

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	NIEVES		
Family name	APARICIO GUTIÉRREZ		
Gender (*)	Female	Birth date	25/06/1971
e-mail	Nieves.Aparicio@itacyl.es	URL Web @aparicionieves3	
Open Researcher and Contributor ID (ORCID) (*)		0000-0003-4518-3667	

A.1. Current position

Position	Researcher		
Initial date	16/01/2004		
Institution	Instituto Tecnológico Agrario de Castilla y León		
Department/Center	Herbaceous Crops Unit	ITACYL	
Country	Spain	Teleph. number	983317353
Key words	Cereals, Breeding, phenotyping, physiology, novel foods		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
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A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD AGRICULTURAL ENGINEER	ETSEA-UNIV.Lleida	1997-2001
MASTER OF SCIENCE in Plant Breeding	IAMZ-CIHEAM	2000
Especialización Postuniversitaria (Plant Breeding)	IAMZ-CIHEAM	1996-1997
Ing. Agrónomo	ETSEA-Univ. Lleida	1993-1995
ING. TÉCNICO AGRICOLA	EUITA-UNIV. DE PALENCIA	1989-1993

Part B. CV SUMMARY (max. 5000 characters, including spaces)

Research Within my research career, three periods must be considered:

From 2004 to present: I got an INIA-CCAA postdoctoral contract to join Cereals and Agronomy department at ITACYL linked to the research line of cereals breeding. During this period, I have had an active participation in public breeding programs for winter cereals (barley, durum and bread wheat). The main purpose is to release varieties able to respond to the main challenges of cereal cultivation in the region. We have tried to incorporate diverse traits in the new varieties: (i) High and stable productivity; (II) resistance to the main diseases; (III) high grain quality; and (IV) provide varieties able of responding to the challenges due to climatic change. In this context, other research lines have been the evaluation of germplasm collections as a source of genes for adaptation and tolerance to biotic and abiotic stresses, the study of the fertilization in wheat and the influence of its management on the production and quality. Moreover, since 2013, complementary to breeding, I start my collaboration with the Integrative Crop Ecophysiology Group (University of Barcelona) led by Dr. JL Araus, and focusing our line on analyzing the physiological and molecular mechanisms involved in the wheat adaptive response and practical implementation of precision phenotyping. More recently, during the last six years, I'm also working in the study of the better adaptation of new crops (quinoa, hemp, amaranth, bluckwheat and chia) and ancestral wheats (emmer, einkorn, spelt and turanicum) to edafoclimatic conditions of Castilla y León and how improve them manage into farming systems.

From 2002-2003, after completing my PhD, I started to work at INIA-OEUV, in the project called "Identification and characterization of plant varieties of cereals and legumes", working with improving the

DHE technical protocols mainly from cereals species and carried out the field trials for national plant variety rights.

From **1997-2001**: I obtained an INIA Fellowship at UDL-IRTA (Lleida) on the **Cereals** Group, with durum wheat team. My line of research was related with the study of adaptation of durum wheat to terminal abiotic stresses and its relationship with yield and quality. I studied the use of morphophysiological traits (early vigor, canopy temperature, carbon isotope discrimination, chlorophyll content and spectral reflectance) for use as indirect selection criteria in improvement programs for semi-arid environments. At the same time, I participated in another line of research related to the effect of water stress on biomass accumulation and quality in durum wheat. During this period, I participated in 11 SCI publications and from this time is my **top h cited research**: **N Aparicio**, et al. (2000). "Spectral vegetation indices as nondestructive tools for determining durum wheat yield". *Agronomy Journal* 92 (1), 83-91 with 406 citations at Researchgate and 518 at Google Scholar.

These lines of research have been funded with various projects, almost national, 16 like IP and 24 as collaborator. I am also IP of 4 contracts with companies (Syngenta, Fertiberia, Valagro, Stoller). In relation to scientific productivity and impact, I am coauthor in 43 SCI publications. I've been cited a total of 2.797 times, H-index 20 and H10 index 28 at Google Scholar and at Researchgate my score is 25.8, and approximately the 90% of the manuscript are first quartile (Q1). AS result of breeding programs, I'm co-obtention of 2 varieties of durum wheat and 6 of bread wheat, and 1 more is in registration process.

Science and Society

I have developed huge capacities and activities with the agricultural sector and public in general. I have several articles in agronomy journals like "Tierras", "Agricultura", etc. and at ITACYL's publications. I participated in several **Outreach activities** such as "Semana de la Ciencia", "Noche de investigadores", "La niña y la Ciencia", post in blogs, twitter, Facebook, press releases, seminars, radio and TV programs, etc.

Training and evaluation

Likewise, I have supervised a PhD (Raquel Martinez, 2022) and 4 undergraduate students from ETSIIA-Palencia. I have also an extensive experience in organizing meeting and conferences, and served on grant evaluation panels (DEVA-Junta de Andalucía; MINECO; Grupos operativos) and some paper reviewing.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications

1. Araus, JL, Zahra-Rezzouk, F, Sanchez-Bragado, R, Aparicio, N, Serret D.. 2023. Phenotyping genotypic performance under multistress conditions: Mediterranean wheat as a case study, *Field Crops Research*, Volume 303, 109122,. <https://doi.org/10.1016/j.fcr.2023.109122>. Q1
2. Martínez-Peña, R, Zahra Rezzouk, F, Díez-Fraile MC, Nieto-Taladriz MT, Araus, JL Aparicio, N, Vicente R. 2023. Genotype-by-environment interaction for grain yield and quality traits in durum wheat: Identification of ideotypes adapted to the Spanish region of Castile and León. *European Journal of Agronomy*, Vol 151. DOI: 10.1016/j.eja.2023.126951. Q1
3. Zahra Rezzouk, F, Gracia-Romero, A, Segarra, J, Kefauver SC, Aparicio, N, Serret, D, Araus, JL. 2023. Root traits and resource acquisition determining durum wheat performance under Mediterranean conditions: An integrative approach. *Agricultural Water Management*. Volume 288, <https://doi.org/10.1016/j.agwat.2023.108487>. Q1
4. Gracia-Romero Adrian, Vatter Thomas, Kefauver Shawn C., Rezzouk Fatima Zahra, Segarra Joel, Nieto-Taladriz María Teresa, Aparicio Nieves, Araus José Luis. 2023. Defining durum wheat ideotypes adapted to Mediterranean environments through remote sensing traits. *Frontiers in Plant Science* .Vol 14 . DOI=10.3389/fpls.2023.1254301. Q1
5. Fatima Zahra Rezzouk, Valter Jário del Lima, Maria Carmen Díez-Fraile, Nieves Aparicio, Maria Dolores Serret, José Luis Araus (2023) Assessing performance of European elite bread wheat cultivars under Mediterranean conditions: Breeding implications. *Field Crops Research*, Volume 302, 2023, <https://doi.org/10.1016/j.fcr.2023.109089>. Q1

6. Hamdane, Y.; Segarra, J.; Buchailot, M.L.; Rezzouk, F.Z.; Gracia-Romero, A.; Vatter, T.; Benfredj, N.; Hameed, R.A.; Aparicio, N.; Torró Torró, I.; et al. (2023). Using Ground and UAV Vegetation Indexes for the Selection of Fungal-Resistant Bread Wheat Varieties. *Drones* 2023, 7, 454. <https://doi.org/10.3390/drones7070454>.
7. Martínez-Peña, R., Vergara-Díaz, O., Schlereth, A. et al. (2023) Analysis of durum wheat photosynthetic organs during grain filling reveals the ear as a water stress-tolerant organ and the peduncle as the largest pool of primary metabolites. *March* 2023. *Planta* 257(4):81. DOI: 10.1007/s00425-023-04115-Q1
8. C. Caldelas, F. Zahra Rezzouk, **N. Aparicio**, M.C. Díez-Fraile, J.L. Araus. (2023). Interaction of genotype, water availability, and nitrogen fertilization on the mineral content of wheat grain. *Food Chemistry*. Volume 404, DOI: 10.1016/j.foodchem.2022.134565. Q1
9. R Martínez-Peña, A. Schlereth, M. Höhne, B. Encke, R. Morcuende, M.T Nieto-Taladriz, J.L Araus, **N. Aparicio*** and R. Vicente*. (2022) Source-Sink Dynamics in Field-Grown Durum Wheat Under Contrasting Nitrogen Supplies: Key Role of Non-Foliar Organs During Grain Filling. *Frontiers in Plant Science* 13. DOI: 10.3389/fpls.2022.869680
10. J. Segarra, F. Zahra Rezzouk, **N. Aparicio**, & S. C. Kefauver(3/8). (2022). Multiscale assessment of ground, aerial and satellite spectral data for monitoring wheat grain nitrogen content. *Information processing in agriculture* DOI: 10.1016/j.inpa.2022.05.004
11. Chairi, F., **Aparicio, N.**, Serret, M. D, Araus, J.L. (2020). Breeding effects on the genotype x environment interaction for yield of durum wheat grown after the Green Revolution: the case of Spain. *Crop Journal*. Doi: 10.1016/j.cj.2020.01.005. **Q1**
12. Chairi, F., Sanchez-Bragado, R., Serret, M. D., **Aparicio, N.**, Nieto-Taladriz, M.T., Araus, J.L.. *Plant Science*. (2019). Agronomic and physiological traits related to the genetic advance of semi-dwarf durum wheat: the case of Spain. Doi.: 10.1016/j.plantsci.2019.110210. **Q1**
13. **Aparicio N**, Villegas D, Casadesus J, Araus JL, Royo C. (2004). "Effect of sensor view angle on the assessment of agronomical traits by spectral reflectance indices in durum wheat". *International Journal of Remote Sensing*. 2004. 25(6)1131-1152. **Q1**
14. **Aparicio N**, Villegas D, Casadesus J, Araus JL, Royo C. (2002). "Relationship between growth traits and spectral reflectance indices in durum wheat canopies measured at different plant stages" *Crop Science*. 2002. vol. 42, no. 5: 1547-1555. **Q1**
15. **Aparicio N**, Villegas D, Casadesus J, Araus JL, Royo C. (2000). Spectral Vegetation indices as non-destructive tools for determining durum wheat yield". *Agronomy Journal*. 92:83-91. **Q1**

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

- 1.- R. Martínez-Peña, R. Morcuende, R. Vicente, N. Aparicio. (2021) Nutrients content under adverse growth conditions in durum wheat". XI Congreso Ibérico de Agroingeniería. Oral Presentation. <https://funge-uva.symposium.events/60974/detail/xi-congreso-iberico-deagroingenieria.html>.
- 2.-R. Martínez-Peña, E. Marcos-Barbero, F., B. Gil-Pérez, R. Morcuende, J. Luis Araus, N. Aparicio, R. Vicente. 2021. "Effect of nitrogen supply and genotypic variability on mineral nutrient composition of photosynthetic organs and grains in field-grown durum wheat.". XXIV Meeting of the Spanish Society of Plant Biology / XVII Spanish Portuguese Congress on Plant Biology (BP 2021). Vigo. 7-9 julio 2021. Oral presentation
- 3.- Y. Pallavicini, I. Araus-González, M. C. Díez-Fraile, R. Martínez-Peña, N. Aparicio.2020. "Durum wheat (*Triticum turgidum* ssp. durum) breeding program from Castile and Leon." III Spanish Symposium on Cereal Physiology and Breeding. Pamplona. 17-18 Nov. Oral Presentation.
- 4.-J. A. Fernandez-Gallego, SC Kefauver, N. Aparicio, M.T Nieto-Taladriz, J. L Araus. (2020) Implications of Very Deep Super-Resolution (VDSR) on RGB imagery for grain yield assessment in wheat. *Virtual Symposium in Plant Omics Sciences (OMICAS)*. pg 1-5 doi: 10.1109/OMICAS52284.2020.9535654. Oral Presentation.
- 5.- R. Martínez-Peña, Y. Pallavicini, R. Morcuende, M. T. Nieto-Taladriz, N. Aparicio, R. Vicente. 2020. "Genetic variability for nutrient composition in durum wheat grains under different agronomic conditions." III Spanish Symposium on Cereal Physiology and Breeding. Pamplona. 17-18 Nov. Oral Presentation.
- 6.- Y. Pallavicini, R. Martínez-Peña, A. Santiago-Pajón, M. C. Díez-Fraile, I. Araus-González, N. Aparicio. 2019. "The effect of cultivar and nitrogen fertilization management on yield and bread wheat quality". II Spanish Symposium on Cereal Physiology and Breeding. Córdoba. 6-7 marzo 2019. Oral presentation.

7. N. Aparicio, R. Martínez, M. Bueno-Herrera, S. Pérez-Magariño. 2019. Differences in total phenolic composition in three milling fractions of purple wheats. II Simposio Español de Fisiología y Mejora de Cereales, Córdoba (Spain), 6-7 March 2019. Poster.
- 8.- R. Martínez-Peña, B. Gil-Pérez, I. Arous-González, J. L. Arous, R. Vicente, N. Aparicio. 2018. "Effects of nitrogen supply on crop performance in durum wheat genotypes with contrasting yield." CropStrengthen Oxidative and Abiotic Stress Symposium. Potsdam (Alemania). 13-14 nov. Oral presentation.
- 9.-R. Martínez-Peña, Y. Pallavicini, S. C. Kefauver, A. Gracia-Romero, I. Arous-González, N. Aparicio. 2018. "Canopy Vegetation Indices to assess yield in durum wheat." I Spanish Symposium on Cereal Physiology and Breeding. Zaragoza. 9-10 abril 2018. Oral presentation.
- 10.- Y. Pallavicini, R. Martínez-Peña, B. González-Jiménez, S. C. Kefauver, A. Gracia-Romero, N. Aparicio. 2018. "Aerial platforms as a new approach to select resistant lines for yellow rust in bread wheat breeding program." I Spanish Symposium on Cereal Physiology and Breeding. Zaragoza. 9-10 abril 2018. Oral presentation.

C.3. Research projects,

1. "Holistic wheat phenotyping: ideotype, tools and target environments" (HolisticWheat) PID2022-138307OB-C22. 2023-2025. Financiación: MCI/AEI. 118.750. IP Subproyecto2: N.Aparicio
2. "Identification and sustainable deployment of wheat genetic diversity to enhance the resilience and security of the European food supply". SusCrop-ERA-NET (2023-2025). Researcher.
3. "Multiscale wheat phenotyping: from the ideotype to regional adaptation" (WheatPhenoScale). PID2019-106650RB-C22. 2020-2023. Financiación: MCI/AEI. 141.570,00. IP Subproyecto2: N.Aparicio
4. "Adaptación del cultivo de trigo duro de calidad a la Comunidad de Castilla y León bajo criterios de rentabilidad, sostenibilidad y eficiencia" (ADAPTRIDUR). 2018-2021. Financiación Fondos FEADER. 157.940€. IP ITACyL: N. Aparicio.
5. "Fisiología del rendimiento y calidad para la mejora de cereales" AGL2016-81855-REDT-2017. Financiación: MINECO. IP ITACyL: N. Aparicio
6. Mejora de la cadena de valor para la producción de superalimentos (CIBENA). 2017-2020. Financiación CDTI-CIEN. 172.000€. IP ITACyL: N. Aparicio.
7. "Obtención de variedades de trigo duro adaptadas a Castilla y León y de alta calidad para la industria transformadora". 2015-2020. FEDER Regional. 350.000€. IP: N.Aparicio.
8. "Towards a multi-approach study focused on Improving Resource Use Efficiency in Cereals under Climate Change" (IRUEC). APCIN-2017-063. 2017-2020. Acciones de Programación Conjunta Internacional. MINECO. Coord. y Leader Europe, Iker ARANJUELO. Researcher collaboration.
9. "Fenotipeado en trigo duro bases fisiológicas y plataformas de evaluación". AGL2016-76527-R. 2017-2019. 210.000€. I.P: José Luis Arous Ortega. Researcher collaboration.
10. "Mejora genética del trigo harinero para los retos actuales del cultivo en España: adaptación al cambio climático, calidad y resistencia a estreses bióticos" RTA-2015-00010-C03-03. Entidad financiadora INIA. (2017- 2019). Presupuesto ITACyL: 75.000 € . I.P: Fanny Alvaro. IPSup 3: N. Aparicio

C.4. Contracts, technological or transfer merit

Registered varieties (patents): 1.- Durum wheat: **Hispanano** (RVC: 20040231), commercialized by Gálvez Semillas y **Ancalei**. (RVC: 20040229) by Marisa S.A. 2.- Bread Wheat: **ENEAS** (RVP: 20094876) by DAFISA; **05THES6212**. (RVC: 20152649) by BATTLE; **ESPERADO** (RVC: 20170158) by Guadalsem; **ECODESAL** (RVC: 20185436); **EPICO** (RVC 20190224).

Contracts with private sector

- "Nuevo programa de fertilización orgánica sostenible para cultivos de secano y regadío en la provincia de Soria". COPISO. (2022-2025) 105.468,00 €. CoIP: N. Aparicio.
- "Efecto de distintos abonados foliares sobre la calidad del trigo blando de fuerza". SAS-AGRI. (2023). 5.000€. I.P.: N. Aparicio
- "Estudio de la adaptación de nuevas variedades de cebadas híbridas a las distintas condiciones agroclimáticas de Castilla y León". SYNGENTA. (2014-2021).150.000€. I.P.: N. Aparicio
- "Optimización de la fertilización en trigos con destino a la industria agroalimentaria". FERTIBERIA. (2014-2017). 100.000 €. I.P.: N. Aparicio