Bitter gourd seed breeding company in world

I'm not robot!

Â Â · · Ã € in the Hybrid F-1 Canola Seed market. Early Maturity / Short During Harvest. Â · Generate potential at © 50 MAUNDS / Acre. · Dry and resistant to the severe climate. Rapid growth suppresses weeds. · Tolerant to disease and insects. Resistant to stature Mother and Hosting. · Good bearing, almost 800 pods per plant. Vegetable seeds, we are working on pollinated seeds and hops for different vegetables, each with special resources and benefits for producers and consumers. Our current gamma of plant seeds offered for sale is provided below: Carrot: Lady Red Lady Lady is developed for market / juice purposes and is characterized as a variety of red core. We offer the Red Lady seed that usually presents the following resources: very good germination and high purity. · Compact plants with less apare. Long and dark darkens of attractive dark red. · All carrots so is not red and uniform size. Very high income with necessary mother management. Â , Mild and distressed edible stuffs. · Carrots not in a very sweet succulent and succulent in taste. · Tolerant to disease, insects and clummy stress. Â , Red Lady is known for its long, tasty, attractive red and without padds on the market, ensuring extra gains for their producers. Peas: Green green green is actually a variety of peas, famous among producers and consumers since the last four of the latter. People like their sweet flavor and the attractive green color of the pod, so in the preference of our customers, we appoint this selection as sweet green. Some highlighted features are the following: aid©Ãm aid©Ãm amU .)acserf atiehloc(erca rop sdnuam 061 ©Ãta laicnetop rizudorP ·Â .)lev¡Ãiv e acserf etnemes(o£Ã§Ãanimreg ed edadicapac etnelecxE ·Â .)arudaemes ed said 55 soa atiehloc ªÂ1(o£Ã§Ãarud atruc ed arutluC ·Â Ã .rotudorp ,noitanimreg hgiH .2 .yteirav pinrut etirov s'remraf ,denwoner dlroW .1 POT ELPRUP :pinruT .noitatropsnart dna sesaesid ot tnatsdirR .7 .etsat ni teews yrev dna yciuj,enif ,hself telracS .3 .dirbyh 1-F ytirutam muideM .2 .)nrettap htiw niks neerg thgiL(.nolemretaw epyt yerg notselrahC .1 1-F TEEWS IBUR :noleM straight W .sesaesid rehto dna esoncarhtnA ot tnareloT .9 .saera laciport-bus ni snosaes ruof nworg eb nac ytilibatpada ediW .8 .sgk 01-8 thgiew tiurf egarevA .7 .roloc der telracs ni hself ytilauq doog eV .6 .tnatsiser kcarc ,yticapac gnidloh dleif tnellecxE .5 .egarots dna noitatropsnart ot tnatsiser ,dnir gnorts sah tiurF .4 .niks kcalb ynihs htiw stiurf gib depahs lavO .3 .laitnetop dleiy hgiH yreV .2 .dees nolem retaw 1-F dirbyH .1 1-F DER YDAER:nolemreta W .tnatsiser esaesid erom,srehto ot derapmoc : : : : : : : : : : ; hin'. · .egatrohs retaw dna sesaesid tsniaga ecnatsiser lanoitiddA · .tnemeganam muminim deen dna tnarelot tsorF / dloC · .ecirp tekram hgih hctef ecnaraeppa hserf dna rollerc evitcarttA · 6Handtone, very high surrender. 4. Mother leaves may also be used as forage. 5. Beautiful purple turnips, uniform in shape and size. 6. Practically roots without hair / bulbs. 7. Broad adaptability and agile to grow anywhere. 8. comparatively fewer fertilizer requirements. 9. Tolerant of disease and meteorological stress. 10. Very slow gap and long -field retention capacity. Vegetable seed vegetables we are working on open field and greenhouse products. A complete range of vegetables and winter is under prism tests. The competitive edge of these products is having better color and good perish capacity. The main products are: open field vegetables> Egg Plan> Hama Okra> hot peppers> tomatoes> musk melon> £ £ £ o> Bitter Gourd> Gourd Botter> Oonion> Cavity Flower> Cabine> Cucumbers> Sweet Peppers> Radish> Carrot> Turnips> Musk Melion> Tomatoes> Sweet Pepper> Bitter Gourd> Cucumber> Bottel Gourd Tarzan Investigation Center Ferozpur Road LHR. World Vegeta Center, East and Southeast ã Sia, Kasetsart University, Kamphaeng Saen, Nakhon Pathom 73140, Thailã ¢ ndia Acsen Hyveg Private Limited, Plot #20, Kiadb Industrial Area, Kasaba Hobli, Veracura Post, Duddaballapur Talk, Bangalore 561203, ã DNIA ACSEN HYVEG PRIVATE LIMIT, VILLAGE-NUNHERA, SOHGRAM NEW CITY, BENGALURU, KARNATAKA 560064, THE WORLD VEGETA CENTER, P.O. Box 42, Shanhua, Tainan 74199, Taiwan World Vegeta Center, East and Southeast Asian, P.O. Box 1010, Bangkok 10903, Thailã ¢ ndia World Vegeta Center, Western and Central Frrica - Coastal and Humid Region, Iita -Benin Campus, Cotonou, 08 BP32 TRI, Benin should be author. Agronomy 2020, 10 (8), 1171; Received: 17 June 2020/Revised: 2 August 2020/Accepted: 3 August 2020/Posted: 10 August 2020 O From the World Vegeta (Worldveg) is research and development to carry out the potential of vegetables for healthier lives and more resistant means of subsistence. World Veg operates throughout the ã s and ã frrica, and its portfolio of reproduction comprises global and traditional vegetables. Cucurbit crops contribute importantly to global food and nutritional security and economically important to small farmers, representing 83% of the global cucurbit production. The global Worldveg Cucurbit Creation Program focuses on Four Espão: Gourd Bitter (Momordica Chantia), Tropical Abrabo (Cucurbita Moschata), Gue de Cume (Luffa Acutangula), and Sponge Gourd (Luffa Cylindrica Syn. L. aegyptiaca). Improved cultivars were developed by the induction of private seeds, however, the repeated recycling of elite-based lines reduced the gene base and reduced gene gains for performance and other key trains. This tendency will continue unless a concerted effort is made to introduce new variability gene into elite hums. WorldVeg has organized a creation of creation with seed companies to facilitate access to new lines of reproduction of the center derived from terrestrial branches at all exploited to develop cultivars of genetically diverse and improved cucurbit with greater performance and resistant to main diseases. Through this partnership, WorldVeg presents its improved and F1 -hummed lines on Crop Field Days for selection for the employee of private seeds involved in the creation, product development and sales and marketing. â € œCurbitsâ € © a broad term that refers to all highly diverse Fumamanos known as cucurbitaceae, which includes at least 950 thickens in more than 90 gãjaNEROS that are distributed mainly in the Train and Train and [1]. The key members of Famãlia include cucumbers, Abrabo and Watermelon, which are found globally, as well as Loofah and Bitter Gourd, which is more common in the ã Sia than in others of the world. The overall value of the agricultural gate of cucurbits and melons was $94 billion in 2016 (also divided between melons and other cucurbits [2]). Asia accounted for 83% of this production, Africa 3% and South and Central America 2%. However, many countries do not report data on cucurbits, and the true value can be higher, mainly because cucurbits are often produced at times for domestic consumption, which are usually not included in official statistics. The public and private sectors in Asia made great contributions to the genetic improvement of cucurbits. The creators of the public sector and the curators of germplasm released cultivars of pollinated cucurbits developed through selection from landraces. The private sector creators developed F1 hybrid cucurbit cultivars that enjoyed popularity among producers due to their fruit traits, according to consumer requirement, uniformity, early yields and high commercializables, and in some cases resistance to diseases [3]. In addition, hybrid technology now provides better intellectual protection of products, which created a strong incentive for seed companies to invest in F1 hybrid development programs. In addition to the last two decades, cabaça and pumpkin breeders have successfully developed enhanced cultivars with a variety of types of fruit that fit into different market segments. To gain rapid gains and meet the continuous demands of farmers and market for new products, cucurbit creators often resort to line derivation, engulfing some elite F1 hybrids and using this recycled germplasm to generate new hybrids. This practice led to the reduction of genetic diversity between commercial cultivars of these baskets [4] and pumpkins, which made these crops vulnerable to biotic and abiotic stresses andThe potential for long -term performance improvements. deadline. fo tsewhtron mk 58 tuoba ,ecnivorP mohtaP nohkaN ni ytisrevinU trastesaK fo supmac neaS gneahpmaK eht no detacol dna 0102 yaM ni dnaliahT ot devom saw margorp ehT .nawiaT ni sretrauqdaeh sÂÂÃ¢retneC eht ta 6002 ni nageb margorp gnideerb tibrucuc labolg geVdlroW ehT.acirfA dna aisA ni sremraf elbategev redlohllams rof tcapmi gnitaerc ta demia srotces etavirp dna cilbup eht htiw pihsrentrap sti dna ,detegrat seiceps porc eht ,margorp eht fo yrotsih eht gnidulcni ,margorp gnideerb tibrucuc labolg geVdlroW eht sebircsed repap sihT .)tnalpgge nacirfA , htnarama ,druog egg ,drruog egdops ,druog rettib ,.g.e(selbatev lanoitav sa llew sa)nikpmus la smargorp gnideerb sâ€â€âEvdlrow .Krow .krow sâ€â€âretne Fo tnatrop our sdoog Cilbup labolg reviviled taht smartu elected avresnoc ehT .tae dna worg ew tahw ni ytisrevid retaerg hguorht sdoohilevil tneiliser erom dna steid reihtlaeh rof selbategev fo laitnetop eht gnitiolpxe fo noissim sti ezilaer ot rotces etavirp dna cilbup eht morf secruoser sezilibom geVdlroW .acirfA dna aisA ssorca setarepo taht tnempoleved dna hcraeser rof etutitsni tiforpnon lanoitanretni na si geVdlroW.]5[sravitluc tibrucuc gnidleiy hgih dna tnatsiser esaesid gnideerb ni ssecorp enituor a noitceles detsissa-rekram gnikam ,gnideerb ralucelom rof htap eht denepo sah stibrucuc rof secneuqes ecnerefer emoneg elohw fo ytilibaliavA .stekram tnereffid rof etairporppa sepyt tiurf fo egnar a htiw senil tnatsiser esaesid dna gnidleiy hgih poleved ot noitcelloc siht fo ytisrevid eht stiolpxe margorp gnideerb tibrucuc sÂÂÃ¢retneC ehT .knabeneg geVdlroW eht ni secruoser citeneg tibrucuc fo noitcelloc tsav a delbmessa sah geVdlroW ,1791 ecniS .hcaorppa tnereffid a Nekat Sah Margop Gnideerb Tibrukuc The main objective of the Cucurbit WorldVeg Creation Program is catalyzing Cucurbit Creation Research in partnership with the Private Seed Streak to facilitate the discovery, piloting and sizing of new exclusive products for the benefit of All in the value chain, including farmers, distributors, retailers and consumers. Current creation efforts are concentrated on four Curcurbit: Gourd bitter (Momordica Charantia), Ridge Gourd (Luffa Acutangula), Sponge Gourd (Luffa Cylindrica), and Tropical Abrabo (Cucurbita Moschata.) The selection of spray was based on the careful consideration of vain factors, including their econamemic importance in directed geographical areas, nutrient density, access to resources Genãos, improvement of the status of culture globally, and restrictions of no resolved production and comparative advantage of WorldVeg in resolving them versus the private sector [6.] The program does not work in cucurbit Globally important, such as cucumbers (Slicing and Pickling) and melon (watermelon and Almandcar). Worldveg discontinued the creation of cucumbers because the investment of the private sector creation in this crop is the environment, the prospects for Worldveg solve problems of producing cucumbers are limited, and and The counting of nutrients of cucumber is low in relation to other plant cultures. Trown Gourd Espão and an aboly intended for improvement are cultivated and marketed by small farmers and important cultures in domain gardens and community gardens throughout the so -called and some parts of ã frrica. The estimated Asian production of gourds and abnutors in 2017 was 16.6 million tons of 1.3 million ha, which represented 20.6% of the total production of cucurbit in ã SIA [2]. These cucurbito vegetables provide significant dietary nutrients such as vitamins A and C, iron, potãjostio and bandage [7]. WorldVeg recognized the fundamental role of deprived of seeds as partnership partners for their improved lines and hums, and created a with the private seed sector in Asia, called The Asia and Pacific Seed Association (APSA)-WorldVeg Vegetable Breeding Consortium [8]. Established in 2016, the consortium has 38 members as of 2020. Bitter gourd and tropical pumpkin are part of the consortium¢ÃÂÂs current target crops while sponge gourd and ridge gourd will be added later as these programs started more recently. Members join forces by funding special projects to advance breeding efforts. Participants in these projects gain early access to the Center¢ÃÂÂs unique cucurbit breeding lines, as well as useful technical information and advice.To promote this partnership, the WorldVeg cucurbit team displays its improved cucurbit lines and F1 hybrids at the annual Crop Field Days at WorldVeg East and Southeast Asia, Research and Training Station, located on the campus of Kasetsart University in Kamphaeng Saen, Thailand. This event attracts cucurbit breeders, pathologists, product development managers, sales and marketing managers, R&D heads, and managing directors representing various seed companies from across Asia. The WorldVeg cucurbit breeding team discusses the specific horticultural traits of WorldVeg¢ÃÂÂs unique breeding lines and F1 hybrids with seed industry staff, explores methods to address the narrow genetic base of current commercial cultivars, and helps companies map a way forward to create new cucurbit market segments to meet the changing needs of growers, distributors, retailers, and consumers. The breeding strategy, output, and uptake of this public¢ÃÂÂprivate partnership are discussed below for each crop.Bitter gourd (Momordica charantia) is an important cucurbitaceous vegetable of good nutritional value. In Asia, more than 340,000 ha are devoted to its cultivation annually [9], mainly by smallholder farmers. In India alone, the bitter gourd seed market is 530¢ÃÂÂ580 MT (F1 hybrid seed = 250¢ÃÂÂ280 tons and open-pollinated (OP) seed = 280¢ÃÂÂ300 [10]). Culture is also cultivated in some African mats, such as ghana, which export to Europe where it is in high demand between Asian communities. The cultivation of this cucurbit is expanding in the zion, Congo and Madagascar for local consumption, and these paanes export to Europe and the northern rich [4]. Gourd bitter is also cultivated to a lesser extent in Austrian (Northern Territis, Queensland, New South Wales and Victoria), especially using Asian cultivars for consumers of Asian origin [11]. Gourd Bitter fruit contains an abundance of phytonutrients [12] and is often used in traditional medicine to manage type 2 diabetes, a disease that affects about 379 million people globally [13]. Slam studies have confirmed that supplementation of bitter gourdos diet reduces high fasting glucose in prostance [14,15]. Consumer preferences for color, shape, skin pattern and bitter gourd fruit size vary between and within the paan. Fruit colors vary from white or cream for light green and dark green, and the shapes include cilmful, losetic, spindle and cyanic types. The fruits develop irregular longitudinal cumms and wart skin, depending on the cultivar. Almost 28 types of bitter gourd fruits are consumed in the SIA (Figure 1) and these are found in eight large markets, including pailonia (2 types), China (6 types), okinawa (1 type) , Vietnam (2 types), Taiwan (2 types), Philippines (2 types), and indonial (3 types), and in the southern market of the 10 types of fruits that are popular in ã Ndia, Bangladesh, Pakistã, Sri Lanka and Nepal. Asian consumers cook bitter gourd fruits with other vegetables (potato, onion, garlic), stuffed or agitated, or add them (the white fruit) to soups to produce a slightly bitter taste. The fruit also widely used to make chips, especially in the south of the Chorga bitter gourd prepared from dried fruits is © a popular japan drink and some other Asians .]81[setnednepedni sovissecer seneg siod rop adalortnoc ©Ã sahnil sassen aicnªÃtsiser a euq odanimreted iof ,etnemroiretsop ,e]71[8102 me MPC Ã setnetsiser sagrama a§Ãabac ed sahnil ocnic uo§Ãnal gevdlroW O .socit¡Ãisa sesÃap setnerefid me agrama a§Ãabac me savisulcxe XP ed sadirroc ortauq ed a§Ãneserp a maralever setnemes ed sadavirp saserpme ocnic e GEVdlroW ad o£Ã§Ãazilacol-itlum ed setset sO .]61[soturf sod edadilauq an e otnemidner on o£Ã§Ãuder etneuqesbus e satnalp sad otnemicserc on o£Ã§Ãuder ,megahlof ad arutarepmet adrep Ã odnavel ,railof acit©Ãtnissotof aer¡Ã ad adrep adip¡Ãr amu me matluser sa§Ãneod ed sotrus sO .safutse e sotreba sopmac me stibrucuc ed o£Ã§Ãudorp a atefa euq air©Ãs acignºÃf a§Ãneod amu ©Ã)XP(iihtnaX areahpsadoP alep odasuac)MPC(³Ãp me ofom O .]4[lairetam od acif¡Ãrgoeg megiro a etrap ednarg me metelfer euq seµÃ§Ãalupopbus sªÃrt uocifitnedi seralucelom serodacram odnasu sahnil sassed otnujnocbus mu ed acit©Ãneg esil¡Ãna A .siacol sortuo me e aidn¢ÃliaT an geVdlroW me sodazilaer soiasne me soturf sod edadilauq roiam e otnemidner rohlem maribixe sahnil sassE .einªÃgorp ed sahnil ertne e ortned etneuqesbus o£Ã§Ãeles e socit¡Ãisa sesÃaP .agrama a§Ãabac ed atiehloc ad ortned acit©Ãneg edadisrevid ad otnematiertse mu me uotluser ossI .o£Ã§Ãudorper ed seroiretna sossecus razilatipac arap sotnemazurc etile - £Ã etile an etnemlapicnirp odnacof e laicremoc o£Ã§Ãairc an sadanoicaler etnemamitni sagrama a§Ãabac ed sahnil ed oremºÃn oneuqep mu odnasu etnemlarge ,sograma a§Ãabac ed o£Ã§Ãairc ed samargorp maraicini setnemes ed saserpme siaM .atiehloc laicremoc ednarg mu me laicremoc-imes atiehloc amu ed aisÃ an agrama a§Ãabac a uomrofsnart o§Ãnava esse e ,etnemavitcepser ,ocyham e etseo-etsel setnemes rop aidnÃ an e sanipiliF san 08 sona sod oicÃni on soda§Ãnal 1F sodirbÃh soriemirp so maraf keviV e ratS edaJ ,a§Ãabac ed seravitluC developed 28 bitter gourd lines resistant to additional CPM from different market segments derived from terrestrial branches through increment and selection (Table 1). The creators of associated seed companies ã WorldVeg through the consent of plant branches of APSA-WORLDVEG is transferring the resistance of CPM of these sources to their elite lines from different market segments [19]. New Delhi Vãrus Tomato Waterfall (Tolcndv) (Genus begomovirus, Famãlia Geminiviridae) is an economically significant begomovãrus that can cause severe bitter gourd epidemics in southern ã Sia [20]. Bitter gourd lines that are resistant to tolcndv is not disposed of, so this begomovan is a great restriction of the bitter gourd production. Severe tolcndv infection leads to short entertainment and distorted, ascendant, often chlorotic leaves. Vãrus is transmitted by Whitefly Bemisia Tabaci Genn. persistently [21]. The bitter Gourd line developed by WorldVeg AVBG1655 (derived from a Bangladesh land) was consistently classified resistant to TolcNDV in Multilocalized Tests in NDIs conducted by private seed companies [22], and this could be used as a potential stock for Get TolCNDV Resistance in locally adapted gourd cultivars. Noble Seeds Private Limited (Bangalore, Ndia) recently developed two bitter Gourd (NBL 368, NBTH 19156) Tolcndv resistant using this source of resistant, and these are going through multi-dislocation tests £ £ o ndia [23]. Currently, world Veg partners of bitter gourd with 25 seed companies, all of which are using AVBG1655 to transfer TolcNDV resistance in their creation lines. However, WorldVeg is looking for new sources of resistant to Begomovãrus. The mothers of the Gourd cultivars Commercial OP range from 12 to 15 t haâji, while commercial humans produce from 25 to 30 t haâji [24]. Due to the narrow basic base of the breeding material of the seed company, has Diffracil break the performance plateau for f1 commercial humer. The wardveg bitter gourd line AVBG1325 (derived from a land) is a predominantly genuinous line with good combination capacity. Mundo Veg made an advance with a bitter Gourd Hama F1 (AVBG1601) Using its own Inbred Lines Developed (AVBG1325 and CPM resistant line AVBG1334), and this F1 Hama reached 36-50 t haâ. '1 In Multilocalization Tests performed by Blacin Sector creators in the pailonia and Myanmar and Noble Seeds Private Limited in ã ia (Table 2). Three seed companies launched this humor F1 in ã ndia under different names of brands, including Figo, Asha and Kbih 25 [10,23,25]. AVBG1325 was found to combine commercial production and headphones by almost all project companies in the project. World The bitter gourd lines of Veg were also used by vain companies to develop improved Gourd Humids, including Sakata Seeds ãdia Private Limited, Gurugram, ãdia (Leena, Sakata 7159) [26], Ajeet Seeds Private Limited, Aurangabad, Ndia (Green Wonder, Treasure) [27] and Kaveri Seeds Private Limited, SecondraBad, ãdia (chhote lal). Gourd Bitter hubes developed by other collaborative seed companies are in advanced phases of multipurpose tests in ã ndia [29]. A bitter recurring recurring selection program was started at WorldVeg in 2011. Basic population was created by interpreting several Genebank adhesions and commercial tuks that have important horticultural traães, such as high fruit performance, brightness of fruits, green fruits uniform without white tips and narrow necks, early bearings, long fruit duration and resistant to CPM and begomovãrus. Pedigree selection followed four recurrent selection cycles. Gourd Bitter lines developed from this program is now being tested on tests rop rop odajesed o§Ãart mu(saditÃn e setrof saturf ed sahnipse sa omoc ,siapicnirp so§Ãart sotium mªÃt sahnil sassE .otnemidner ed Color of uniform bright green fruits, absence of white tips and narrow neck (preferred characteristics by consumers), early and total improvement and resistance to CPM and begomovirus (producer-promode characteristics). These enhanced lines will be offered to partnership seed companies for evaluation and selection. Tropic Pumpkin (Cucurbita Moschata) is a widely cultivated cucurbita of great economic and nutritional importance. Pumpkin is consumed cooked, steamed or baked or used to make soups and puree. The leaves are also used as cooked vegetable or soups. Only in India, the pumpkin seed market is 335 mt (F1 hybrid seed = 85 tons and OP seed = 250 tons; [10,24,29,30]). In Bangladesh, pumpkin is next to eggplant (brinjal) and radish in cultivation area (9600 ha) [31]. Pumpkin is also used as a graft to manage soil-borne diseases in melons [9]. Pumpkin is a rich source of micronutrients, especially provitamin carotenoids, tocopherol and ascorbic acid, which have important roles in human nutrition as vitamin It is also a source of minerals such as calcium, potassium and iron [7]. The World Health Organization classifies vitamin A deficiency (VAD) as a public health problem with high prevalence in Sub-Saharan Africa (48%) and South Asia (44%) [32]. The pumpkin lines developed by WorldVeg are rich in 2-carotene (provitamin A) with content of up to 6.01 mg/100 g (fresh fruit weight base), according to bioassay by the High-earth Research and Development Institute (HRDI), Thailand [33]. Eating 100 g pumpkin can therefore easily provide the minimum daily requirement of 4.8 mg of 2-carotene (800 micrograms of vitamin A virus). Mosaic virus (ZyMV), pumpkin leaf winding virus (SLCV), Tolcndv, yellow virus o£Ã§Ãudorp o£Ã§Ãudorp Ã sevarg seµÃ§Ãirtser o£Ãs surÃvorelop e)vybac(atibrucuc od saroglup ed ,seµÃ§Ãalupop e sosseca ertne e ortned sadanoicales marofâã siev¡Ãjesed saturf ed sedadilauq moc MPC e surÃv a setnarelot satnalP .)arucse ajnaral ,oralc ajnaral ,ajnaral ,orucse olerama ,oralc olerama ,olerama(enrac ed roc e)agnol ,adnoder ,lavo ,analp adnoder(amrof ,)oralc edrev ,oterp edrev ,odahcnam edrev(elep ad roc a omoc ,saturf ed sacitsÃretcarac e MPC oa aicnªÃtsiser ,surÃv a aicnªÃtsiser arap sadagerges marof seµÃ§Ãalupop sA .sarob³Ãba ed o£Ã§Ãairc ed amargorp o ra§Ãnal a geVdlroW o uovitnecni surÃv oa aicn¢Ãrelot a moc serossimorp sosseca ed o£Ã§Ãacifitnedi an laicini ossecus O .aidn¢ÃliaT ,neaS gneahpmaK me surÃv soir¡Ãv ed sadatsefni saer¡Ã me sodailava marof luS od acir©ÃmA e acirfÃ ,aisÃ an sesÃap 62 ed soir¡Ãnigiro sosseca 008 ed siaM .knabeneG ues me odanezamra arob³Ãba ed laciport amsalpomreg odacifisrevid on racot a uo§Ãemoc gevdlroW o ,0102 mE .surÃv oa aicnªÃtsiser a ranoiceles ed edadinutropo a moc gevdlroW od sarob³Ãba ed o£Ã§Ãairc a ecenrof olpitlºÃm surÃv od acimªÃdne o£Ãsserp assE .]73[2102 edsed sodazilaer arob³Ãba ed opmac ed soiasne ed ritrap a sadartsoma sacit¡Ãmotnis sahlofF)surÃv sod surÃv sod surÃv ed ASILE e RCP rop sodamrifnoc marof e socimªÃdne o£Ãs)VDNCLOT ,VCLS(surÃvomogeb so e)W-VSRP ,VMyZ(surÃvytop so edno lacol mu ,aidn¢ÃliaT an ,neaS gneahpmaK ed supmac on ,trastesaK edadisrevinU an odaesab ©Ã gevdlroW od siaciporT sarob³ÃbA ed aicnªÃrefeR ed labolG amargorP O .o£Ã§Ãairc a arap lanoicida acit©Ãneg edadisrevid adizudortni ajes euq senoma e ,ozarp ognol a otnemidner ed sairohlem arap sadatimil savitcepsrep moc ,PO ed seravitluc/1F sodirbÃh snugla me sodaesab o£Ãs acirfÃ an e aisÃ an arob³Ãba ed setnemes ed siaicremoc sodacrem so ,ossid m©ÃlA .surÃv ed ortcepse olpma mu a setnetsiser 1F sodirbÃh uo laciport arob³Ãba ed siaicremoc seravitluc metsixe o£ÃN .]63,53,43,02[stibrucuc me satsim surÃv rop seµÃ§Ãcefni ed siaidnum sotaler metsixe ,ossid m©ÃlA .%001 ©Ãta me otnemidner ed sadrep rasuac ed sezapac o£Ãs e acirfÃ e ed ed o£Ã§Ãacifitnedi Ã uovel eergidep ed o£Ã§Ãeles A .)einªÃgorp ed ahnil(o£Ã§Ãeles ed adaropmet amix³Ãrp a arap einªÃgorp rizudorp arap)adalortnoc o£Ã§Ãazinilop(o£Ãm Ã sodazinilop)hsedalgnB B gniducnl(aidnI dna noiger amruB-odnI ehT .ais The dna,napa J ,ASU eht ni sremusnoc htiw ralupop si)egnops gnibbucrs hafool eht(stiurf erutam fo pracodne suorbif ehT .seitreporp egarots dna gnippihs tnellecxe sah dna nosaes tew dna toh eht gnirud L .seirruc ni desu era dna ,deirf ro deleep ,deliob ,selbategev sa granddaughter era dna senisiuc nacirf dna naisA ni elor tnatropmi na evah tiurf hafool erutammI .stneirtun evoba eht fo ekatni dednemmocer yliad eht fo %61 dna %5 neewteb srevoc gnivres g 002 A .]7[noitirtun namuh rof)UI 014(A nimativ dna)WF g 001/gm 931(muissatop)WF g 001/gm 41(muisengam)WF(thgiew hserf g 001/gm 02(muiclac sedivorp tiurf hafoo L .affuL suneg eht fo seiceps detavitluc owt era)alugnatuca .L(druog egdir dna)acaitpygea .L .nys ;acirdnilyc affuL(druog egnopS.)93[9102 ni nawiaT ,naniaT ,detimiL ynapmoC deeS worgrevE ot dna 8102 ni nawiaT ,naniaT ,detimiL ynapmoC gnidarT deeS WOLF-GNIS ot nawia)AOC(erutlucirgA fo licnuoC eht yb)ylevisulcxe-non(desnecil erew sravitluc eseht dna , "epoH luc2 .oN CDRVA " neilauH ,dirbyh 1F tnatsiser 3NT-VMYZ eh PO tnatsiser 3NT-VMYZ eht desaeler geVdlro W.]83[seneg tnanimod yratnemelpmoc owt yb dellortnoc si ecnatsiseR .nawiaT ni tnelaverp si hcihw ,3NT-VMYZ ,niarts tneluriv tsom eht tnatsiser si ,ecardnal atahcsom.C eht taht dnuof eW .nawiaT ni nikpmup fo negohtap rojam si VMYZ dettimsnart-dihpa ehTcejorp siht fo stuptuo eht erahs ot seinapmoc F.)2 erugiF ,3 elbaT(stnemges tekram tnereffid morf ytilauq tiurf devorpmi dassop taht senil tnarelot suriv 051 naht nahtConsidered the main diversity centers of sponge and summit cabinet, respectively [40]. These nutritional skills are an important source of subsistence for small farmers in the SIA and can be cultivated in agro-climated vain. Large variability of the size, shape and color of the fruit can be observed in both samples. There are two segments of sponge cabin market: light green and dark green green. Trown market segments for Ridge Gourd are recognized and are based on the length of the fruit: small, dio and long. These gourds are high in the portfolio of seed companies. Only in ãdia, the total market of loophuh seeds is 490 mt (gourd ridge: seed humer f1 = 80 tons, op = 80 tons; sponge gut: seed huma f1 = 200 tons, op = 130 tons [10,23,24]). The Ridge and Sponge Cabaa Seed Market in Bangladesh is 16 and 22 mt, respectively [41]. Most Loofah's creation research is concentrated in ãdia, and a recent survey by APSA member companies indicated that LOOFAH should be considered a priority harvest for research breeding By WorldVeg, as moderate to strong growth is expected in the size of the seed market in the 10 years [42]. Commercial bushing cultivars of the currently susceptible to Tolcndv, and the control of this disease is a major challenge for bushing producers. From an econamemic perspective, the Downy (DM) caused by pseudoperospora cubensis is the second foliar disease Fanchica most important fan of the silly. The cultivars of OP derivatives of Landces are being quickly replaced by modern F1 humus; However, the gene base has decreased because of the creator's excessive confidence in the use of some F1 elite tuks to derive consanguage lines for the so -called development. LOFAH GENERAL RESOURCES me me geVdlroW me geVdlroW me geVdlroW od asiuqsep ed o£Ã§Ãatse an socimªÃdne o£Ãs MD e vdnclot sobmA .adatimil etnemamertxe ©Ã setnemes ed saserpme rop aditnam omsalpomreg- obmop ed edadisrevid a e ,sievÃnopsid o£Ãtse o£Ãn vdncloT a setnetsiser)odacrem ed sotnemges setnerefid e zorra ,ohlim ,ogirt omoc ,sarutluc sednarg ed o£Ã§Ãaripser-©Ãrp an etnemlapicnirp marartnecnoc es sadavirp-ocilbºÃp sairecrap bos satnalp ed o£Ã§Ãairc ed siabolg sotejorP .laicremoc o£Ã§Ãarolpxe a arap solpma etnemaciteneg sodirbÃh serohlem revlovnesed arap acit©Ãneg edadilibairav avon atse rarolpxe medop setnemes ed airtsºÃdni ad serodairc so e ,setnemes ed saserpme sa moc airecrap me aisÃ an o£Ã§Ãazilacolitlum ed soiasne me MD e VDNCLoT a artnoc sadatset o£Ãres etile ed hafool ed sahnil sassE .odacrem ed otnemges ed ocifÃcepse otudorp etsed acit©Ãneg esab a missa o£Ãrailpma e sacnarb setnemes ed seravitluc serohlem ed otnemivlovnesed on o£Ãraduja euq ,MD oa aicn¢Ãrelot e VDNCLoT oa aicnªÃtsiser moc sacnarb setnemes ed ajnopse ed sahnil sasrevid etniv uevlovnesed geVdlroW A .)esualC MH alep adiriuqda(aidnÃ ,ihleD ,detimiL deeS etavirP sdeeS yrutneC ad)level edrev aturf(sacnarb setnemes ed ravitluc alep odanimod etnemlatelpmoc ©Ã setnemes ed odacrem o edno ,aidnÃ an TM 05 a 04 ed ©Ã sacnarb setnemes moc ajnopse ed setnemes ed odacrem O .)4 arugiF e 3 arugiF(hafool ed odacrem ed sotnemges so sodot merboc sahnil satsE .]34[MD a setnarelot o£Ãs sahnil druog ajnopse 32 e druog egdir evon ,sahnil sassed arof e)5 alebaT e 4 alebaT(VDNCLoT a setnetsiser sahnil druog ajnopse 56 e druog egdir 28 ed otnemivlovnesed oa uovel eergidep ed o£Ã§Ãeles A .)ynegorp ahnil a atnalp(o£Ã§Ãeles ed adaropmet amix³Ãrp a arap ynegorp rairc arap)adalortnoc o£Ã§Ãaiulop(o£Ãm Ã sadazinilop e sadanoicales marof)agrama o£Ãn aturf(odacrem ed sotnemges setnerefid a setnecnetrep MD e VDNCLoT a setnarelot satnalp sA .saturf ed atiehloc ad o£Ã§Ãarud e arugrama ,otnemirpmoc ,amrof ,roc omoc saturf ed so§Ãart e ,MD e VDNCLoT a aicnªÃtsiser arap sadagerges marof seµÃ§ÃalupoP .neaS gneahpmaK me o£Ã§Ãatse asson me 9102 a 6102 ed ona rop setnemes crescerc seµÃ§Ãatse saud arap MD e VDNCLoT artnoc druog ajnopse ed seµÃseda 387 e druog emuc ed knabeneg seµÃseda 764 somarotinom s³ÃN .aidn¢ÃliaT ,neaS ,or vegetables, such as tomato and chili and not in the development of new cultivars of small cultures of cucurbitaceae cucurbitaceae [44,45,46]. Cucurbits are a diverse family of vegetable crops that are of great economic importance to smallholder farmers and consumers, particularly in Asia. The World Vegetable Center has been able to collect a diverse germplasm collection from different parts of the world and has made this available to public and private breeding programs globally. Breeding efforts have focused on four species: bitter gourd, tropical pumpkin, ridge gourd, and sponge gourd. These cucurbits are of great interest to private seed companies in Asia, which have partnered with the WorldVeg. This partnership has enabled the pool of genetic resources used in commercial breeding programs to be widened and the introduction of new traits such as multiple virus resistance, powdery mildew resistance, and high yield. Much work remains to be done to introduce new traits that will be of increasing importance, such as dwarf vines, enhanced nutrient density, longer shelf life, extended fruit harvest, parthenocarpic gourds, bitter gourd gynoecious lines of

different market segments, and tolerance to abiotic stresses. Genomic tools have improved the breeding efficiency of major cucurbit crops, and transgenic and genome-edited plants have been produced [47,48]. The availability of whole genome sequences of C. moschata [49], M. charantia [50], and L. cylindrica [51] is stimulating molecular breeding approaches in these crops. Several markers putatively associated with resistance to ZYMV in pumpkin and CPM in bitter gourd have been proposed and are being validated.There is much potential to expand commercial and home garden production of cucurbits in Africa and South and Central America as these crops can contribute to diversifying agricultural production systems and improving global food and nutrition security in these regions. It is important that governments, donors, and research and development organizations recognize the considerable potential of Conceptualization, N.P.S.D.; first draft preparation, N.P.S.D.; writing review and edition, N.P.S.D., S.L., S.S., S.P., A.M., A.K., K.K.Y., G.H., P.H., R.S. and P.S.; Acquis. All authors read and agreed to the published version of the manuscript. This research received external funding from twenty-five collaborative seed companies (World Vegeta Center project numbers: 10000274, 10000292, 10000365). The funding for this research was also provided by long-term strategic donors to the World Vegeta Center: Taiwan, UK help from the UK government, United States Agency for International Development (USAID), Australian International Agricultural Research Center (ACIAR), Germany, Thailand, Philippines, Korea and Japan. We thank Professor Graham Jellis for editing the manuscript. The authors declare that there is no conflict of interest. Schaefer, H.; Renner, S.S. 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Figure 3. Fruit color and length variability among ridge gourd breeding lines developed at WorldVeg. Figure 4. Fruit color and length variability among sponge gourd breeding lines developed at WorldVeg. Figure 4. Fruit color and length variability among sponge gourd breeding lines developed at WorldVeg. Table 1. Cucurbit powdery mildew (CPM)(caused by Podosphaera xanthii) disease severity scored 12 days after the third artificial inoculation, measured using 28 bitter gourd breeding lines and the CPM susceptibility check (AVBG1331) and CPM resistance check (AVBG1330) and grown in the net-house at Kamphaeng Saen, Thailand, December 2019¢ÂÂÂJanuary 2020. Table 1. Cucurbit powdery mildew (CPM)(caused by Podosphaera xanthii) disease severity scored 12 days after the third artificial inoculation, measured using 28 bitter gourd breeding lines and the CPM susceptibility check (AVBG1331) and CPM resistance check (AVBG1330) and grown in the net-house at Kamphaeng Saen, Thailand, December 2019¢ÂÂÂJanuary 2020. LineLandrace OriginDisease Rating (Mean Disease Reaction)Fruit TraitsSkin ColorSkin greenSpinySpindleTHMC833IndiaR(0)Dark greenSpinySpindleTHMC836IndiaR(0)Dark greenSpinySpindleTHMC853IndiaR(0)GreenSpinySpindleAVBG1435BangladeshR(1)Dark greenSpinySpindleAVBG1436BangladeshR(0)GreenSpinySpindleAVBG1502BangladeshR(0)GreenSpinySpindleAVBG1612-1BangladeshR(0)Light greenSpinySpindleAVBG1612-2BangladeshR(0)GreenSpinySpindleAVBG1613BangladeshR(0)Light greenSpinySpindleAVBG1634BangladeshR(0)GreenSpinySpindleAVBG1635BangladeshR(1)Light greenSpinySpindleAVBG1679BangladeshR(0)GreenSmoothSpindleAVBG1723BangladeshR(0)Dark greenSpinySpindleAVBG1341TaiwanR(0)GreenSpinySpindleAVBG1314ThailandR(1)Light greenSmoothCylindricalAVBG1468ThailandR(0)Light greenSmoothSpindleAVBG1473ThailandR(0)GreenSpinySpindleAVBG1508ThailandR(0)GreenSpinySpindleTHMC 768ThailandR(0)Dark greenSpinySpindleTHMC 773ThailandR(0)Dark greenSmoothSpindleTHMC 774ThailandR(1)GreenSpinySpindleTHMC 797ThailandR(1)GreenSpinySpindleAVBG1480PhilippinesR(0)GreenSmoothElongatedAVBG1738VietnamR(1)Dark greenSpinyElongatedAVBG1330 (resistance check)IndiaR(0)Dark greenSpinySpindleAVBG1331 (susceptibility check)IndiaS(5)Dark greenSpinySpindle Table 2. Fruit yield (t ha¢ÂÂÂ1) of WorldVeg bitter gourd F1 hybrid AVBG1601 and local checks evaluated in four locations across Southeast and South Asia. Table 2. Fruit yield (t ha¢ÂÂÂ1) of WorldVeg bitter gourd F1 hybrid AVBG1601 and local checks evaluated in four locations across Southeast and South Asia. CultivarLocationKamphaeng Saen, ThailandNay Pyi Taw, MyanmarBangalore,IndiaSonepat,IndiaGuntur,IndiaAVBG160139.643.950.943.436.2Arjuna (Check)26.9----Perfect 212 (Check)-31.9---Amanshri (Check)--43.532.023.8VNR 22 (Check)--34.430.224.1CV%23.811.297.910.9LSD (0.05)5.95.97.35.15.8 Table 3. Pumpkin lines of different market segments tolerant to multiple viruses developed from diverse germplasm accessions evaluated at the World Vegetable Center East and Southeast Asia, Thailand. Table 3. Pumpkin lines of different market Tolerante a vÃ¡rios vãrus desenvolvidos a partir de diversas acessos de germoplasma avaliados no World Vegetable Center East e Sudeste AsiÃ¡tico, TailÃ¢ndia. No. Inbred Lines Tolerant to Multiple Viruses in the FieldLandrace OriginFruit ShapeFruit Skin Color3VietnamFlat roundDark green4VietnamFlat roundMottled green4VietnamButternutMottled green2VietnamButternutDark green1VietnamLongMottled green1KoreaGlobularDark green3KoreaGlobularMottled green1KoreaOblongMottled green1KoreaFlat roundDark green2KoreaFlat roundMottled green2KoreaHeartMottled green6MyanmarFlat roundDark green8MyanmarFlat roundMottled green3MyanmarGlobularMottled green33ThailandFlat roundDark green7ThailandFlat roundMottled green1ThailandFlat roundGreen3ThailandGlobularDark green2ThailandButternutDark green1ThailandButternutMottled green1ThailandLongDark green3TaiwanLongMottled green2TaiwanButternutMottled green2TaiwanGlobularDark green2TaiwanGlobularMottled green1TaiwanOblongMottled green2ChinaButternutMottled green1ChinaLongMottled Green4IndiaBlongDark Green11IndiaoblongMottled Green2Indiaoblongottled Green2indiaoblongGreen20Indiaflat Roundmottled Green2Indiaglobula rMottled green1IndiaLongDark green8BangladeshGlobularDark green5BangladeshGlobularMottled green5BangladeshGlobularGreen27BangladeshFlat roundDark green6BangladeshFlat roundMottled green2BangladeshFlat roundGreen2BangladeshOblongDark green3BangladeshOblongMottled green1BangladeshOblongGreen1BangladeshHeartDark green1BangladeshLongDark green1CambodiaButternutDark green1USAGlobularMottled green1USAFlat roundMottled green Table 4. Ridge gourd lines (82) of different market segments tolerant to the tomato leaf curl New Delhi virus (ToLCNDV), developed from diverse germplasm at the World Vegetable Center. Tabela 4. Linhas de cabaÃ§a Ridge (82) de diferentes segmentos de mercado tolerantes ao vÃrus da folha de tomate em Nova DÃ©lhi (Tolcndv), desenvolvido a partir de diversos germoplasma no World .o£ÃN .o£ÃN .retneC .)0.4/yb/sesnecil/gro.snommocevitaerc//:ptth( )0.4/yb/sesnecil/gro.snommocevitaerc//:ptth( )YB CC(noitubirttA snommoC evitaerC a§Ãnecil ad seµÃ§Ãidnoc e somret son odÃubirtsid otreba osseca ed ogitra mu ©Ã ogitra etsE .a§ÃÃuS ,aielisaB ,IPDM odaicneciL .serotua solep 0202 ©Â neerGaiseõdnI1neerGaidobmaC1neerGmanteiV3neerg kraDdnaliahT2neerg thgiLdnaliahT1neerGdnaliahT5neerg kraDhsedalgnaB41neerg thgiLhsedalgnaB22neerGhsedalgnaB61oturf od roc an odaesaB tnemgeS tekraMnigirO ecardnaLVDNCLoT arap etnareloT derbnI sahniL .o£AN .retneC ategeV dlroW on sadivlovnesed ,VDNCLoT A setnarelot odacrem ed sotnemges setnerefid ed)56(druog ajnopse ed sahniL .5 ordauQ .retneC ategeV dlroW on sadivlovnesed ,VDNCLoT A setnarelot odacrem ed sotnemges setnerefid ed)56(druog ajnopse ed sahniL .5 ordauQ muideMsenippilihP1gnoLdnaliahT2muideMdnaliahT8trohSdnaliahT8gnoLhsedalgnaB3muideMhsedalgnaB12trohShsedalgnaB93laicremoc esaf an saturf sad otnemirpmoc on odaesaB tnemgeS tekraMnigirO ecardnaLVDNCLoT arap setnareloT sahniL

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