

Phenotypic diversity of *Amaranthus quitensis* Kunth landraces: a millenary crop of Ecuadorian Andean regionSupplementary Material

Supplementary Material 1. Passport data of 139 ataco (*Amaranthus quitensis* Kunth) accessions analyzed in this study, from National Institute for Agricultural Research (INIAP) Germplasm Bank (GB) collection at Pichincha, Ecuador. A1 to A50, accessions from collect A (1981 to 1986); A51 to A139, accessions from collect B (2014 and 2015)

| INIAP GB code * | Analysis code | Common name | Province | Canton | Parish | Locality | Altitude (m.a.s.l.) | Latitude | Longitude | Collection date |
|-----------------|---------------|-------------|------------|---------------------|---------------------|------------------------|---------------------|--------------|-------------|-----------------|
| ECU-03 | A1 | ataco | Imbabura | Otavalo | Miguel Egas Cabezas | Peguche Alto | 2820 | 00° 10' 00" | 78° 15' 00" | 01/03/1981 |
| ECU-06 | A2 | ataco | Imbabura | Otavalo | San Pablo de Lago | San Pablo | 2600 | 00° 10' 00" | 78° 12' 00" | 01/03/1981 |
| ECU-10 | A3 | ataco | Imbabura | Otavalo | San Pablo de Lago | El Topo | 2900 | 00° 10' 00" | 78° 10' 00" | 01/03/1981 |
| ECU-41 | A4 | ataco | Imbabura | Ibarra | La Esperanza | La Esperanza | 2500 | 00° 18' 00" | 78° 06' 00" | 19/06/1982 |
| ECU-42 | A5 | ataco | Imbabura | Pimampiro | Pimampiro | Pimampiro | 2140 | 00° 23' 00" | 77° 56' 00" | 20/06/1982 |
| ECU-43 | A6 | ataco | Imbabura | Pimampiro | Pimampiro | Pimampiro | 2060 | 00° 23' 00" | 77° 56' 00" | 20/06/1982 |
| ECU-48 | A7 | ataco | Imbabura | Antonio Ante | Andrade Marín | Andrade Marín | 2520 | 00° 19' 00" | 78° 12' 00" | 21/06/1982 |
| ECU-49 | A8 | ataco | Imbabura | Otavalo | San Pablo de Lago | San Pablo | 2630 | 00° 10' 00" | 78° 10' 00" | 21/06/1982 |
| ECU-50 | A9 | ataco | Imbabura | Otavalo | San Pablo de Lago | Cazco Valenzuela | 2790 | 00° 10' 00" | 78° 10' 00" | 21/06/1982 |
| ECU-08 | A10 | ataco | Tungurahua | Ambato | Juan Benigno Vela | Juan Benigno Vela | 2800 | -01° 17' 00" | 78° 41' 00" | 01/01/1981 |
| ECU-09 | A11 | ataco | Tungurahua | Ambato | Juan Benigno Vela | Juan Benigno Vela | 2800 | -01° 15' 00" | 78° 40' 00" | 01/01/1982 |
| ECU-22 | A12 | ataco | Tungurahua | Ambato | Santa Rosa | Santa Rosa | 2650 | -01° 15' 00" | 78° 40' 00" | 01/02/1982 |
| ECU-23 | A13 | ataco | Tungurahua | Cevallos | Cevallos | Cevallos | 2750 | -01° 17' 00" | 78° 42' 00" | 30/03/1982 |
| ECU-24 | A14 | ataco | Tungurahua | Ambato | Huachi Loreto | Huachi | 2700 | -01° 15' 00" | 78° 40' 00" | 30/03/1982 |
| ECU-52 | A15 | ataco | Tungurahua | Ambato | Izamba | Pisque Chiquito | 2520 | -01° 12' 00" | 78° 35' 00" | 26/06/1986 |
| ECU-53 | A16 | ataco | Tungurahua | Cevallos | Cevallos | Cevallos | 2700 | -01° 21' 00" | 78° 36' 00" | 17/06/1986 |
| ECU-54 | A17 | ataco | Tungurahua | Ambato | Izamba | Cunchibamba | 2600 | -01° 13' 00" | 78° 33' 00" | 22/06/1986 |
| ECU-55 | A18 | ataco | Tungurahua | Cevallos | Cevallos | Cevallos | 2775 | -01° 21' 00" | 78° 36' 00" | 26/07/1982 |
| ECU-56 | A19 | ataco | Tungurahua | Tisaleo | Tisaleo | Tisaleo | 3100 | -01° 18' 00" | 78° 40' 00" | 23/06/1982 |
| ECU-57 | A20 | ataco | Tungurahua | Quero | Quero | Quiambe | 2890 | -01° 24' 00" | 78° 37' 00" | 23/06/1982 |
| ECU-58 | A21 | ataco | Tungurahua | Ambato | Montalvo | Barrio Amazonas | 2775 | -01° 19' 00" | 78° 37' 00" | 23/06/1982 |
| ECU-59 | A22 | ataco | Tungurahua | Tisaleo | Tisaleo | El Porvenir | 2960 | -01° 21' 00" | 78° 23' 00" | 23/06/1982 |
| ECU-60 | A23 | ataco | Tungurahua | Quero | Rumipamba | San Antonio Ipolongito | 3070 | -01° 25' 00" | 78° 37' 00" | 23/06/1982 |
| ECU-63 | A24 | ataco | Tungurahua | Santiago de Pillaro | Presidente Urbina | Urbina | 2750 | -01° 08' 00" | 78° 33' 00" | 22/06/1982 |
| ECU-64 | A25 | ataco | Tungurahua | Patate | Los Andes | Los Andes | 2260 | -01° 15' 00" | 78° 30' 00" | 22/06/1982 |
| ECU-65 | A26 | ataco | Tungurahua | Mocha | Mocha | Mocha | 3080 | -01° 24' 00" | 78° 39' 00" | 22/06/1982 |
| ECU-66 | A27 | ataco | Tungurahua | Ambato | Izamba | Cunchibamba | 2580 | -01° 13' 00" | 78° 33' 00" | 22/06/1982 |

Supplementary Material 1. Continuation

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| ECU-67 | A28 | ataco | Tungurahua | San Pedro de Pelileo | Pelileo | Pelileo | 2520 | -01° 19' 00" | 78° 32' 00" | 22/06/1982 |
| ECU-68 | A29 | ataco | Tungurahua | Patate | Sucre | Sucre | 2830 | -01° 15' 00" | 78° 30' 00" | 22/06/1982 |
| ECU-69 | A30 | ataco | Tungurahua | Santiago de Pillaro | San Miguelito | San Miguel | 2650 | -01° 12' 00" | 78° 32' 00" | 22/06/1982 |
| ECU-71 | A31 | ataco | Tungurahua | Quero | Quero | Querochaca | 2760 | -01° 21' 00" | 78° 37' 00" | 23/06/1982 |
| ECU-72 | A32 | ataco | Tungurahua | Santiago de Pillaro | Presidente Urbina | Urbina | 2725 | -01° 08' 00" | 78° 33' 00" | 22/06/1982 |
| ECU-73 | A33 | ataco | Tungurahua | Cevallos | Cevallos | Cevallos | 2760 | -01° 21' 00" | 78° 36' 00" | 23/06/1982 |
| ECU-01 | A34 | sangorache - ataco | Cañar | Biblián | Biblián | Biblián | 2550 | -02° 43' 00" | 78° 55' 00" | 12/10/1981 |
| ECU-02 | A35 | sangorache - ataco | Cañar | Biblián | Biblián | El Paraíso | 2500 | -02° 44' 00" | 78° 54' 00" | 12/01/1981 |
| ECU-05 | A36 | sangorache | Cañar | Biblián | Biblián | Cochahuacu | 2550 | -02° 44' 00" | 78° 55' 00" | 12/01/1981 |
| ECU-07 | A37 | sangorache | Cañar | Biblián | Biblián | San Luis | 2700 | -02° 44' 00" | 78° 55' 00" | 01/06/1981 |
| ECU-87 | A38 | sangorache | Cañar | Biblián | Biblián | La Vaquería | 2750 | -02° 42' 00" | 78° 53' 00" | 24/06/1982 |
| ECU-88 | A39 | sangorache | Cañar | Cañar | Ingapirca | Ingapirca | 3000 | -02° 32' 00" | 78° 52' 00" | 24/06/1982 |
| ECU-89 | A40 | sangorache | Cañar | Tambo | El Tambo | Parque del Tambo | 2890 | -02° 30' 00" | 78° 56' 00" | 24/06/1982 |
| ECU-90 | A41 | sangorache | Cañar | Delég | Delég | Gualají de Déleg | 2800 | -02° 46' 00" | 78° 55' 00" | 23/06/1982 |
| ECU-93 | A42 | sangorache | Cañar | Biblián | Biblián | Zhalao | 2635 | -02° 43' 00" | 78° 55' 00" | 24/06/1982 |
| ECU-94 | A43 | sangorache | Cañar | Delég | Solano | Solano | 2550 | -02° 43' 00" | 78° 48' 00" | 24/06/1982 |
| ECU-95 | A44 | sangorache | Cañar | Biblián | Biblián | San Luis | 2550 | -02° 44' 00" | 78° 54' 00" | 24/06/1982 |
| ECU-96 | A45 | sangorache | Cañar | Delég | Delég | Sigsipamba Grande | 2600 | -02° 48' 00" | 78° 55' 00" | 24/06/1982 |
| ECU-97 | A46 | sangorache | Cañar | Biblián | Turupamba | Turupamba | 2850 | -02° 44' 00" | 78° 54' 00" | 24/06/1982 |
| ECU-99 | A47 | sangorache | Cañar | Azogues | Borroo | Charazol | 2385 | -02° 44' 00" | 78° 48' 00" | 25/06/1982 |
| ECU-100 | A48 | sangorache | Cañar | Azogues | Azogues | Zhullín | 2310 | -02° 43' 00" | 78° 48' 00" | 25/06/1982 |
| ECU-101 | A49 | sangorache | Cañar | Azogues | Aurelio Bayas | Bayas | 2630 | -02° 43' 00" | 78° 50' 00" | 25/06/1982 |
| ECU-102 | A50 | sangorache | Cañar | Cañar | Zhud | Zhud | 2750 | -02° 28' 00" | 79° 01' 00" | 24/06/1982 |
| <i>HDEB-156</i> | A51 | ataco | Imbabura | Otavalo | Eugenio Espejo | Cuaraburo | 2615 | 00° 11' 90" | 78° 14' 40" | 12/08/2015 |
| ECU-27408 | A52 | ataco | Imbabura | Otavalo | Eugenio Espejo | Cuaraburo | 2689 | 00° 20' 59" | 78° 14' 45" | 12/08/2015 |
| ECU-27409 | A53 | ataco | Imbabura | Otavalo | Miguel Egas Cabezas | Peguche | 2597 | 00° 14' 58" | 78° 14' 29" | 12/08/2015 |
| ECU-27411 | A54 | ataco | Imbabura | Otavalo | Eugenio Espejo | Calpaqui Alto | 2822 | 00° 16' 67" | 78° 15' 42" | 13/08/2015 |
| ECU-27412 | A55 | ataco | Imbabura | Otavalo | San Luis | Imbabuela Alto | 2752 | 00° 12' 36" | 78° 16' 19" | 13/08/2015 |
| <i>HDEB-162</i> | A56 | quinua castilla | Imbabura | Otavalo | San Luis | Imbabuela Alto | 2752 | 00° 12' 36" | 78° 16' 19" | 13/08/2015 |

Supplementary Material 1. Continuation

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| ECU-27413 | A57 | ataco | Imbabura | Otavaló | San Luis | Mojanda Curumbi | 2929 | 00° 11' 90" | 78° 17' 28" | 13/08/2015 |
| ECU-27414 | A58 | ataco | Imbabura | Otavaló | Miguel Egas Cabezas | Peguche | 2586 | 00° 15' 14" | 78° 14' 77" | 13/08/2015 |
| ECU-27415 | A59 | ataco | Imbabura | Otavaló | Miguel Egas Cabezas | Quinchuqui | 2750 | 00° 15' 15" | 78° 13' 70" | 13/08/2015 |
| ECU-27416 | A60 | ataco | Imbabura | Otavaló | San Luis | Gualapuro | 2564 | 00° 15' 06" | 78° 16' 87" | 13/08/2015 |
| ECU-27417 | A61 | ataco | Imbabura | Otavaló | San Luis | Gualapuro | 2564 | 00° 15' 06" | 78° 16' 87" | 13/08/2015 |
| ECU-27419 | A62 | ataco | Imbabura | Otavaló | San José de Quichinche | Gualsaqui | 2700 | 00° 15' 14" | 78° 19' 09" | 13/08/2015 |
| ECU-27418 | A63 | ataco | Imbabura | Otavaló | San José de Quichinche | Moraspungo | 2895 | 00° 16' 17" | 78° 20' 61" | 13/08/2015 |
| ECU-27420 | A64 | ataco | Imbabura | Cotacachi | Quiroga | Cumbas Conde | 2727 | 00° 15' 98" | 78° 19' 08" | 13/08/2015 |
| ECU-27421 | A65 | ataco | Imbabura | Cotacachi | Quiroga | San Antonio del Pují | 2668 | 00° 16' 19" | 78° 18' 56" | 13/08/2015 |
| ECU-27422 | A66 | ataco | Imbabura | Otavaló | Puetaqui | Centro Barrio | 2554 | 00° 10' 42" | 78° 22' 07" | 14/08/2015 |
| ECU-27410 | A67 | ataco | Imbabura | Cotacachi | Sagrario | Alabuela | 2353 | 00° 19' 63" | 78° 15' 64" | 01/09/2015 |
| ECU-27423 | A68 | amaranto negro | Imbabura | Cotacachi | San Francisco | Chilcapamba | 2624 | 00° 17' 66" | 78° 17' 91" | 02/09/2015 |
| ECU-27424 | A69 | ataco | Imbabura | Cotacachi | San Francisco | Chilcapamba | 2626 | 00° 17' 49" | 78° 17' 95" | 02/09/2015 |
| ECU-27425 | A70 | ataco | Imbabura | Cotacachi | Sagrario | Itaqui Chico | 2675 | 00° 18' 21" | 78° 18' 13" | 03/09/2015 |
| ECU-27426 | A71 | ataco | Imbabura | Cotacachi | Sagrario | Itaqui Chico | 2675 | 00° 18' 21" | 78° 18' 13" | 03/09/2015 |
| ECU-27427 | A72 | amaranto negro | Imbabura | Cotacachi | Sagrario | Itaqui Chico | 2655 | 00° 18' 14" | 78° 18' 03" | 03/09/2015 |
| ECU-27428 | A73 | ataco negro | Imbabura | Cotacachi | San Francisco | Morocho | 2711 | 00° 17' 25" | 78° 18' 66" | 03/09/2015 |
| <i>HDEB-227</i> | A74 | ataco | Imbabura | Cotacachi | San Francisco | Morocho | 2788 | 00° 17' 72" | 78° 19' 09" | 03/09/2015 |
| ECU-27489 | A75 | ataco | Imbabura | Otavaló | San Pablo de Lago | Gualabín Alto | 2826 | 00° 12' 19" | 78° 10' 30" | 18/11/2014 |
| ECU-27490 | A76 | ataco | Imbabura | Pimampiro | Pimampiro | El Rosal | 2144 | 00° 23' 60" | 77° 56' 38" | 28/10/2014 |
| ECU-27495 | A77 | ataco | Imbabura | Pimampiro | Pimampiro | Chapí | 2067 | 00° 23' 45" | 77° 56' 11" | 28/10/2014 |
| ECU-27491 | A78 | ataco | Imbabura | Antonio Ante | Andrade Marín | Andrade Marín | 2520 | 00° 19' 01" | 78° 12' 18" | 29/10/2014 |
| ECU-27496 | A79 | ataco-negro | Imbabura | Otavaló | San Pablo de Lago | Cazco Valenzuela | 2885 | 00° 12' 39" | 78° 10' 07" | 18/11/2014 |
| <i>HDJV-229</i> | A80 | sangorache | Tungurahua | Santiago de Pillaro | Presidente Urbina | Presidente Urbina | 2766 | -01° 08' 72" | 78° 33' 26" | 30/09/2015 |
| ECU-27432 | A81 | sangorache | Tungurahua | Santiago de Pillaro | Presidente Urbina | Presidente Urbina | 2836 | -01° 08' 58" | 78° 33' 35" | 30/09/2015 |
| ECU-27433 | A82 | sangorache | Tungurahua | Ambato | Montalvo | Barrio Empalme | 2805 | -01° 18' 81" | 78° 36' 70" | 30/09/2015 |
| ECU-27434 | A83 | sangorache | Tungurahua | Ambato | San Pedro | Caserío San Pedro | 2833 | -01° 18' 97" | 78° 37' 06" | 30/09/2015 |
| ECU-27435 | A84 | sangorache | Tungurahua | Cevallos | Cevallos | Primero de mayo | 2931 | -01° 21' 77" | 78° 36' 92" | 30/09/2015 |
| ECU-27436 | A85 | sangorache | Tungurahua | San Pedro de Pelileo | Salasaka | Caserío Llica Cama | 2655 | -01° 19' 13" | 78° 34' 85" | 01/10/2015 |

Supplementary Material 1. Continuation

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| ECU-27437 | A86 | sangorache | Tungurahua | San Pedro de Pelileo | García Moreno | Caserío Pamatug | 2594 | -01° 19' 40" | 78° 32' 36" | 01/10/2015 |
| ECU-27438 | A87 | sangorache | Tungurahua | San Pedro de Pelileo | García Moreno | García Moreno | 2562 | -01° 19' 27" | 78° 32' 66" | 01/10/2015 |
| ECU-27439 | A88 | sangorache | Tungurahua | San Pedro de Pelileo | Pelileo | Barrio Central de Pelileo | 2618 | -01° 19' 92" | 78° 32' 35" | 01/10/2015 |
| ECU-27440 | A89 | sangorache | Tungurahua | San Pedro de Pelileo | Huambalo | La Esperanza | 2845 | -01° 23' 36" | 78° 31' 72" | 01/10/2015 |
| ECU-27441 | A90 | sangorache | Tungurahua | San Pedro de Pelileo | La Matriz | Caserío Guasipamba | 2682 | -01° 21' 98" | 78° 31' 99" | 01/10/2015 |
| ECU-27442 | A91 | sangorache | Tungurahua | San Pedro de Pelileo | Pelileo | Quinibana bajo | 2650 | -01° 21' 03" | 78° 32' 00" | 01/10/2015 |
| ECU-27443 | A92 | sangorache | Tungurahua | San Pedro de Pelileo | La Matriz | Caserío El Obraje | 2224 | -01° 18' 47" | 78° 31' 59" | 01/10/2015 |
| ECU-27444 | A93 | sangorache | Tungurahua | San Pedro de Pelileo | Pelileo Grande | Caserío Chaupí | 2041 | -01° 21' 78" | 78° 29' 87" | 01/10/2015 |
| ECU-27445 | A94 | sangorache | Tungurahua | San Pedro de Pelileo | Pelileo | El Corte | 2703 | -01° 19' 99" | 78° 33' 82" | 01/10/2015 |
| ECU-27446 | A95 | sangorache | Tungurahua | San Pedro de Pelileo | Chiquicha Grande | Barrio Bellavista | 2593 | -01° 15' 10" | 78° 31' 82" | 01/10/2015 |
| ECU-27447 | A96 | sangorache | Tungurahua | San Pedro de Pelileo | Salasaka | Manzana Grande | 2755 | -01° 19' 32" | 78° 34' 19" | 02/10/2015 |
| ECU-27448 | A97 | sangorache | Tungurahua | San Pedro de Pelileo | Salasaka | Chicalpamba alto | 2682 | -01° 18' 82" | 78° 35' 28" | 02/10/2015 |
| ECU-27449 | A98 | sangorache | Tungurahua | San Pedro de Pelileo | Salasaka | Vargas Pamba | 2746 | -01° 19' 65" | 78° 35' 10" | 02/10/2015 |
| ECU-27450 | A99 | sangorache | Tungurahua | Ambato | Totoras | Huachi la Dolorosa | 2734 | -01° 17' 66" | 78° 36' 44" | 02/10/2015 |
| ECU-27451 | A100 | sangorache | Tungurahua | Tisaleo | Tisaleo | Punguileo Arriba (Barrio) | 3289 | -01° 20' 85" | 78° 40' 37" | 21/10/2015 |
| ECU-27452 | A101 | sangorache | Tungurahua | Ambato | Santa Rosa | Guayaquil | 3047 | -01° 17' 11" | 78° 39' 81" | 21/10/2015 |
| ECU-27453 | A102 | sangorache | Tungurahua | Ambato | Totoras | Huachi la Dolorosa | 2750 | -01° 17' 59" | 78° 36' 85" | 21/10/2015 |
| ECU-27454 | A103 | sangorache | Tungurahua | Ambato | Totoras | La Unión (Barrio) | 2779 | -01° 18' 20" | 78° 36' 97" | 21/10/2015 |
| ECU-27457 | A104 | sangorache | Tungurahua | Ambato | Picaihua | San Juan | 2628 | -01° 15' 77" | 78° 34' 23" | 21/10/2015 |
| ECU-27459 | A105 | sangorache | Tungurahua | Ambato | Atahualpa | Tangaleo | 2716 | -01° 12' 16" | 78° 36' 71" | 21/10/2015 |
| ECU-27460 | A106 | sangorache | Tungurahua | Santiago de Pillaro | San Miguelito | La Quinta (Barrio) | 2395 | -01° 13' 20" | 78° 32' 07" | 22/10/2015 |
| ECU-27461 | A107 | sangorache | Tungurahua | Ambato | Izamba | Santo Antonio | 2643 | -01° 14' 42" | 78° 34' 43" | 22/10/2015 |
| ECU-27462 | A108 | sangorache | Tungurahua | San Pedro de Pelileo | Quiquicha | Barrio Bellavista | 2671 | -01° 15' 20" | 78° 32' 00" | 23/10/2015 |
| ECU-27463 | A109 | sangorache | Tungurahua | San Pedro de Pelileo | Quiquicha | Barrio la Florida | 2524 | -01° 14' 39" | 78° 32' 39" | 23/10/2015 |
| ECU-27494 | A110 | sangorache | Tungurahua | Ambato | Izamba | Villa Loma | 2648 | -01° 13' 85" | 78° 34' 40" | 23/10/2015 |
| ECU-27464 | A111 | sangorache | Cañar | Azogues | Javier Loyola | Sumbahuaico | 2342 | -02° 49' 24" | 78° 53' 39" | 09/11/2015 |
| ECU-27465 | A112 | sangorache | Cañar | Azogues | Javier Loyola | Anyacay | 2480 | -02° 49' 25" | 78° 54' 16" | 09/11/2015 |
| ECU-27466 | A113 | sangorache | Cañar | Delég | Solano | Salapata | 2639 | -02° 49' 06" | 78° 55' 53" | 09/11/2015 |
| ECU-27467 | A114 | sangorache | Cañar | Delég | Solano | Guabichungo | 2662 | -02° 48' 19" | 78° 56' 13" | 09/11/2015 |

Supplementary Material 1. Continuation

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| ECU-27468 | A115 | sangorache | Cañar | Delég | Delég | Chulcay bajo | 2507 | -02° 48' 18" | 78° 55' 18" | 09/11/2015 |
| ECU-27469 | A116 | sangorache | Cañar | Delég | Delég | San José de Bayandel | 2851 | -02° 46' 48" | 78° 56' 19" | 09/11/2015 |
| ECU-27470 | A117 | sangorache | Cañar | Delég | Delég | Colina | 2723 | -02° 44' 49" | 78° 52' 56" | 09/11/2015 |
| ECU-27471 | A118 | sangorache | Cañar | Azogues | Cojitambo | San Miguel de Cojitambo | 2712 | -02° 44' 49" | 78° 52' 56" | 10/11/2015 |
| ECU-27472 | A119 | sangorache | Cañar | Azogues | Guapán | Centro de Guapán | 2624 | -02° 43' 02" | 78° 50' 53" | 10/11/2015 |
| <i>HDEB-295</i> | A120 | sangorache | Cañar | Azogues | Guapán | Chiricain | 2544 | -02° 43' 01" | 78° 50' 25" | 10/11/2015 |
| ECU-27473 | A121 | sangorache | Cañar | Azogues | Luis Cordero | Rumi Loma Centro | 2850 | -02° 44' 23" | 78° 49' 14" | 10/11/2015 |
| <i>HEEB-298</i> | A122 | sangorache | Cañar | Azogues | Rivera | Centro de Rivera | 2486 | -02° 34' 39" | 78° 39' 66" | 10/11/2015 |
| <i>HEEB-300</i> | A123 | sangorache | Cañar | Azogues | San Miguel de Porotos | Begapamba | 2694 | -02° 48' 77" | 78° 50' 42" | 10/11/2015 |
| ECU-27474 | A124 | sangorache | Cañar | Azogues | San Miguel de Porotos | Cristo Rey | 2824 | -02° 48' 23" | 78° 50' 27" | 10/11/2015 |
| ECU-27475 | A125 | sangorache | Cañar | Azogues | Guapán | Sector Oriente Aguilán | 2787 | -02° 48' 24" | 78° 52' 57" | 11/11/2015 |
| ECU-27476 | A126 | sangorache o ataco | Cañar | Biblián | San Francisco de Sageo | Sageo Cerro | 2599 | -02° 43' 13" | 78° 52' 34" | 11/11/2015 |
| ECU-27477 | A127 | sangorache | Cañar | Biblián | Biblián | San Luis | 2747 | -02° 43' 43" | 78° 53' 50" | 11/11/2015 |
| <i>HDEB-307</i> | A128 | Sangorache | Cañar | Biblián | Turupamba | Cochahuico | 2764 | -02° 43' 27" | 78° 54' 21" | 11/11/2015 |
| ECU-27478 | A129 | Ataco | Cañar | Biblián | Biblián | Puente Dávila | 2730 | -02° 41' 49" | 78° 55' 05" | 11/11/2015 |
| ECU-27479 | A130 | Sangorache | Cañar | Biblián | Nazón | Galo Ibarra | 2988 | -02° 40' 59" | 78° 56' 58" | 11/11/2015 |
| ECU-27480 | A131 | Sangorache | Cañar | Biblián | Jerusalén | El Progreso | 2911 | -02° 41' 38" | 78° 55' 50" | 11/11/2015 |
| ECU-27481 | A132 | Sangorache | Cañar | Biblián | Biblián | Cruz pamba | 2906 | -02° 42' 14" | 78° 52' 44" | 11/11/2015 |
| ECU-27482 | A133 | Sangorache | Cañar | Cañar | Honorato Vásquez | Tambo viejo | 3274 | -02° 34' 28" | 78° 55' 38" | 11/11/2015 |
| ECU-27483 | A134 | Sangorache | Cañar | Cañar | Honorato Vásquez | San Pedro Bajo | 3060 | -02° 34' 17" | 78° 52' 35" | 11/11/2015 |
| ECU-27484 | A135 | Sangorache | Cañar | Cañar | Ingapirca | Ingapirca | 3096 | -02° 32' 46" | 78° 52' 37" | 11/11/2015 |
| ECU-27485 | A136 | Sangorache | Cañar | Cañar | Chorocopte | Laganzhi | 3399 | -02° 34' 43" | 78° 57' 93" | 11/11/2015 |
| ECU-27486 | A137 | Sangorache | Cañar | Cañar | Cañar | Quilloaq | 3191 | -02° 33' 19" | 78° 57' 15" | 12/11/2015 |
| ECU-27487 | A138 | Sangorache | Cañar | Tambo | Tambo | Tunaspamba | 2789 | -02° 30' 68" | 78° 58' 17" | 12/11/2015 |
| ECU-27488 | A139 | Sangorache | Cañar | Cañar | Gualleturo | Grutapelte | 2372 | -02° 31' 17" | 78° 81' 65" | 12/11/2015 |

* A collection code is indicated in italics for accessions in which the farmer did not donate the seeds to be conserved in INIAP GB.

Supplementary Material 2. Data obtained for the 11 quantitative descriptors (D1-D11) used in the agro-morphological characterization of the 139 ataco accessions (A1-A50 from Collect A; A51-A139 from Collect B) collected in the provinces of Imbabura, Tungurahua, and Cañar. See Table 1 in Materials and methods for descriptors codes (D1 to D11)

| INIAP GB code * | Analysis code | Province Collect | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----------------|---------------|--------------------|----------------------|-------|-------|-------|-------|-------|-------|-------|----|-----|-----|
| ECU-03 | A1 | Imbabura Collect A | 155 | 11,79 | 18,52 | 11,98 | 51,50 | 1,12 | 25,22 | 6 | 65 | 78 | 176 |
| ECU-06 | A2 | | 160 | 12,41 | 19,36 | 13,09 | 53,50 | 1,13 | 19,08 | 6 | 65 | 78 | 176 |
| ECU-10 | A3 | | 183 | 12,65 | 15,53 | 9,08 | 48,50 | 1,08 | 11,95 | 6 | 78 | 98 | 176 |
| ECU-41 | A4 | | 195 | 16,07 | 17,65 | 11,19 | 46,00 | 1,12 | 10,64 | 6 | 78 | 98 | 176 |
| ECU-42 | A5 | | 176 | 13,89 | 15,88 | 9,84 | 50,50 | 1,07 | 10,67 | 6 | 78 | 98 | 176 |
| ECU-43 | A6 | | 199 | 15,51 | 16,91 | 10,29 | 61,50 | 1,06 | 13,31 | 6 | 65 | 78 | 176 |
| ECU-48 | A7 | | 149 | 10,56 | 19,66 | 12,49 | 59,50 | 1,14 | 20,13 | 6 | 65 | 84 | 176 |
| ECU-49 | A8 | | 208 | 15,75 | 16,98 | 9,82 | 55,50 | 1,08 | 9,23 | 6 | 78 | 98 | 176 |
| ECU-50 | A9 | | 199 | 13,87 | 17,44 | 10,00 | 53,00 | 1,77 | 12,44 | 6 | 78 | 98 | 176 |
| ECU-08 | A10 | | Tungurahua Collect A | 184 | 14,29 | 15,34 | 9,06 | 53,00 | 1,16 | 12,68 | 6 | 78 | 91 |
| ECU-09 | A11 | 190 | | 12,23 | 16,13 | 9,64 | 56,50 | 1,17 | 12,29 | 6 | 78 | 98 | 176 |
| ECU-22 | A12 | 187 | | 14,17 | 13,98 | 8,52 | 57,00 | 1,20 | 20,26 | 6 | 71 | 91 | 176 |
| ECU-23 | A13 | 160 | | 13,60 | 14,57 | 8,47 | 59,50 | 1,19 | 20,08 | 6 | 71 | 91 | 176 |
| ECU-24 | A14 | 179 | | 12,97 | 12,83 | 7,78 | 55,00 | 1,05 | 22,84 | 6 | 71 | 84 | 176 |
| ECU-52 | A15 | 173 | | 14,04 | 15,76 | 9,11 | 60,00 | 1,14 | 23,88 | 6 | 71 | 91 | 176 |
| ECU-53 | A16 | 157 | | 12,87 | 13,80 | 8,72 | 52,50 | 1,14 | 18,17 | 6 | 71 | 84 | 176 |
| ECU-54 | A17 | 166 | | 14,22 | 15,19 | 9,04 | 51,50 | 1,16 | 23,15 | 6 | 71 | 84 | 176 |
| ECU-55 | A18 | 174 | | 14,02 | 16,49 | 9,62 | 50,50 | 1,08 | 21,90 | 6 | 71 | 84 | 176 |
| ECU-56 | A19 | 167 | | 14,57 | 16,18 | 9,26 | 52,00 | 1,15 | 24,30 | 6 | 71 | 91 | 176 |
| ECU-57 | A20 | 174 | | 13,22 | 14,92 | 8,59 | 59,00 | 1,13 | 15,86 | 6 | 71 | 84 | 176 |
| ECU-58 | A21 | 150 | | 14,90 | 17,41 | 10,15 | 57,00 | 1,15 | 19,66 | 6 | 71 | 91 | 176 |
| ECU-59 | A22 | 187 | | 13,83 | 15,53 | 8,82 | 50,00 | 1,10 | 17,71 | 6 | 71 | 84 | 176 |
| ECU-60 | A23 | 181 | | 13,78 | 15,01 | 9,41 | 54,50 | 1,17 | 18,95 | 6 | 71 | 91 | 176 |
| ECU-63 | A24 | 164 | | 14,02 | 15,34 | 9,14 | 53,00 | 1,09 | 15,21 | 6 | 71 | 91 | 176 |
| ECU-64 | A25 | 179 | | 14,52 | 15,45 | 9,35 | 54,00 | 1,08 | 19,25 | 6 | 71 | 84 | 176 |
| ECU-65 | A26 | 196 | | 14,91 | 16,39 | 9,59 | 57,00 | 1,09 | 17,09 | 6 | 71 | 91 | 176 |
| ECU-66 | A27 | 176 | 12,74 | 15,35 | 9,36 | 60,50 | 1,14 | 20,78 | 6 | 65 | 78 | 176 | |

Supplementary Material 2. Continuation

| INIAP GB code * | Analysis code | Province Collect | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----------------|---------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|----|----|-----|-----|
| ECU-67 | A28 | Tungurahua/ Collect A | 188 | 14,61 | 16,19 | 9,00 | 54,00 | 1,07 | 13,80 | 6 | 71 | 84 | 176 |
| ECU-68 | A29 | | 188 | 14,20 | 14,19 | 9,19 | 54,50 | 1,13 | 21,08 | 6 | 65 | 78 | 176 |
| ECU-69 | A30 | | 147 | 10,32 | 11,85 | 6,69 | 49,50 | 1,14 | 16,48 | 6 | 71 | 91 | 176 |
| ECU-71 | A31 | | 172 | 11,43 | 13,53 | 7,44 | 51,00 | 1,17 | 8,95 | 6 | 78 | 98 | 176 |
| ECU-72 | A32 | | 173 | 14,53 | 14,86 | 8,95 | 50,50 | 1,18 | 21,10 | 6 | 71 | 91 | 176 |
| ECU-73 | A33 | | 178 | 11,34 | 11,86 | 7,32 | 65,00 | 1,12 | 12,54 | 6 | 78 | 98 | 176 |
| ECU-01 | A34 | Cañar Collect A | 161 | 9,34 | 12,84 | 7,40 | 59,00 | 1,61 | 4,32 | 6 | 84 | 98 | 176 |
| ECU-02 | A35 | | 166 | 13,18 | 13,74 | 7,58 | 57,00 | 1,11 | 13,57 | 6 | 71 | 91 | 176 |
| ECU-05 | A36 | | 143 | 10,15 | 14,44 | 7,56 | 49,00 | 1,14 | 12,70 | 6 | 71 | 91 | 176 |
| ECU-07 | A37 | | 180 | 13,71 | 14,37 | 8,71 | 56,00 | 1,21 | 17,06 | 6 | 78 | 98 | 176 |
| ECU-87 | A38 | | 177 | 13,47 | 16,14 | 9,81 | 52,50 | 1,17 | 25,14 | 6 | 65 | 78 | 176 |
| ECU-88 | A39 | | 182 | 13,56 | 15,99 | 9,65 | 55,50 | 1,12 | 34,49 | 6 | 78 | 91 | 176 |
| ECU-89 | A40 | | 112 | 13,05 | 14,97 | 9,54 | 57,50 | 1,12 | 22,11 | 6 | 71 | 84 | 176 |
| ECU-90 | A41 | | 107 | 13,83 | 16,61 | 9,76 | 59,00 | 1,07 | 22,57 | 6 | 78 | 98 | 176 |
| ECU-93 | A42 | | 175 | 13,52 | 15,41 | 9,61 | 55,50 | 1,11 | 23,31 | 6 | 71 | 91 | 176 |
| ECU-94 | A43 | | 187 | 11,79 | 15,51 | 9,18 | 59,00 | 1,16 | 18,36 | 6 | 71 | 91 | 176 |
| ECU-95 | A44 | | 186 | 12,82 | 17,19 | 10,40 | 61,50 | 1,10 | 25,81 | 6 | 71 | 91 | 176 |
| ECU-96 | A45 | | 183 | 14,58 | 16,93 | 10,25 | 58,00 | 1,12 | 24,25 | 6 | 71 | 91 | 176 |
| ECU-97 | A46 | | 183 | 12,51 | 14,86 | 8,74 | 57,00 | 1,09 | 11,49 | 6 | 71 | 91 | 176 |
| ECU-99 | A47 | | 167 | 12,32 | 15,74 | 9,04 | 55,00 | 1,09 | 13,56 | 6 | 78 | 91 | 176 |
| ECU-100 | A48 | 165 | 13,12 | 16,53 | 9,71 | 48,50 | 1,03 | 21,14 | 6 | 71 | 91 | 176 | |
| ECU-101 | A49 | 155 | 12,89 | 16,17 | 9,65 | 57,50 | 1,08 | 24,98 | 6 | 71 | 84 | 176 | |
| ECU-102 | A50 | 184 | 14,26 | 16,38 | 9,56 | 60,00 | 1,13 | 16,61 | 6 | 71 | 91 | 176 | |
| <i>HDEB-156</i> | A51 | Imbabura Collect B | 158 | 13,82 | 16,41 | 8,79 | 59,00 | 1,10 | 12,92 | 6 | 84 | 92 | 176 |
| ECU-27408 | A52 | | 191 | 13,74 | 15,31 | 8,72 | 59,44 | 1,11 | 7,71 | 6 | 84 | 92 | 176 |
| ECU-27409 | A53 | | 177 | 11,65 | 14,67 | 7,03 | 59,50 | 1,09 | 10,76 | 6 | 84 | 92 | 176 |
| ECU-27411 | A54 | | 206 | 12,66 | 15,53 | 8,96 | 59,61 | 1,13 | 5,96 | 6 | 84 | 92 | 176 |
| ECU-27412 | A55 | | 218 | 14,10 | 13,26 | 7,91 | 64,00 | 1,17 | 8,52 | 6 | 84 | 92 | 176 |

Supplementary Material 2. Continuation

| INIAP GB code * | Analysis code | Province Collect | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----------------|---------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|----|-----|-----|-----|
| <i>HDEB-162</i> | A56 | Imbabura Collect B | 161 | 12,66 | 16,45 | 10,53 | 63,50 | 1,09 | 20,90 | 6 | 71 | 78 | 176 |
| ECU-27413 | A57 | | 178 | 9,05 | 11,32 | 7,03 | 58,20 | 1,18 | 3,58 | 6 | 105 | 140 | 168 |
| ECU-27414 | A58 | | 162 | 10,73 | 18,26 | 12,37 | 61,50 | 1,08 | 27,80 | 6 | 78 | 91 | 168 |
| ECU-27415 | A59 | | 162 | 10,09 | 13,69 | 7,16 | 46,00 | 1,06 | 26,02 | 6 | 91 | 105 | 176 |
| ECU-27416 | A60 | | 185 | 13,25 | 13,21 | 8,11 | 51,00 | 1,69 | 17,67 | 6 | 78 | 91 | 176 |
| ECU-27417 | A61 | | 163 | 11,40 | 17,10 | 11,02 | 73,50 | 1,05 | 32,13 | 6 | 71 | 84 | 168 |
| ECU-27419 | A62 | | 208 | 13,85 | 15,79 | 8,85 | 66,00 | 1,10 | 12,32 | 6 | 78 | 91 | 168 |
| ECU-27418 | A63 | | 179 | 13,83 | 13,98 | 8,36 | 69,50 | 1,13 | 14,31 | 6 | 71 | 78 | 168 |
| ECU-27420 | A64 | | 195 | 14,88 | 14,43 | 8,98 | 64,00 | 1,08 | 13,04 | 6 | 71 | 91 | 176 |
| ECU-27421 | A65 | | 162 | 12,55 | 13,32 | 7,99 | 57,50 | 1,08 | 20,38 | 6 | 71 | 84 | 168 |
| ECU-27422 | A66 | | 204 | 14,49 | 13,85 | 8,13 | 60,00 | 1,04 | 10,24 | 6 | 78 | 91 | 168 |
| ECU-27410 | A67 | | 216 | 15,21 | 16,34 | 9,90 | 57,00 | 1,11 | 9,55 | 6 | 78 | 91 | 168 |
| ECU-27423 | A68 | | 151 | 11,92 | 17,06 | 10,90 | 58,50 | 1,09 | 15,84 | 6 | 71 | 78 | 168 |
| ECU-27424 | A69 | | 170 | 11,31 | 12,91 | 8,15 | 63,50 | 1,17 | 6,25 | 6 | 65 | 71 | 168 |
| ECU-27425 | A70 | | 193 | 14,08 | 13,90 | 8,44 | 68,00 | 1,11 | 3,08 | 6 | 78 | 98 | 176 |
| ECU-27426 | A71 | | 195 | 13,19 | 14,53 | 8,60 | 54,50 | 1,11 | 9,67 | 6 | 78 | 98 | 168 |
| ECU-27427 | A72 | | 108 | 13,13 | 13,17 | 7,90 | 64,50 | 1,02 | 18,89 | 6 | 65 | 71 | 168 |
| ECU-27428 | A73 | | 207 | 13,67 | 14,66 | 8,59 | 58,00 | 1,12 | 17,48 | 6 | 78 | 91 | 168 |
| <i>HDEB-227</i> | A74 | | 204 | 11,96 | 13,19 | 8,18 | 55,00 | 1,11 | 10,24 | 6 | 84 | 98 | 176 |
| ECU-27489 | A75 | | 216 | 13,08 | 13,74 | 8,72 | 57,00 | 1,15 | 9,65 | 6 | 78 | 98 | 176 |
| ECU-27490 | A76 | 210 | 13,67 | 15,45 | 9,17 | 62,50 | 1,11 | 10,89 | 6 | 78 | 98 | 176 | |
| ECU-27495 | A77 | 189 | 13,74 | 15,53 | 9,35 | 60,50 | 1,20 | 13,44 | 6 | 71 | 84 | 168 | |
| ECU-27491 | A78 | 169 | 14,63 | 16,76 | 10,63 | 54,50 | 1,15 | 31,18 | 6 | 78 | 91 | 168 | |
| ECU-27496 | A79 | 172 | 11,63 | 20,70 | 10,67 | 62,00 | 1,10 | 31,82 | 6 | 71 | 91 | 168 | |
| <i>HDJV-229</i> | A80 | Tungurahua Collect B | 169 | 13,21 | 16,80 | 9,93 | 53,00 | 1,10 | 16,01 | 6 | 71 | 91 | 176 |
| ECU-27432 | A81 | | 171 | 14,68 | 17,83 | 10,09 | 51,50 | 1,13 | 17,28 | 6 | 71 | 91 | 168 |
| ECU-27433 | A82 | | 182 | 16,17 | 15,25 | 8,56 | 57,50 | 1,09 | 25,89 | 6 | 71 | 91 | 168 |
| ECU-27434 | A83 | | 177 | 14,25 | 15,98 | 9,58 | 56,50 | 1,15 | 28,25 | 6 | 71 | 91 | 168 |

Supplementary Material 2. Continuation

| INIAP GB code * | Analysis code | Province Collect | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----------------|---------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|----|----|-----|-----|
| ECU-27436 | A85 | Tungurahua Collect B | 176 | 14,51 | 15,94 | 9,91 | 60,50 | 1,09 | 28,33 | 6 | 71 | 91 | 168 |
| ECU-27437 | A86 | | 169 | 15,73 | 18,22 | 10,03 | 51,50 | 1,13 | 35,65 | 6 | 78 | 91 | 168 |
| ECU-27438 | A87 | | 167 | 14,69 | 17,05 | 9,60 | 51,50 | 1,07 | 28,73 | 6 | 71 | 91 | 168 |
| ECU-27439 | A88 | | 158 | 14,92 | 16,26 | 9,80 | 58,80 | 1,20 | 21,39 | 6 | 71 | 91 | 168 |
| ECU-27440 | A89 | | 166 | 13,91 | 15,41 | 8,74 | 53,00 | 1,11 | 22,05 | 6 | 71 | 91 | 168 |
| ECU-27441 | A90 | | 183 | 14,58 | 15,69 | 9,39 | 53,50 | 1,08 | 31,51 | 6 | 71 | 91 | 168 |
| ECU-27442 | A91 | | 163 | 14,53 | 15,88 | 9,46 | 55,00 | 1,12 | 21,65 | 13 | 78 | 98 | 168 |
| ECU-27443 | A92 | | 168 | 13,38 | 14,87 | 8,77 | 52,00 | 1,12 | 13,69 | 6 | 78 | 91 | 176 |
| ECU-27444 | A93 | | 173 | 12,56 | 16,34 | 9,26 | 64,00 | 1,05 | 24,40 | 6 | 71 | 91 | 168 |
| ECU-27445 | A94 | | 174 | 12,35 | 14,06 | 8,47 | 59,50 | 1,13 | 15,43 | 6 | 71 | 84 | 168 |
| ECU-27446 | A95 | | 157 | 12,14 | 13,17 | 7,62 | 52,50 | 1,17 | 16,25 | 6 | 78 | 91 | 168 |
| ECU-27447 | A96 | | 152 | 13,07 | 14,06 | 8,12 | 43,50 | 1,10 | 47,13 | 6 | 65 | 84 | 168 |
| ECU-27448 | A97 | | 166 | 12,49 | 14,85 | 8,65 | 52,00 | 1,04 | 15,40 | 6 | 78 | 84 | 168 |
| ECU-27449 | A98 | | 152 | 13,71 | 14,93 | 8,52 | 43,50 | 1,14 | 16,05 | 6 | 78 | 91 | 168 |
| ECU-27450 | A99 | | 143 | 13,66 | 14,53 | 8,30 | 53,50 | 1,02 | 15,42 | 6 | 71 | 84 | 168 |
| ECU-27451 | A100 | | 153 | 14,24 | 15,94 | 9,28 | 56,00 | 1,14 | 15,56 | 13 | 71 | 91 | 168 |
| ECU-27452 | A101 | | 172 | 13,44 | 14,29 | 7,82 | 49,00 | 1,06 | 13,33 | 6 | 71 | 91 | 168 |
| ECU-27453 | A102 | | 156 | 12,85 | 14,45 | 8,37 | 49,50 | 1,07 | 26,41 | 6 | 65 | 84 | 168 |
| ECU-27454 | A103 | | 143 | 12,85 | 15,01 | 8,62 | 56,50 | 1,08 | 23,83 | 6 | 65 | 84 | 168 |
| ECU-27457 | A104 | | 170 | 13,51 | 12,73 | 7,21 | 61,50 | 1,16 | 22,53 | 6 | 71 | 84 | 168 |
| ECU-27459 | A105 | 108 | 7,37 | 10,61 | 6,28 | 35,00 | 1,08 | 3,08 | 6 | 71 | 91 | 176 | |
| ECU-27460 | A106 | 169 | 12,48 | 13,21 | 8,05 | 60,50 | 1,20 | 23,96 | 6 | 71 | 91 | 168 | |
| ECU-27461 | A107 | 199 | 14,09 | 13,77 | 9,35 | 65,50 | 1,08 | 29,88 | 6 | 71 | 91 | 176 | |
| ECU-27462 | A108 | 190 | 13,22 | 13,35 | 7,59 | 54,00 | 1,10 | 29,88 | 6 | 71 | 91 | 176 | |
| ECU-27463 | A109 | 141 | 13,31 | 14,52 | 8,58 | 50,50 | 1,07 | 24,72 | 6 | 71 | 91 | 168 | |
| ECU-27494 | A110 | 157 | 13,37 | 12,59 | 7,59 | 53,00 | 1,13 | 20,36 | 6 | 71 | 91 | 168 | |
| ECU-27464 | A111 | 164 | 13,21 | 13,37 | 8,23 | 64,00 | 1,60 | 28,57 | 6 | 71 | 91 | 168 | |
| ECU-27465 | A112 | 174 | 13,92 | 14,03 | 7,91 | 61,00 | 1,12 | 34,89 | 6 | 65 | 84 | 168 | |

Supplementary Material 2. Continuation

| INIAP GB code * | Analysis code | Province Collect | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----------------|---------------|--------------------|-----|-------|-------|-------|-------|------|-------|----|----|-----|-----|
| ECU-27466 | A113 | Cañar Collect B | 174 | 14,30 | 14,42 | 8,04 | 61,50 | 1,16 | 30,51 | 6 | 71 | 91 | 168 |
| ECU-27467 | A114 | | 174 | 13,72 | 12,62 | 7,11 | 58,50 | 1,13 | 21,06 | 6 | 78 | 98 | 176 |
| ECU-27468 | A115 | | 180 | 14,97 | 15,75 | 9,54 | 69,00 | 1,19 | 33,74 | 6 | 71 | 91 | 176 |
| ECU-27469 | A116 | | 162 | 13,72 | 14,16 | 7,91 | 56,00 | 1,12 | 26,69 | 6 | 71 | 91 | 168 |
| ECU-27470 | A117 | | 177 | 13,83 | 15,68 | 8,93 | 67,00 | 1,13 | 23,81 | 6 | 71 | 91 | 168 |
| ECU-27471 | A118 | | 173 | 12,54 | 12,69 | 7,36 | 56,50 | 1,17 | 3,07 | 6 | 71 | 91 | 176 |
| ECU-27472 | A119 | | 175 | 10,14 | 12,18 | 6,81 | 51,50 | 1,11 | 15,04 | 6 | 71 | 91 | 168 |
| <i>HDEB-295</i> | A120 | | 170 | 15,71 | 17,63 | 10,34 | 54,00 | 1,12 | 33,20 | 6 | 71 | 91 | 168 |
| ECU-27473 | A121 | | 169 | 13,96 | 17,59 | 10,25 | 53,00 | 1,13 | 24,31 | 6 | 71 | 91 | 168 |
| <i>HEEB-298</i> | A122 | | 172 | 14,50 | 15,35 | 9,07 | 60,00 | 1,15 | 23,76 | 6 | 71 | 91 | 168 |
| <i>HEEB-300</i> | A123 | | 186 | 15,33 | 17,68 | 9,95 | 55,50 | 1,13 | 20,57 | 6 | 71 | 91 | 176 |
| ECU-27474 | A124 | | 188 | 14,64 | 16,34 | 9,00 | 53,50 | 1,88 | 19,34 | 6 | 71 | 91 | 168 |
| ECU-27475 | A125 | | 168 | 14,82 | 15,71 | 10,13 | 49,00 | 1,28 | 5,43 | 6 | 71 | 84 | 176 |
| ECU-27476 | A126 | | 192 | 14,44 | 17,20 | 9,99 | 60,00 | 1,13 | 9,22 | 6 | 71 | 91 | 176 |
| ECU-27477 | A127 | | 172 | 15,12 | 16,54 | 9,72 | 51,50 | 1,06 | 3,43 | 6 | 71 | 84 | 168 |
| <i>HDEB-307</i> | A128 | | 186 | 15,16 | 14,52 | 8,53 | 60,00 | 1,10 | 12,00 | 6 | 71 | 98 | 176 |
| ECU-27478 | A129 | | 195 | 15,70 | 15,76 | 9,37 | 60,00 | 1,09 | 22,89 | 6 | 71 | 98 | 176 |
| ECU-27479 | A130 | | 175 | 14,98 | 14,96 | 9,11 | 51,50 | 1,12 | 5,07 | 6 | 71 | 91 | 176 |
| ECU-27480 | A131 | | 148 | 14,16 | 17,39 | 10,34 | 44,50 | 1,12 | 26,09 | 6 | 71 | 91 | 168 |
| ECU-27481 | A132 | | 163 | 14,62 | 15,46 | 8,89 | 63,00 | 1,17 | 19,50 | 6 | 71 | 91 | 168 |
| ECU-27482 | A133 | | 188 | 14,90 | 17,98 | 10,59 | 46,00 | 1,10 | 33,83 | 6 | 71 | 91 | 168 |
| ECU-27483 | A134 | | 160 | 15,40 | 16,54 | 9,79 | 53,50 | 1,12 | 18,10 | 6 | 71 | 91 | 168 |
| ECU-27484 | A135 | | 192 | 13,49 | 17,00 | 9,55 | 49,60 | 1,14 | 13,54 | 6 | 78 | 98 | 168 |
| ECU-27485 | A136 | | 169 | 14,31 | 17,43 | 10,11 | 60,50 | 1,15 | 21,66 | 6 | 71 | 84 | 168 |
| ECU-27486 | A137 | | 167 | 15,39 | 17,34 | 10,48 | 61,50 | 1,12 | 23,50 | 6 | 71 | 91 | 168 |
| ECU-27487 | A138 | | 157 | 15,16 | 17,78 | 10,81 | 61,00 | 1,11 | 41,23 | 6 | 65 | 84 | 168 |
| ECU-27488 | A139 | | 171 | 16,13 | 15,94 | 8,51 | 68,50 | 1,65 | 16,87 | 6 | 71 | 91 | 168 |

* A collection code is indicated in italics for accessions in which the farmer did not donate the seeds to be conserved in INIAP GB.

Supplementary Material 3. Pearson's correlations (below diagonal) among the nine polymorphic quantitative traits analyzed in the 50 accessions from Collect A, and their corresponding p -values (above diagonal). See Table 1 in Materials and methods for descriptors codes. High absolute correlation (> 0.70) and highly significant ($p < 0.0001$) values are indicated in bold

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D9 | D10 |
|-----|--------|--------|--------------|-------------------|--------|--------|--------|--------------|-------------------|
| D1 | | 0.0028 | 0.6874 | 0.8738 | 0.9642 | 0.5182 | 0.0978 | 0.4963 | 0.4583 |
| D2 | 0.414 | | 0.0228 | 0.0513 | 0.5631 | 0.1044 | 0.2253 | 0.5965 | 0.7391 |
| D3 | 0.058 | 0.322 | | <0.0001 | 0.7403 | 0.5872 | 0.0949 | 0.0492 | 0.1428 |
| D4 | 0.023 | 0.277 | 0.937 | | 0.9267 | 0.4413 | 0.0299 | 0.0102 | 0.0259 |
| D5 | -0.007 | -0.084 | -0.048 | -0.013 | | 0.7529 | 0.4735 | 0.5487 | 0.7735 |
| D6 | 0.094 | -0.232 | -0.079 | -0.111 | 0.046 | | 0.0442 | 0.0128 | 0.0428 |
| D7 | -0.237 | 0.175 | 0.239 | 0.308 | 0.104 | -0.286 | | 0.0003 | 0.0006 |
| D9 | 0.099 | -0.077 | -0.280 | -0.360 | -0.087 | 0.350 | -0.490 | | <0.0001 |
| D10 | 0.107 | -0.048 | -0.210 | -0.315 | -0.042 | 0.288 | -0.469 | 0.854 | |

Supplementary Material 4. Pearson's correlations (below diagonal) among the eleven polymorphic quantitative traits analyzed in the 89 accessions from Collect B, and their corresponding p -values (above diagonal). See Table 1 in Materials and methods for descriptors codes. High absolute correlation (> 0.70) and highly significant ($p < 0.0001$) values are indicated in bold

| | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|-----|--------|--------|--------------|-------------------|--------|--------|--------|--------|--------------|-------------------|--------|
| D1 | | 0.0121 | 0.7577 | 0.6912 | 0.0026 | 0.2685 | 0.0183 | 0.2713 | 0.0004 | 0.0018 | 0.0024 |
| D2 | 0.265 | | 0.0002 | 0.0002 | 0.1021 | 0.2380 | 0.0322 | 0.4789 | 0.0016 | 0.1291 | 0.4152 |
| D3 | 0.033 | 0.470 | | <0.0001 | 0.4959 | 0.5468 | 0.0007 | 0.5895 | 0.0571 | 0.1325 | 0.0386 |
| D4 | 0.043 | 0.414 | 0.896 | | 0.1615 | 0.4213 | 0.0021 | 0.6004 | 0.0296 | 0.0581 | 0.0940 |
| D5 | 0.316 | 0.174 | 0.073 | 0.150 | | 0.5933 | 0.8810 | 0.7253 | 0.6550 | 0.2493 | 0.8341 |
| D6 | 0.119 | 0.126 | -0.065 | -0.086 | 0.057 | | 0.7684 | 0.9072 | 0.8674 | 0.4952 | 0.9784 |
| D7 | -0.250 | 0.227 | 0.354 | 0.322 | 0.016 | -0.032 | | 0.8839 | 0.0001 | 0.0887 | 0.0002 |
| D8 | -0.118 | 0.076 | 0.058 | 0.056 | -0.038 | -0.013 | -0.016 | | 0.8046 | 0.4470 | 0.3509 |
| D9 | 0.367 | -0.329 | -0.203 | -0.231 | -0.048 | 0.018 | -0.404 | 0.027 | | <0.0001 | 0.0044 |
| D10 | 0.327 | -0.162 | -0.161 | -0.202 | -0.123 | 0.073 | -0.182 | 0.082 | 0.736 | | 0.0529 |
| D11 | 0.318 | -0.087 | -0.220 | -0.179 | 0.023 | 0.003 | -0.382 | -0.100 | 0.300 | 0.206 | |

Supplementary Material 5. Data obtained for the 19 qualitative descriptors (D12-D30) used in the agro-morphological characterization of the 139 ataco accessions (A1-A50 from Collect A; A51-A139 from Collect B) collected in the provinces of Imbabura, Tungurahua, and Cañar. See Table 2 in Materials and methods for descriptors codes (D12 to D30)

| INIAP GB code * | Analysis code | Province Collect | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 | D25 | D26 | D27 | D28 | D29 | D30 | |
|-----------------|---------------|--------------------|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| ECU-03 | A1 | Imbabura Collect A | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 3 | 5 | 1 | 3 | |
| ECU-06 | A2 | | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 3 | 5 | 1 | 3 |
| ECU-10 | A3 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-41 | A4 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-42 | A5 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-43 | A6 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-48 | A7 | | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-49 | A8 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-50 | A9 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-08 | A10 | | Tungurahua Collect A | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-09 | A11 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-22 | A12 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-23 | A13 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-24 | A14 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-52 | A15 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-53 | A16 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 | |
| ECU-54 | A17 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-55 | A18 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-56 | A19 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-57 | A20 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-58 | A21 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 | |
| ECU-59 | A22 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-60 | A23 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-63 | A24 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-64 | A25 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-65 | A26 | 1 | | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-66 | A27 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | | |

Supplementary Material 5. Continuation

| INIAP GB code * | Analysis code | Province Collect | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 | D25 | D26 | D27 | D28 | D29 | D30 | |
|-----------------|---------------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| ECU-67 | A28 | Tungurahua Collect A | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-68 | A29 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-69 | A30 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-71 | A31 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-72 | A32 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-73 | A33 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-01 | A34 | Cañar Collect A | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-02 | A35 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-05 | A36 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-07 | A37 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-87 | A38 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-88 | A39 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-89 | A40 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-90 | A41 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-93 | A42 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-94 | A43 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-95 | A44 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-96 | A45 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-97 | A46 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-99 | A47 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-100 | A48 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-101 | A49 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | | |
| ECU-102 | A50 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | | |
| HDEB-156 | A51 | Imbabura Collect B | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27408 | A52 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27409 | A53 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27411 | A54 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27412 | A55 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 | |

Supplementary Material 5. Continuation

| INIAP GB code * | Analysis code | Province Collect | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 | D25 | D26 | D27 | D28 | D29 | D30 | |
|-----------------|---------------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| ECU-27413 | A57 | Imbabura Collect B | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 4 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27414 | A58 | | 1 | 4 | 0 | 3 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 3 | 5 | 1 | 3 | |
| ECU-27415 | A59 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27416 | A60 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27417 | A61 | | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 3 | 5 | 1 | 3 |
| ECU-27419 | A62 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27418 | A63 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27420 | A64 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27421 | A65 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27422 | A66 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27410 | A67 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27423 | A68 | | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 3 | 5 | 1 | 3 |
| ECU-27424 | A69 | | 1 | 4 | 0 | 2 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 2 |
| ECU-27425 | A70 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27426 | A71 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27427 | A72 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27428 | A73 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| HDEB-227 | A74 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27489 | A75 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27490 | A76 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27495 | A77 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27491 | A78 | 1 | 3 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27496 | A79 | 1 | 4 | 0 | 3 | 0 | 0 | 6 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 3 | 5 | 1 | 3 | |
| HDJV-229 | A80 | Tungurahua Collect B | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27432 | A81 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27433 | A82 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27434 | A83 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27435 | A84 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |

Supplementary Material 5. Continuation

| INIAP GB code * | Analysis code | Province Collect | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 | D25 | D26 | D27 | D28 | D29 | D30 |
|-----------------|---------------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ECU-27436 | A85 | Tungurahua Collect B | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27437 | A86 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27438 | A87 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27439 | A88 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27440 | A89 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27441 | A90 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27442 | A91 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27443 | A92 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27444 | A93 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27445 | A94 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27446 | A95 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27447 | A96 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27448 | A97 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 |
| ECU-27449 | A98 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27450 | A99 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27451 | A100 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27452 | A101 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27453 | A102 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27454 | A103 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27457 | A104 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27459 | A105 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27460 | A106 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27461 | A107 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27462 | A108 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27463 | A109 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27494 | A110 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27464 | A111 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27465 | A112 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 | |

Supplementary Material 5. Continuation

| INIAP GB code * | Analysis code | Province Collect | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 | D25 | D26 | D27 | D28 | D29 | D30 | |
|-----------------|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| ECU-27467 | A114 | Cañar Collect B | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 | |
| ECU-27468 | A115 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 |
| ECU-27469 | A116 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27470 | A117 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27471 | A118 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27472 | A119 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| <i>HDEB-295</i> | A120 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27473 | A121 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| <i>HEEB-298</i> | A122 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| <i>HEEB-300</i> | A123 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27474 | A124 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27475 | A125 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 |
| ECU-27476 | A126 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27477 | A127 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| <i>HDEB-307</i> | A128 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27478 | A129 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27479 | A130 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27480 | A131 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27481 | A132 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27482 | A133 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27483 | A134 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |
| ECU-27484 | A135 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27485 | A136 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 5 | 5 | 1 | 3 |
| ECU-27486 | A137 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 |
| ECU-27487 | A138 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 5 | 5 | 1 | 3 |
| ECU-27488 | A139 | | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 7 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | 5 | 1 | 3 |

* A collection code is indicated in italics for accessions in which the farmer did not donate the seeds to be conserved in INIAP GB.

Supplementary Material 6. Spearman's correlations (below diagonal) among the five polymorphic qualitative traits analyzed in the 50 accessions from Collect A, and their corresponding p -values (above diagonal). See Table 2 in Materials and methods for descriptors codes. High absolute correlation (> 0.65) and highly significant ($p < 0.0001$) values are indicated in bold

| | D15 | D18 | D24 | D25 | D27 |
|-----|--------|---------|--------|--------|---------|
| D15 | | <0.0001 | 0.5198 | 0.0823 | <0.0001 |
| D18 | 1.000 | | 0.5198 | 0.0823 | <0.0001 |
| D24 | -0.093 | -0.093 | | 0.9618 | 0.6033 |
| D25 | -0.248 | -0.248 | 0.007 | | 0.1627 |
| D27 | -0.808 | -0.808 | 0.075 | 0.201 | |

Supplementary Material 7. Spearman's correlations (below diagonal) among the seven polymorphic qualitative traits analyzed in the 89 accessions from Collect B, and their corresponding p -values (above diagonal). See Table 2 in Materials and methods for descriptors codes. High absolute correlation (> 0.65) and highly significant ($p < 0.0001$) values are indicated in bold

| | D13 | D15 | D18 | D24 | D25 | D27 | D30 |
|-----|--------|--------|---------|--------|--------|---------|--------|
| D13 | | 0.8088 | 0.8297 | 0.5359 | 0.3371 | 0.8088 | 0.9158 |
| D15 | 0.026 | | <0.0001 | 0.0088 | 0.0112 | <0.0001 | 0.8088 |
| D18 | 0.023 | 0.654 | | 0.0011 | 0.2388 | <0.0001 | 0.0002 |
| D24 | 0.067 | 0.276 | 0.341 | | 0.0085 | 0.0088 | 0.1166 |
| D25 | -0.103 | -0.268 | -0.126 | -0.277 | | 0.011 | 0.3371 |
| D27 | -0.026 | -1.000 | -0.654 | -0.276 | 0.268 | | 0.8088 |
| D30 | -0.011 | 0.026 | -0.491 | -0.168 | -0.103 | -0.026 | |

Supplementary Material 8. Comparison of the quantitative traits (D1 to D11) mean values obtained for clusters defined in the dendrogram (see Figure 2): Group I (G I) vs. Group II (G II); Subgroup I.1 (SG I.1) vs. Subgroup I.2 (SG I.2); Subgroup II.1 (SG II.1) vs. Subgroup II.2 (SG II.2) vs. Subgroup II.3 (SG II.3). The p -values obtained for each descriptor studied are indicated; the significant differences ($p < 0.05$) between the means are shown in bold. For each trait, different letters indicate significant differences ($p < 0.05$) between subgroups II.1, II.2 and II.3

| Code-Descriptor | G I | G II | p -value | SG I.1 | SG I.2 | p -value | SG II.1 | SG II.2 | SG II.3 | p -value |
|----------------------------------------|--------|--------|-------------------|--------|--------|---------------|-----------------|-----------------|-----------------|-------------------|
| D1-Plant height (cm) | 169.72 | 175.48 | 0.0885 | 178.95 | 165.23 | 0.0046 | 180.65 a | 174.79 a | 159.13 b | 0.0285 |
| D2-Petiole length (cm) | 13.87 | 13.26 | 0.0159 | 13.38 | 14.11 | 0.0450 | 13.78 a | 13.19 a | 11.64 b | 0.0014 |
| D3-Leaf length (cm) | 15.30 | 15.41 | 0.7003 | 14.46 | 15.71 | 0.0057 | 15.27 b | 14.95 b | 18.39 a | <0.0001 |
| D4-Leaf width (cm) | 8.94 | 9.20 | 0.2015 | 8.41 | 9.20 | 0.0033 | 9.03 b | 8.86 b | 11.63 a | <0.0001 |
| D5-Inflorescence length (cm) | 56.54 | 56.27 | 0.7819 | 59.48 | 55.11 | 0.0081 | 55.53 | 56.01 | 60.44 | 0.0878 |
| D6-Seed size (mm) | 1.14 | 1.14 | 0.8403 | 1.21 | 1.11 | 0.0099 | 1.14 | 1.15 | 1.10 | 0.5867 |
| D7-Grain yield per plant (g) | 21.57 | 17.19 | 0.0017 | 17.05 | 23.77 | 0.0046 | 17.08 b | 15.96 b | 24.11 a | 0.0153 |
| D8-Days to emergency (#) | 6.24 | 6.00 | 0.0936 | 6.00 | 6.36 | 0.3236 | 6.00 | 6.00 | 6.00 | - |
| D9-Days to floral bud formation (#) | 72.21 | 73.58 | 0.1527 | 73.26 | 71.69 | 0.3412 | 72.81 ab | 74.90 a | 69.63 b | 0.0199 |
| D10-Days to flowering (#) | 89.60 | 90.38 | 0.5311 | 90.37 | 89.23 | 0.6354 | 90.61 a | 91.67 a | 82.75 b | 0.0005 |
| D11-Days to physiological maturity (#) | 168.00 | 175.6 | <0.0001 | 168.00 | 168.00 | - | 176.00 a | 176.00 a | 172.00 b | <0.0001 |

Supplementary Material 9. Discriminant values obtained using the Chi-square test (χ^2) for polymorphic qualitative descriptors in the agro-morphological differentiation of clusters defined in the dendrogram (see Figure 2): Group I (G I), Group II (G II), Subgroup I.1 (SG I.1), Subgroup I.2 (SG I.2), Subgroup II.1 (SG II.1), Subgroup II.2 (SG II.2) and Subgroup II.3 (SG II.3). Significant ($p < 0.05$) discriminant values are indicated in bold

| Code-Descriptor | χ^2 (p -value) G I vs. G II | χ^2 (p -value) SG I.1 vs. SG I.2 | χ^2 (p -value) SG II.1 vs. SG II.2 | χ^2 (p -value) SG II.1 vs. SG II.3 | χ^2 (p -value) SG II.2 vs. SG II.3 |
|----------------------------|----------------------------------------|---------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| D13-Branching index | 1.41 (0.2356) | 0.50 (0.4814) | - | - | - |
| D15-Stem pigmentation | 6.08 (0.0137) | - | - | 39.00 (<0.0001) | 50.00 (<0.0001) |
| D18-Leaf colour | 2.28 (0.1308) | 2.09 (0.1484) | - | 27.48 (<0.0001) | 35.80 (<0.0001) |
| D24-Inflorescence shape | 2.11 (0.5490) | 4.43 (0.1091) | 1.73 (0.4214) | 5.37 (0.0205) | 2.94 (0.2299) |
| D25-Inflorescence attitude | 9.37 (0.0092) | 53.58 (<0.0001) | 73.00 (<0.0001) | 39.00 (<0.0001) | 0.83 (0.3628) |
| D27-Inflorescence colour | 5.28 (0.0216) | - | - | 33.06 (<0.0001) | 42.73 (<0.0001) |
| D30-Tumbling resistance | 1.41 (0.2356) | 2.09 (0.1484) | - | - | - |