainly traditional varieties but some improved varieties were collected. Most of the varieties collected were upland varieties. Among the characteristics of the varieties collected were glutinous, aromatic and purple varieties. A number of the upland rices appeared to have disease resistance and drought tolerance.

KEYWORDS : rice, landrace, upland rice, northeast Vietnam

1. 目的

ベトナム北部はラオス、中国雲南省、広西壮族自治区と国境を接し、山間地帯には多くの少数民族が居住している。この地域はアジア栽培稲の起源地に近く、野生稲をはじめ、在来種など多様なイネ遺伝資源の存在が想定され、遺伝資源の研究、調査を行う上で重要な地域である。一方、ベトナムはドイ・モイ政策のもとに国の近代化、経済発展を促進しており、

稲作においても改良品種の導入により在来種の消滅が危惧され、調査、収集を急ぐ必要がある。今回の探索調査ではベトナム北東部について稲作の実情を把握し、イネ遺伝資源の調査・収集を行う。

2. 調査方法

1994年から国際植物遺伝資源研究所（IPGRI）によるベトナムを対象とした植物遺伝資源の探索調査および収集が開始された。本計画は3年間の研究プロジェクトであり、IPGRIの特別予算により、ベトナム農業食料省農業科学技術局（DAST）の協力の下に行われている。今回はベトナム北部について2チームが探索調査を行い、そのうちチーム1（奥野員敏・福岡

Table 1 Log of the trip (Team 2)
探索調査の日程（チーム2）

Date	Course	Activity
November		
4	Tokyo — Hong Kong — Ha Noi	Transfer
5	Ha Noi	Supply materials for trip
6	Ha Noi	Arrangement trip at VASI
7	Ha Noi — Lang Son	Transfer
8	Lang Son — Loc Binh	Collection (4 Samples)
9	Loc Binh — That Khe	Collection (4)
10~11	That Khe	Collection (11)
12	That Khe — Cao Bang	Collection (5)
13~14	Cao Bang	Collection (12)
15	Cao Bang — Tinh Tuc (Cao Bang)	Collection (3), Cleaning seed
16	Tinh Tuc — Bao Lac (Cao Bang)	Collection (2), Cleaning seed
17~18	Bao Lac (Cao Bang)	Collection (13), Cleaning seed
19	Bao Lac — Tinh Tuc (Cao Bang)	Transfer, Collection (5)
20	Tinh Tuc — Cao Bang (Cao Bang)	Transfer, Investigation grain traits
21	Cao Bang — Bac Can	Collection (9)
22~23	Bac Can	Collection (17)
24	Bac Can — Tuyen Quang	Transfer, Cleaning seed
25	Tuyen Quang — Ham Yen	Collection (17)
26	Ham Yen	Collection (6)
27	Ham Yen — Na Hang	Transfer
28	Na Hang	Collection (22)
29	Na Hang — Phu Ho	Transfer, Visit Fruit Institute
30	Phu Ho — Ha Noi	Transfer
December		
1~2	Ha Noi	Cleaning seed, Investigating grain
3	Ha Noi — Hong Kong — Tokyo	Transfer

修一氏ら）が北西部，チーム2（当チーム）が北東部を担当した。いずれのチームも日本，ベトナム双方からそれぞれ2名の研究員が参加し共同で探索調査を行った。

チーム2の探索調査は1995年11月4日から12月3日までの1か月間行った。はじめにベトナム農業科学研究所（VASI）において，チーム1とともに探索ルートや日程の概略について打ち合わせを行い，現地ですらに詳細な打ち合わせを行った。探索調査を行ったのは Lang Son, Gao Bang, Bac Thai および Tuyen Quang の4省で，移動には車を用いた。探索調査の日程を Table 1 に，探索の経路および収集地点を Fig. 1 に示した。各省では省政府の許可を得た後，人民委員会等で稲作事情や収集のための情報を得た。収集に当たっては，地元の農業

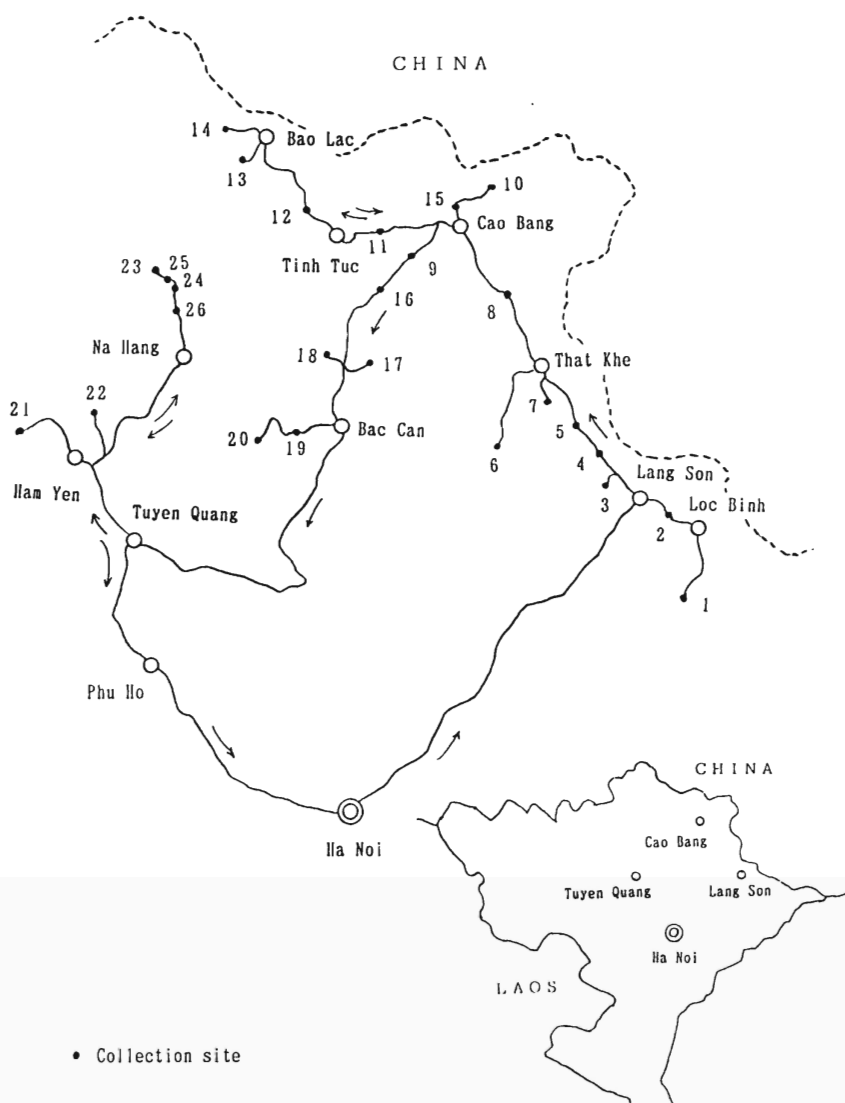


Fig. 1 The exploration route for collecting rice germplasm in northeast Vietnam
ベトナム東北部におけるイネ遺伝資源の探索収集ルート

改良普及員等の協力を得て農家を訪問し、貯蔵中の種子の分譲を受けたり、圃場でサンプリングを行ったりして、在来種を中心に収集した。移動の途中でも農家に立ち寄り収集を行った。収集した品種は農家から特性、栽培時期等について聞き取り調査を行った。また種子は、害虫や汚粒を除くため随時クリーニングを行うとともに、脱ぶして玄米の特性を調査した。

3. 調査・収集結果

11月7日に、北西部を探索調査するチーム1と別れて、ハノイを出発し、Lang Son 省、Cao Bang 省、Bac Thai 省、Tuyen Quang 省と順次探索調査を行い、11月30日にハノイに帰着した。車での走行は全体で2010kmに達し、このほか徒歩での行動や、オートバイで移動する場面もあった。この時期は乾季の始まりで、気候的には探索に好適な時期であった。参考として Table 2 にハノイの年間の気象を示した。

Table 2 Climate in Ha Noi (Average 1993,1994)
ハノイの気候 (1993,1994年平均)

Month		1	2	3	4	5	6	7	8	9	10	11	12	Year
Av. Temp.	℃	17.0	19.0	19.4	24.7	27.4	29.5	29.3	28.7	27.5	24.4	22.6	18.6	24.0
Rain Fall	mm	8	45	81	60	332	319	327	459	289	217	20	40	2197
Sunshine	hr	73	63	42	86	165	153	180	177	160	189	153	112	1553

After Statistical Yearbook 1994

これらの地域においては、水稻は基本的には2期作が行われているが、乾季にあたる春稲は水利条件から栽培できない地帯も多い。また陸稲は1期作のみである。温度による制約が厳しくないため、播種期、収穫期は大きな幅をもっているが、多くの場合、秋稲は9～11月が収穫期であり、今回、探索調査を行った地域では、ほとんど収穫が終わっていたが、一部地域の水田では収穫最盛期であった。しかし陸稲の場合は全て収穫済みであった。ハノイ周辺では、出発時には収穫風景がみられ、帰着時には苗代に生育中の苗がみられた。Table 3には探索調査を行った4省の米生産概況を示した。米の平均収量は全国平均よりも低く、春稲が少なく、秋稲の比重が高い。これらの地域においても平坦地～中山間地の水田は、ほぼ全面的に中国や台湾から導入された改良インディカ品種 Moc tuyen, Bao thai (20年前から)、Doan ket, CI 203 (10年以上前から)などが栽培されており、一部では中国から種子を購入して、ハイブリッド品種も栽培されている。これらの品種は条件のよい所では5～7t/haの収量をあげている。そして一般の水稲梗品種では、在来種はほとんど消滅している。しかし糯米または低アミロース米、香り米などの特殊米では在来種が残されていた。これらは長稈で穂長も長い短(円)粒種が多く、病害虫に強いものもある。これらを収集の対象とした。しかし圃場で観察したところ、これら在来種は純系ではなく、かなり雑ばくなものが多かった。

Table 3 Rice Production in North-eastern Provinces of Vietnam (1994)
ベトナム北東部4省における米生産 (1994年)

* : 1000

Province	Land area (* km ²)	Population (*)	Sown area of rice (* ha)	Output of rice (* tons)	Average yield (t/ha)	Spring rice area (* ha)	Autumn rice area (* ha)
Tuyen Quang	5.8	645	40	125	3.14	13.3	26.5
Cao Bang	8.4	638	33	94	2.81	3.3	30.3
Lang Son	8.2	689	43	150	2.70	9.6	34.7
Bac Thai	6.5	1168	75	227	3.02	24.6	50.6
Whole count.	331.0	72509	6598 ¹⁾	23528	3.56	2381.0	2640.0

1): Include 1577,000 ha of summer rice area in southern provinces.

After Agriculture of Vietnam 1945-1955.
and Statistical Yearbook 1994.

山間地で少数民族が栽培している陸稲は、改良種はほとんどなく在来種が多い。陸稲は既に収穫済みで、圃場で栽培状況を調査することはできなかったが、栽培地帯は山の斜面の焼畑が多い。今回の探索では、これら陸稲を主として収穫した。農家から分譲された種子は、いくつかの品種が混じっていると思われるものが多かった。

収集した品種は合計131点あり、それらの多くが陸稲である。これらは長粒種よりも、短(円)粒種が多く、粒大は比較的大きい。そして糯または低アミロース米が多く、香り米、紫黒米品種なども含まれる (Table 4)。さらに耐干性や、病虫害抵抗性品種も含まれると推定され、遺伝資源として貴重なものが多いと思われる。収集品種の一部には改良種も含まれ、収集地点の標高は低い所は80m から、高い所では1100m に達する。収集した粳を脱ぷして調べた糯、粳などの玄米特性と、農家から聞き取り調査した特性が異なる場合があったが、Table 4 には聞き取り調査の結果を示した。

なお、この地域には野生稲 *Oryza granulata/meyeriana* が多く生育しているとされているが、今回の探索調査ではこれらは見つけれなかった。

4. 所感

道路事情が極めて悪く、通行に時間を要することなど、現地の事情把握が事前には出来なかったため、当初の予定を若干縮小せざるを得なかった。省都など主要都市間の道路は車の走行にあまり問題はなかったが、地方道に入ると、車(ランドクルーザー)の走行が困難で、辺境の地 Bao Lac への道などは乗車人員を減らして車を軽くする必要があったり、全く通行できない場所もあった。道路事情が探索調査の大きな制限要因で、雨季にはとても通行できないような所が多く、調査時期としては、今回は気候的に最適であった。

現地関係者の話では、5～10年前は平坦地水田でも多くの在来種が栽培されていたが、それらはすでに消滅し、詳しい調査資料もないと言う。したがって今回の探索調査は遅きに失した感があるが、今後さらに在来種は消えて行くであろうから、この数年が探索のラストチャンスでもあろう。今回の探索調査で収集できなかった地帯にも、在来種のめばしい山間地帯があると言われ、次回実施するとすれば、そのような地帯を集中的に探索するのが効果的と思われる。今回の探索調査では、現地の関係者、訪問した農家とも、大変好意的に対応してくれたので、道路事情、生活環境等、諸条件の悪さも十分カバーできた。

Lang Son 省、Cao Bang 省は中国の広西壮族自治区と接しており、中国との経済交流の多い地帯である。このため町の市場には中国から入ってきた生活物資があふれていた。また農村地帯でも各地で市場がたち、その中で生活用品と並んで白米なども売られており、それらを調査することによって、その地域の栽培種が長粒種、短粒種、糯、粳など、おおまかに把握できた。

5. 謝辞

今回の探索調査の実現にご尽力いただいた IPGRI, DAST, VASI, 農林水産技術会議事務局国際研究課、農業生物資源研究所の関係各位、ならびに好意的にご協力をいただいた現地関係機関各位、農家の方々に厚くお礼申し上げる。

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List of rice landraces collected in northeast Vietnam, 1995

Collection No.	Date Month	Genus & Species	Cultivar or local name	Sample P/In ¹⁾	Status ²⁾	Locality(Prov.Dist.Commune/Vill.,km) & Altitude(m)	Crop season	Cultural practice	Usage	Topography ³⁾	Site ⁴⁾	Drainage ⁵⁾	Characteristics	Ethnic group
501	08/11	<i>Oryza sativa</i>	KHAU NUA PAY	P	3	Lang Son, Loc Binh, Xuar Duong, Bam Lau Nam Quan, 75km S Loc Binh / 300m	5-11	lowland	human food	1	1	2	sticky, aromatic	-
502	"	"	KHAU NUA PE	"	"	"	5-11	"	"	1	1	2	sticky	-
503	"	"	KHAU NUA LAY	"	"	Lang Son, Loc Binh, Xuar Duong, Bam Lau Nam Quan, 76km S Loc Binh / 300m	5-11	upland	"	6	2	4	sticky, hull color heterogeneous, (straw, red, black, red striped)	-
504	"	"	KHAU NUA KEO	"	"	Lang Son, Loc Binh, Xuar Duong, Bam Lau Nam Quan, 77km S Loc Binh / 300m	5-11	lowland	"	1	1	2	sticky, hull color brown with stripe, brown with stripe, high yield	-
505	09/11	"	KHAU NUA LIEM	"	"	Lang Son, Loc Binh, Ban Khanh, Keo Mat 6km N Loc Binh / 300m	5-11	"	"	1	1	2	sticky, aromatic	-
506	"	"	KHAU NUA KEO	"	"	Lang Son, Yen Dung, Tan My, Nam 1km SW Dong Dang / 230m	5-11	"	"	1	1	1	sticky, aromatic, brown hull and apiculus	-
507	"	"	KHAU NUA MENG THUNG	"	"	Lang Son, Van Lang, Hoang Viet, Na Thanh 9km N Dong Dang / 310m	5-11	"	"	1	1	1	aromatic, brown hull	-
508	"	"	KHAU NU SAY	"	"	Lang Son, Dong Vang, Trang Dinh, Hung Viet, Hat Con, 34km NW Dong Vang / 200m	4-9	upland	"	6	2	4	sticky, reddish brown apiculus	-
509	19/11	"	DOAN KET	"	"	Cao Bang, Cao Bang, Tinh 3km SE Cao Bang / 200m	8-11	lowland	"	1	1	2	seed coat color heterogeneous	-
510	"	"	KHAU NEP TRUNG QUOC	"	"	"	8-11	"	"	1	1	2	long and large grain, hull color brown with stripe	-
511	"	"	NEP VN	"	"	"	8-11	"	"	1	1	2	long and large grain, aromatic	-
512	"	"	BAO THAI LUN	"	"	"	8-11	"	"	1	1	2	brown hull, seed coat color heterogeneous	-
513	"	"	NEP MOANG	"	"	"	8-11	"	"	1	1	2	large grain, reddish brown apiculus	-
514	10/11	"	TRAM VAI	"	"	Lang Son, That Khe, Trang Dinh, Vinh Thien 30km SW That Khe / 290m	5-10	upland	"	6	2	4	long grain, seed coat color heterogeneous	-
515	"	"	KHAU LAM PUA	"	"	"	6-10	"	"	6	2	4	(can plant paddy field) sticky, lodging tolerance	-
516	"	"	KHAU NUA DAU	"	"	"	6-10	"	"	6	2	4	sticky, purple hull and apiculus	-
517	"	"	KHAU XIEN PAN	"	"	"	5-10	"	"	6	2	4	sticky, blackish purple and long grain	-
518	"	"	KHAU NUA CHIA SAY	"	"	"	5-10	"	"	6	2	4	sticky, high yield, large grain	-
519	"	"	DOAN KET (1)	"	"	"	6-10	lowland	"	1	1	2	high quality, long grain, blown hull	-
520	"	"	DOAN KET (2)	"	"	"	6-10	"	"	1	1	2	long grain, dark brown hull	-
521	11/11	"	MUOI CAI	"	"	Lang Son, That Khe, Hung Son, Na Khoang 10km E That Khe / 180m	6-10	upland	"	1	1	2	rainfed, glutinous, high yield	-
522	"	"	KHAU NUA MENY THUNG	"	"	"	6-11	lowland	"	1	1	2	aromatic, brown hull	-
523	"	"	KHAU NUA TRUNG QUOC	"	"	"	6-11	"	"	1	1	2	aromatic, round grain	-
524	"	"	KHAU NUA HEO	"	"	Lang Son, Tran Dinh, That Khe, Dai Dong, La Tinh 1km E That Khe / 180m	6-11	"	"	1	1	2	high yield	-
525	12/11	"	KHAU NUA MENG THUNG	"	"	Cao Bang, Thach, Kin Deng, Nam Nang 20km E Cao Bang / 300m	5-9	upland	"	6	2	4	reddish brown hull, red apiculus	-

Collection No.	Date Month	Genus & Species	Cultivar or local name	Sample P/In ¹⁾	Status ²⁾	Locality(Prov.Dist.CommuneVill.,km) & Altitude(m)	Crop season	Cultural practice	Usage	Topography ³⁾	Site ⁴⁾	Drainage ⁵⁾	Characteristics	Ethnic group
526	12/11	<i>Oryza sativa</i>	KHAU MO	P	3	Cao Bang, Thach, Kin Deng, Nam Nang 20km E Cao Bang / 300m	4- 8	upland	human food	6	2	4	high yield, high quality	-
527	"	"	NEP NUONG	"	"	"	5-10	"	"	6	2	4	aromatic, sticky, very large grain	-
528	"	"	TRAM VAI	"	"	"	5-10	"	"	6	2	4	mixed brown hull seed	-
529	"	"	KHAU NUA MO	"	"	"	-	"	"	6	2	4	sticky, brown hull	-
530	13/11	"	KHAU NUA SAY	"	"	Cao Bang, Hoa An, Bach Dang, Xinh Hoa 17km SE Cao Bang / 420m	-	"	"	6	2	4	sticky, large grain, dark brown hull, reddish brown awn	-
531	"	"	KHAU NUA HOM	"	"	Cao Bang, Hoa An, Bach Dang, Na Luong 22km SE Cao Bang / 280m	-	"	"	6	2	4	aromatic, sticky, long grain	-
532	"	"	KHAU NUA DAM	"	"	"	-	"	"	6	2	4	large grain, blackish purple hull and awn	-
533	14/11	"	KHAU SAY (VO VANG)	"	"	Cao Bang, Hoa An, Nguyen Hue 11km N Cao Bang / 260m	4- 9	"	"	6	2	4	seed coat color heterogeneous	-
534	"	"	KHAU SAY (VO TRUNG)	"	"	"	4- 9	"	"	6	2	4		-
535	"	"	KHAU NUA (NEP NUONG)	"	"	"	4- 9	"	"	6	2	4	large grain, reddish brown hull and awn	-
536	"	"	KHAU NUA (VO VANG)	"	"	"	4- 9	"	"	6	2	4	large grain, dark brown hull, reddish brown apiculus	-
537	"	"	KHAU TA	"	"	Cao Bang, Hoa An, Quang Trung, Naca 11km N Cao Bang / 260m	-	"	"	6	2	4	seed coat color heterogeneous	-
538	"	"	KHAU MO KHAO	"	"	Cao Bang, Hoa An, Nguyen Hue, Nam Loat 14km N Cao Bang / 340m	4- 8	"	"	6	2	4	glutinous, seed coat color heterogeneous	-
539	"	"	KHAU NUA HOM	"	"	"	4- 9	"	"	6	2	4	aromatic, seed coat color heterogeneous, sticky, large grain	-
540	"	"	NEP DAP	"	"	"	4- 9	"	"	6	2	4	large grain, dark brown hull, brown apiculus	-
541	14/11	"	KHAU NUA PUOC CHIA	"	"	"	-	lowland	"	1	1	2	sticky, lodging tolerance, brown hull (heterogeneous)	-
542	15/11	"	KHAU LUONG	"	"	Cao Bang, Tinh Tuc, Thom O 59km W Cao Bang / 950m	5-10	rainfed lowland	"	5	1	2	terraced, sticky	-
543		"	KHAU NGOI	"	"	"	5-10	"	"	5	1	2	terraced, lodging tolerance, sticky, long and red awn	-
544		"	KHAU PET	"	"	"	5-10	"	"	5	1	2	terraced, lodging tolerance, long grain, glutinous	-
545	17/11	"	unknown	"	"	Cao Bang, Bao Lac, Hong Tri, Na Phat 4km SW Bao Lac / 480m	3- 8	upland	"	6	2	4	sticky, large and round grain	-
546	16/11	"	BEO TRI	"	"	Cao Bang, Nguyen Binh, Vu Nong, Lung Noi 27km NW Nguyen Binh / 1100m	4.5- 10,11	rainfed lowland	"	5	1	2	terraced, glutinous, red seed coat color	-
547		"	BEO RMUA TUNG	"	"	"	4-10	"	"	5	1	2	terraced, glutinous, long grain	-
548	17/11	"	BEO BIUT	"	"	"	-	"	"	5	1	2	terraced, sticky	-
549		"	KHAU MAI GIANG	"	"	Cao Bang, Bao Lac, Hong Tri, Na Phat 4km SW Bao Lac / 300m	4-10	lowland	"	2	1	2	plant height 160cm, panicle length 36cm, sticky, aromatic	-
550		"	KHAU PAI	"	"	"	4-10	"	"	2	1	2	plant height 150cm, sticky, aromatic, large grain can plant on upland	-

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551		<i>Oryza sativa</i>	KHAU RAY NA	P	3	Cao Bang, Bao Lac, Hong Tri, Na Phat 4km SW Bao Lac / 300m	5-10	upland	human food	6	2	4	(can plant in paddy field)	-
552		"	KHAU TRAM TAN	"	"	Cao Bang, Bao Lac, Hong Tri, Na Phat 4km SW Bao Lac / 480m	3-8	"	"	6	2	4	(can plant in paddy field) very sticky, long grain	-
553		"	KHAU NAM	"	"	"	3-8	"	"	6	2	4	sticky, red seed coat color	-
554		"	KHAU NAY KHAO	"	"	"	3-8	"	"	6	2	4	glutinous	-
555		"	KHAU NAY DENG	"	"	"	3-8	"	"	6	2	4	glutinous, seed coat color heterogeneous	-
556		"	KHAU VAI	"	"	"	3-8	"	"	6	2	4	sticky, large grain, hull color reddish brown with stripe, reddish brown awn	-
557		"	KHAU LAI NOC	"	"	"	4-10	"	"	6	2	4	sticky	-
558	18/11	"	KHAU PHANG KHIU	"	"	Cao Bang, Bao Lac, Hong Tri, Coc Xa Tren 8km NW Bao Lac / 700m	4-10	"	"	6	2	4	sticky	-
559		"	KHAU HEN	"	"	Cao Bang, Bao Lac, Bao Toan, Cuc Hung 9km NW Bao Lac / 640m	4-10	"	"	6	2	4	lodging tolerance, sticky, very large grain, seed coat color heterogeneous	-
560		"	KHAU KEN	"	"	"	4-9	"	"	6	2	4	glutinous, seed coat color heterogeneous	-
561	21/11	"	KHAU THEP	"	"	Cao Bang, Nguyen Binh, Thinh Vuong, Xep Pan 28km SW Cao Bang / 460m	5-10	"	"	6	2	2	(can plant paddy field) glutinous, long grain	-
562	"	"	KHAU NUA (NEP NUOG)	"	"	"	5-10	"	"	6	2	2	sticky, large panicle (length:34cm, grain num:250)	-
563	"	"	KHAU MUNG	"	"	"	4,5-10,11	"	"	6	2	2	glutinous, long grain, brown hull and apiculus	-
564	"	"	KHAU BAU	"	"	"	4,5-10,11	"	"	6	2	2	(can plant paddy field) sticky, reddish brown glume	-
565	"	"	KHAU NUA DAM	"	"	"	4-10	"	"	6	2	2	sticky, long grain, dark purple hull and awn	-
566	"	"	KHAU NUA NON	"	"	"	4-9	"	"	6	2	2	sticky, long and large grain	-
567	"	"	KHAU KHOENG	"	"	"	4,5-10,9	"	"	6	2	2	glutinous, long grain	-
568	"	"	KHAU NGHE	"	"	"	4,5-10,9	"	"	6	2	2	glutinous, long grain	-
569	"	"	KHAU THU NGAO	"	"	"	4,5-10,9	"	"	6	2	2	sticky, long and large grain, light purple hull and apiculus	-
570	22/11	"	KHAU CHAT	"	"	Bac Thai, Bach Thong, Sy Binh, Khui Vang 28km N Bac Can / 480m	5-9	"	"	6	2	4	glutinous, long and black grain	-
571	"	"	CHAM TOM	"	"	"	5-11	"	"	6	2	4	sticky, large grain, brown with stripe hull, brown apiculus	-
572	"	"	KHAU LUM PUA	"	"	"	5-10	"	"	6	2	4	glutinous, long grain, reddish brown glume	-
573	"	"	KHAU NUA PET	"	"	Bac Thai, Bach Thong, Sy Binh, Na Loan 20km N Bac Can / 480m	5-8	"	"	6	2	4	sticky, reddish brown hull and apiculus, red glume	-
574	"	"	KHAU NUA NUONG	"	"	"	5-8	"	"	6	2	4	sticky	-
575	"	"	KHAU NUA DENG	"	"	Bac Thai, Bach Thong, Sy Binh, 1B Kau Luom 28km N Bac Can / 480m	4-10	lowland	"	1	1	2	high yield, high quality	-

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576	22/11	<i>Oryza sativa</i>	KHAU NUA LUOMG	P	3	Bac Thai, Bach Thong, Sy Binh, 1B Kau Luom 28km N Bac Can /480m	4-10	lowland	human food	1	1	2	reddish brown apiculus, mixed brown hull	-
577	"	"	NEP CAM	"	"	Bac Thai, Bach Thong, Phuong Thong, Xom Dau Cau 20km N Bac Can /200m	5-11	"	"	1	1	2	sticky, long and blackish purple grain	-
578	"	"	BEO BUT VANG	"	"	Bac Thai, Bach Thong, Phuong Thong, Khuoi Lua 23km N Bac Can /260m	5-10	upland	"	6	2	4	sticky, yellow hull, red apiculus and glume	-
579	"	"	MOTA	"	"	"	5-9	"	"	6	2	4	glutinous, seed coat color heterogeneous	-
580	23/11	"	KHAU NUA PIMU	"	"	Bac Thai, Bach Thong, Quang Thuan, Na Dinh 14km W Bac Can /170m	5-11	lowland	"	1	1	2	sticky, large grain, reddish brown hull and awn	-
581	"	"	KHAU NUA NARI	"	"	Bac Thai, Bach Thong, Quang Thuan, Na Chap 14km W Bac Can /170m	6-10	upland	"	6	2	4	sticky, reddish brown glume	-
582	"	"	KHAU NUA HAN	"	"	Bac Thai, Bach Thong, Quang Thuan, Na Dinh 15km W Bac Can /170m	6-9	"	"	6	2	4	sticky, long and large grain	-
583	"	"	KHAU MIN	"	"	Bac Thai, Cho Don, Bang Lung 43km W Bac Can /370m	5-10	lowland	"	1	1	2	sticky, long and reddish brown awn	-
584	"	"	KHAU BAU	"	"	"	5,7-10,11	upland	"	6	2	4	(can be transplanting) sticky	-
585	"	"	NEP DEN	"	"	"	5-11	"	"	6	2	4	sticky, large grain	-
586	"	"	XAM DAU	"	"	"	5-11	"	"	6	2	4	glutinous, long grain	-
587	25/11	"	BEO XAM	"	"	Tuyen Quang, Ham Yen, Yen Huong, Nac Com 16km W Ham Yen /180m	5-11	"	"	6	2	4	glutinous, long and brown awn	-
588	"	"	CAO BANH	"	"	"	5-9	"	"	6	2	4	glutinous, long and large grain, long and black awn	-
589	"	"	NEP CAM	"	"	"	5-11	"	"	6	2	4	sticky, long large and blackish purple grain	-
590	"	"	BEO VANG BLAT	"	"	"	5-11	"	"	6	2	4	sticky, brown hull dark brown apiculus	-
591	"	"	BEO TAY THU	"	"	"	5-11	"	"	6	2	4	glutinous, long grain, reddish brown awn	-
592	"	"	THON PE	"	"	"	6-11	"	"	6	2	4	glutinous, long grain	-
593	"	"	CLANG PE	"	"	"	6-11	"	"	6	2	4	glutinous, long grain, dark brown awn	-
594	"	"	THOM THI	"	"	"	5-10	"	"	6	2	4	glutinous, hull color reddish brown with stripe	-
595	"	"	BEO CAMU	"	"	"	5-10	"	"	6	2	4	glutinous, long grain, long awn	-
596	"	"	BEO DAM LAC	"	"	"	5-9	"	"	6	2	4	glutinous, reddish brown apiculus	-
597	"	"	BEO THOM VANG	"	"	"	5-11	lowland	"	1	1	2	sticky, long and reddish brown awn	-
598	"	"	CA LAO	"	"	"	5-11	"	"	1	1	2	sticky, yellow hull, reddish brown apiculus	-
599	"	"	BEO TRI	"	"	"	5-11	upland	"	6	2	4	glutinous, long and large grain, long and reddish brown awn	-
600	23/11	"	BEO TAM	"	"	"	5-11	"	"	6	2	4	glutinous, long grain	-

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601	25/11	<i>Oryza sativa</i>	GIANG LAU	P	3	Tuyen Quang, Ham Yen, Yen Huong, Nac Com 16km W Ham Yen /180m	5-11	upland	human food	6	2	4	glutinous, long grain mixed reddish brown hull	-
602	"	"	BEO YEN MINH	"	"	Tuyen Quang, Ham Yen, Yen Huong, Nac Com 18km W Ham Yen /180m	5-11	"	"	6	2	4	sticky, heterogeneous	-
603	"	"	BEO THAY CONG	"	"	"	5-11	"	"	6	2	4	glutinous, long and large grain, long and dark brown awn	-
604	26/11	"	NEP CAI TRANG	"	"	Tuyen Quang, Ham Yen, Minh Huong, Minh Quong 30km NE Ham Yen /80m	5-11	lowland	"	1	1	2	sticky	-
605	"	"	NEP CAI DO	"	"	"	5-11	"	"	1	1	2	sticky, reddish brown hull and apiculus	-
606	"	"	SAM PE	"	"	"	5-11	upland	"	6	2	4	glutinous, long grain, large panicle (length 37cm, grain number 220)	-
607	"	"	NEP CAI NAO	"	"	"	5-9	"	"	6	2	4	sticky, large grain, reddish brown glume	-
608	"	"	LA NGHE	"	"	"	5-11	"	"	6	2	4	sticky	-
609	"	"	KHAU KEN	"	"	"	5-11	"	"	6	2	4	glutinous, long grain	-
610	28/11	"	KHAU PUNG	"	"	Tuyen Quang, Na Hang, Yen Hoa, Coc Chu 43km N Na Hang /150m	5-10	"	"	6	2	4	sticky, reddish brown with stripe hull	-
611	"	"	KHAU MOC	"	"	"	5-10	"	"	6	2	4	sticky long and large grain, blackish purple hull and awn	-
612	"	"	KHAU CA	"	"	"	5-10	"	"	6	2	4	sticky long grain, blackish purple hull and apiculus	-
613	"	"	KHAU KEN	"	"	"	5-10	"	"	6	2	4	long grain, long and blackish purple awn	-
614	"	"	KHAU QUAI	"	"	"	5-10	"	"	6	2	4	sticky, blackish purple apiculus, long grain	-
615	"	"	KHAU LAO	"	"	"	5-10	"	"	6	2	4	sticky long and large grain	-
616	"	"	KHAU LENG	"	"	"	5-10	"	"	6	2	4	glutinous, long grain, black apiculus	-
617	"	"	GIANG LAP	"	"	"	5-10	"	"	6	2	4	glutinous, long and reddish brown awn	-
618	"	"	KHAU NGHE	"	"	"	5-10	"	"	6	2	4	sticky, large grain, brown hull, reddish brown apiculus	-
619	"	"	KHAU COI	"	"	"	5-10	"	"	6	2	4	sticky	-
620	"	"	KHAU NHON	"	"	"	5-10	"	"	6	2	4	sticky, long and large grain, reddish brown apiculus	-
621	"	"	KHAU LAI	"	"	"	5-10	"	"	6	2	4	sticky, large grain, reddish brown apiculus	-
622	"	"	KHAU XAM QUAT	"	"	"	5-10	"	"	6	2	4	long grain, long and reddish brown awn	-
623	"	"	KHAU KHA	"	"	"	5-10	"	"	6	2	4	glutinous, long and large grain, long awn	-
624	"	"	NEP CAN RAU	"	"	"	5-10	"	"	6	2	4	sticky, long and blackish purple grain, purple hull and awn	-
625	"	"	KHAU NUA NUONG	"	"	Tuyen Quang, Na Hang, Na Phung 37km N Na Hang /200m	4-10	"	"	6	2	4	sticky, brown hull reddish brown apiculus	-

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626	28/11	<i>Oryza sativa</i>	KHAU PAI	P	3	Tuyen Quang, Na Hang, Na Phung 37km N Na Hang /200m	5-8	lowland	human food	6	1	2	terraced, reddish brown with stripe hull	-
627	"	"	KHAU SAI LAY	"	"	Tuyen Quang, Na Hang, Dari, Na Puc 40km N Na Hang /200m	4-10	upland	"	6	2	4	sticky, yellow hull, brown apiculus, red glume	-
628	"	"	NEP NUONG DEN	"	"	"	4-10	"	"	6	2	4	sticky, large panicle (length-33cm, grain number 260)	-
629	"	"	KHAU KEN	"	"	Tuyen Quang, Na Hang, Dari, Ban Luc 35km N Na Hang /200m	5-9	"	"	6	2	4	glutinous	-
630	"	"	KHAU LANH	"	"	"	5-10	"	"	6	2	4	glutinous, long and large grain	-
631	"	"	BEO IP	"	"	"	5-10	"	"	6	2	4	sticky, long and large grain	-

- 1) Sample P: population, I: individual
- 2) Status 1: wild, 2: weedy, 3: landrace, 4: improved, 5: breeder's line, 6: others
- 3) Topology 1: swamp, 2: flood plain, 3: plain level, 4: undulating, 5: hilly, 6: mountainous
- 4) Site 1: level, 2: slope, 3: summit, 4: depression
- 5) Drainage 1: poor, 2: moderate, 3: good, 4: excessive