

Curriculum vitae



Nom : Douira

Prénom : Allal

Date et lieu de naissance : 1958 à Sefrou

Nationalité : Marocaine

Situation sociale : Marié 02 enfants

Diplôme universitaire le plus élevée : Doctorat d'Etat

Grade : PES grade D

Spécialité : Botanique et Pathologie Végétale

Adresse : Département de Biologie, Faculté des Sciences de Kénitra. BP. 133.

N° Téléphone : 06 67 45 26 94

e-mail : douiraallal@hotmail.com / machkalyoussi@yahoo.fr./ allal.douira@uit.ac.ma

Responsabilité: Directeur de Laboratoire des Productions Végétales, Animales et Agro industrie

Publications (2020-2023)

2023

-El Allaoui, N.; Yahyaoui, H.; **Douira, A.**; Benbouazza, A.; Ferrahi, M.; Achbani, E.H.; Habbadi, K., **2023**. Assessment of the Impacts of Plant Growth-Promoting Micro-Organisms on Potato Farming in Different Climatic Conditions in Morocco. Microbiol. Res. 2023, 14, 2090-2104. <https://doi.org/10.3390/microbiolres14040141>

-El Aymani, I., Ourras, S., Mouden, N., Chliyah, M., Selmaoui, K., Msairi, S., ... **Douira, A.** **2023**. Effect of endomycorrhizal fungi inoculum on agro morphological behavior and productivity of saffron (*Crocus sativus* L.) under water and salinity stress. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 71(4), 183-192. doi: 10.11118/actaun.2023.013

-Abdessamad Sallami, Karim Rabeh, Abdelali Idrissi Lahsini, Hanane El Khedri, **Allal Douira**, Cherkaoui El Modafar, Leila Medraoui & Abdelkarim Filali-Maltouf (**2023**). The ability of two indigenous bacteria isolated from Moroccan olive tree to promote the growth of olive seedlings in the presence of the pathogen *Verticillium dahlia*. **Biocontrol Science and Technology**, 33:10, 963-984, DOI: 10.1080/09583157.2023.2263185

- Abdessamad Sallami, Farid Rachidi, Abdelali Idrissi Lahsini, Hanane El Khedri, **Allal Douira**, Cherkaoui El Modafar, Leila Medraoui and Abdelkarim Filali-Maltouf, **2023**. Plant Growth Promoting (PGP) Performances and Diversity of Bacterial Species Isolated from Olive (*Olea europaea* L.) Rhizosphere in Arid and Semi-arid Regions of Morocco. **J Pure Appl Microbiol.** 17(4):2165-2178. doi: 10.22207/JPAM.17.4.13

-Mzioud Khaoula, Habsaoui Amar, Imtara Hamada, Haida Sara, Rached Sara, Msairi Soukaina, **Douira Allal**, Alqahtani Ali S., Noman Omar M., Tarayrah Mahmoud, Ebn Touhami Mohamed, **2023**. Physicochemical characterization, antioxidant and antifungal activities of essential oils of *Urginea maritima* and *Allium sativum*. **Open Chemistry**, Vol. 21, no. 1, pp. 2110 – 27 <https://doi.org/10.1515/chem-2023-0149>

- Salma Oulad Ziane , Zainab El Alaoui Talibi , Saad Ibensouda koraichi , **Allal Douira**, Soumia Amir , Abdelilah Meddich , Cherkaoui El Modafar, **2023**. Synergistic effects of arbuscular mycorrhizal fungi associated to plant growth-promoting rhizobacteria in suppression of soil-borne *Fusarium* wilt of date palm. **Biocatalysis and Agricultural Biotechnology** Volume 51, August 2023, 102753 <https://www.sciencedirect.com/science/article/abs/pii/S1878818123001548?via%3Dihub>

-Boujraf A, Dallahi Y, Dahmani J, Orlando C, **Douira A.**, 2023. Effect of Plant Communities and Ecological Parameters on Soil Organic Carbon Stocks in the Mamora Forest, Morocco. **Journal of Ecological Engineering**. 2023;24(5).

-Ait-Ouakrim, E.H., Chakhchar, A., El Modafar, C., **Douira A. et al.**, 2023. Valorization of Moroccan Phosphate Sludge Through Isolation and Characterization of Phosphate Solubilizing Bacteria and Assessment of Their Growth Promotion Effect on *Phaseolus vulgaris*. *Waste Biomass Valor* (2023). <https://doi.org/10.1007/s12649-023-02054-2>

-El Allaoui, Nadia, **Douira, Allal**, Ben Bouazza et al. Abdellatif, **et al.**, 2023. Effect of Plant Growth-Promoting Rhizobacteria (PGPRS) on Tuber Storage of Two Potato Varieties. Available at SSRN: <https://ssrn.com/abstract=4416238> or <http://dx.doi.org/10.2139/ssrn.4416238>

- El Houcine Ait-Ouakrim, Abdelghani Chakhchar, Cherkaoui El Modafar, **Allal Douira**, Soumia Amir, Saad Ibensouda-Koraichi, Bouchra Belkadi & Abdelkarim Filali-Maltouf et al. Valorization of Moroccan Phosphate Sludge Through Isolation and Characterization of Phosphate Solubilizing Bacteria and Assessment of Their Growth Promotion Effect on *Phaseolus vulgaris*. **Waste Biomass Valor** 14, 2673–2690 (**2023**). <https://doi.org/10.1007/s12649-023-02054-2>

-Ait-Ouakrim, E.H., Chakhchar, A., El Modafar, C., **Douira A. et al., 2023.** Valorization of Moroccan Phosphate Sludge Through Isolation and Characterization of Phosphate Solubilizing Bacteria and Assessment of Their Growth Promotion Effect on *Phaseolus vulgaris*. *Waste Biomass Valor* (2023). <https://doi.org/10.1007/s12649-023-02054-2>

-El Allaoui, Nadia, **Douira, Allal**, Ben Bouazza et al. Abdellatif, et al., 2023. Effect of Plant Growth-Promoting Rhizobacteria (PGPRS) on Tuber Storage of Two Potato Varieties. Available at SSRN: <https://ssrn.com/abstract=4416238> or <http://dx.doi.org/10.2139/ssrn.4416238>

-Merieme Soufiani, Abdelghani Chakhchar, Salama Aissam, Abderrahim Ferradous, Allal Douira, et al., 2023. Beneficial effects of an indigenous arbuscular mycorrhizal consortium on phosphate nutrition and growth of argan tree seedlings, *Archives of Agronomy and Soil Science*, 69:12, 2386-2400, DOI:10.1080/03650340.2022.2155951

- Msairi, S., Rais, C., Maazouzi, S., Artib, M., El Gabardi, S., Mouden, N., Selmaoui, K., Benkirane, R., Ouazzani Touhami, A., and **Douira, A.**, 2023. Arbuscular Mycorrhizal Symbiosis in Khardala and Critical, Cannabis Varieties in Morocco. *Ecological Engineering & Environmental Technology* 2023. <http://www.ecoeet.com/Arbuscular-mycorrhizal-symbiosis-in-khardala-and-critical-cannabis-varieties-in-Morocco,162701,0,2.html>

-Chaachouay N, Azeroual A, Bencharki B, **Douira A**, Zidane L. Cannabis sativa L.: A Review on Traditional Uses, Botany, Phytochemistry, and Pharmacological Aspects. **Trad Integr Med.** 2023; 8(1):97-116.

-Boujraf A, Dallahi Y, Dahmani J, Orlando C, **Douira A.**, 2023. Effect of Plant Communities and Ecological Parameters on Soil Organic Carbon Stocks in the Mamora Forest, Morocco. **Journal of Ecological Engineering.** 2023;24(5).

-Maazouzi, S., Aoajdad, J., Selmaoui, K., ChliyahM., MoudenN., Msairi, S., Elantry, S., Azeroual, M., Ouajdi, M., Kariml, M., Ooazzani Touhami, A., & **Douira, A.** (2023). Mycorrhizal status of *Argania spinosa* (L.) Skeels in northeastern of Morocco . **Notulae Scientia Biologicae**, 15(2), 11405. <https://doi.org/10.55779/nsb15211405>

-El Hazat, N., Adnani, M., Berber, F., Boughribill, S., Mouden, N., Errifi, A., Chliyah, M., Selmaoui, K., Benkirane, R., Ouazzani Touhami, A., & **Douira, A.**, 2023. Comparative pathogenesis of *Fusarium* spp. obtained from diseased chickpea plants in Morocco. **Notulae Scientia Biologicae**, 15(3), 11361. <https://doi.org/10.55779/nsb15311361>

2022

-Kotba Imad, El Kinany Said,Bouaichi Abdelaziz,Achbani El Hassan,Ouazzani Touhami Amina, **Douira Allal.**, 2022. Pathogenicity study of *Rhizoctonia solani* and its integrated management on different crop species in Morocco. *Archives of Phytopathology and Plant Protection*, Volume 55- Issue 20, pp. 2301-2316.

- Merieme Soufiani, Salama Aissam, Hanane Boutaj, Abderrahim Ferradous, **Allal Douira** et al., 2022. Effectiveness of indigenous arbuscular mycorrhizal consortium on the growth and mineral nutrition of *Argania spinosa* (L.) Skeels, **Plant Biosystems**, DOI:10.1080/11263504.2022.2048280
- Khamar, H., Benkhniue, O., **Douira, A.**, Zidane, L., Ouazzani Touhami A., 2022. *Phyllanthus tenellus* Roxb. (Phyllanthaceae), a newly naturalising species in Morocco. *Check List*, 8(2), pp. 411–417.
- Soufiane Lahbouki, Mohamed Anli, Soumaya El Gabardi, Mohamed Ait-El-Mokhtar, Raja Ben-Laouane, Abderrahim Boutasknit, Youssef Ait-Rahou, Abdelkader Outzourhit, Said Wahbi, **Allal Douira** & Abdelilah Meddich, **2022**. Evaluation of arbuscular mycorrhizal fungi and vermicompost supplementation on growth, phenolic content and antioxidant activity of prickly pear cactus (*Opuntia ficus-indica*), **Plant Biosystems**, 156:4, 882-892, DOI: 10.1080/11263504.2021.1947408
- Ouissame Raho, Abderrahim Boutasknit, Mohamed Anli, Raja Ben-Laouane, Youssef Ait Rahou, Redouane Ouhammadou, Robin Duponnois, **Allal Douira et al.**, **2022**. Impact of Native Biostimulants/Biofertilizers and Their Synergistic Interactions On the Agro-physiological and Biochemical Responses of Date Palm Seedlings. **Gesunde Pflanzen** 74:4, pages 1053-1069.
- El Haddadi Rachid, Errifi Azeddine, Msairi Soukaina, Touhami, Amina Ouazzani and **Douira Allal**, **2021**. "Effect of interaction between *Fusarium solani* and *Rhizoctonia solani* on damping-off and root rot disease of *Tetradlea articulata* seedlings" **Forestry Studies**, vol.75, no.1, 2021, pp.166-175. <https://doi.org/10.2478/fsmu-2021-0018>
- Fadoua Berbrer, Nadia Lamrani, Nawal Imrani, Soukaina Msairi , Najoua Mouden, Rachid Benkiran,Amina Ouazzani Touhami, **Allal Douira**, **2022**. First Report of *Bipolaris oryzae* on *Typha latifolia* and the Pathogenicity of Its Isolates on Different Rice Varieties. **Acta Mycologica** / 2022 / Volume 57 / Article 573, 1-12.
- Amine Elbouazaoui , Badreddine Sijilmassi, Ilyass Maafa, **Douira Allal**, Seid Ahmed, **2022**. Biocontrol activity of *Bacillus*,*Paenibacillus*and*Pseudomonas*against *Fusarium* wilt of chickpea in Morocco. *Acta Agriculturae Scandinavica, Section B—Soil & Plant science*, Vol. 72, NO. 1, 847–859<https://doi.org/10.1080/09064710.2022.2100819>
- Abdelali Idrissi Lahsini , Abdessamad Sallami , El Houcine Ait-Ouakrim , Hanane El khedri , Morad Obtel , **Allal Douira et al.**, **2022**. . Isolation and molecular identification of an indigenous abiotic stress-tolerant plant growth-promoting rhizobacteria from the rhizosphere of the olive tree in southern Morocco. **Rhizosphere** Volume 23, September 2022, 100554
- Chaachouay, N., Azeroual, A., Bencharki, B., **Douira, A.**, Zidane, L., **2022**. Ethnoveterinary medicines plants for animal therapy in the Rif, North of Morocco. **South African Journal of Botany**, 147, pp. 176–191.

- Amine Elbouazaoui, **Allal Douira**, Ilyass Maafa, Seid Ahmed Kemal, **2022**. Integrating Sowing Date with Chickpea Genotypes in Managing Fusarium Wilt in Morocco. *Agriculture (Switzerland)*, 12(6), 773
- Lahbouki, S., Ben-Laouane, R., Anli, M., Boutasknit, A., Ait-Rahou, Y., Ait-El-Mokhtar, M., S. El Gabardi, A. **Douira, et al., 2022**. Arbuscular mycorrhizal fungi and/or organic amendment enhance the tolerance of prickly pear (*Opuntia ficus-indica*) under drought stress. **Journal of Arid Environments** , 199, 104703.
- El Hazzat N, Adnani M, Msairi S, El Alaoui MA, Mouden N, Chliyah M, Boughribil S, Selmaoui K, Ouazzani Touhami A, **Douira A, 2022**. Fusarium equisetias one of the main Fusarium species causing wilt and root rot of chickpeas in Morocco. **Acta Mycologica**, Vol. 57, Article 576 DOI: 10.5586/am.576
- Benkhniue, O., Chaachouay, N., Khamar, H. **Douira, A., Zidane, L., 2022**. Ethnobotanical and ethnopharmacological study of medicinal plants used in the treatment of anemia in the region of Haouz-Rehamna (Morocco). **Journal of Pharmacy and Pharmacognosy Research**, 2022, 10(2), pp. 279–302.
- Amal El Khaddari, Amina El Ouazzani Touhami, Soumaya El Gabardi, Jalila Aoujda, Mohammed Ouajdi, Benaissa Kerdouh, Salwa El Antry, **Allal Douira**, Jamila Dahmani, **2022..** Impact of inoculation by native endomycorrhizal fungi associated with *Tetraclinis articulata* on plant growth and mycorrhizal diversity in the forest nursery. **Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis**, volume 70 (3) : 249-260
- Youssef Ait Rahou, Hanane Boutaj, Mohamed Ait El Mokhtar, Mohamed Anli, Abderrahim Boutasknit, · Abdel ilah Tahiri, · Fatima El Amerany, · Cherkaoui El Modafar, **Allal Douira et al., · 2022**. Effect of beneficial indigenous microorganisms on tomato growth performance, productivity, and protection against *Verticillium dahliae*. **Journal of Plant Diseases and Protection**. <https://doi.org/10.1007/s41348-022-00616-5>
- Ait Rahou, Y., **Douira, A., Tahiri, A.I. et al., 2022**. Application of plant growth-promoting rhizobacteria combined with compost as a management strategy against *Verticillium dahliae* in tomato. **Canadian Journal of Plant Pathology**, 2022 DOI:10.1080/07060661.2022.2089235
- Raho O., Boutasknit A., Anli M., Ben-Laouane R., Rahou Y. A., Ouhaddou R., Duponnois Robin, **Douira A. et al., 2022**. Impact of native biostimulants/biofertilizers and their synergistic interactions on the agro-physiological and biochemical responses of date palm seedlings. **Gesunde Pflanzen**, [Early access], p. [18 p.]. ISSN 0367-4223
- Merieme Soufiani, Salama Aissam, Hanane Boutaj, Abderrahim Ferradous, **Allal Douira**, et al., 2022. Effectiveness of indigenous arbuscular mycorrhizal consortium on the growth and mineral nutrition of *Argania spinosa* (L.) skeels. **Plant Biosystems** <https://doi.org/10.1080/11263504.2022.2048280>

- Chafai, W., El Gabardi, S., **Douira, A.**, Khalid, A., 2022. Diversity and mycorrhizal potential of arbuscular mycorrhizal fungi in two natural soils in the eastern region of Morocco. **Asian Journal of Agriculture and Biology**, 2022(2), 202102101
- Mzibra, A., Aasfar, A., Khouloud, M., Farrie, Y., Boulif, R., Kadmiri, I. M., Bamouh, A., Douira, A., 2021. Improving Growth, Yield, and Quality of Tomato Plants (*Solanum lycopersicum* L) by the Application of Moroccan Seaweed-Based Biostimulants under Greenhouse Conditions. *Agronomy*, 11(7), 1373.
- Sara Louriki, Sajid Rehman, Samira El Hanafi, Yassine Bouhouch, Muamar Al-Jaboobi, Ahmed Amri, **Allal Douira**, Wuletaw Tadesse, 2021. Identification of Resistance Sources and Genome-Wide Association Mapping of Septoria Tritici Blotch Resistance in Spring Bread Wheat Germplasm of ICARDA. **Front Plant Sci.** 2021; 12: 600176
- Senhaji Chaimae, Ahansal Khadija, Abdelwahd Rabha, Diria Ghizlane, Gaboun Fatima, Udupa Sripada Mahabala, **Douira Allal** and Iraqi Driss. (2021). Development of an efficient regeneration system for mature bombarded calli of Moroccan durum wheat varieties. **Australian Journal of Crop Science**. Vol. 15(03): 431-437
- Samah Ourras, Soumaya EL Gabardi, Ismail El Aymani, Najoua Mouden, Mohamed Chliyah, Karima Selmaoui, Soukaina Msairi , Rachid Benkirane, Cherkaoui El Modafar, Amina Ouazzani Touhami, **Allal Douira**, 2021. Diversity of arbuscular mycorrhizal fungi in the rhizosphere of saffron (*Crocus sativus*) plants along with age of plantation in Taliouine region in Morocco. **Acta Biologica Szegediensis** Volume 65(2):199-209, 2021
- EL Alaoui, M. A., Msairi, S., Kaissoumi, H. E., Chliyah, M., Selmaoui, K., Benkirane, R., Ouazzani Touhami, A., & **Douira, A.** 2021. Phylogenetic diversity of a natural population of *Colletotrichum* spp. isolated from different substrates in Morocco. **Plant Cell Biotechnology and Molecular Biology** 22(1-2), 84-94.
- Benjelloun, I., Alami, I.T., Khadir, M.E., **Douira, A.**, Udupa, S.M., 2021. Co-inoculation of mesorhizobium ciceri with either bacillus sp. Or enterobacter aerogenes on chickpea improves growth and productivity in phosphate-deficient soils in dry areas of a mediterranean region. **Plants**, 10(3), pp. 1–15, 571
- Ayoub Haouas, Cherkaoui El Modafar, **Allal Douira**, et al., 2021. Evaluation of the nutrients cycle, humification process, and agronomic efficiency of organic wastes composting enriched with phosphate sludge. **Journal of Cleaner Production**, 2021, 302, 127051
- Latique, S.; Mrid, R.B.; Kabach, I.; Kchikich, A.; Sammama, H.; Yasri, A.; Nhiri, M.; El Kaoua, M.; **Douira, A.**; Selmaoui, K., 2021. Foliar Application of *Ulva rigida* Water Extracts Improves Salinity Tolerance in Wheat (*Triticum durum* L.). **Agronomy** 2021, 11, 265.
<https://doi.org/10.3390/agronomy11020265>
- Berber, F., Ouazzani Touhami, A., **Douira, A.**, 2021. Survey of the fungal species associated to sorghum (*sorghum bicolor* L. moench) in morocco: A mini review. **Plant Cell Biotechnology and Molecular Biology**, 2021, 22(13-14), pp. 88–99

-Hanane Boutaj, Abdelilah Meddich, Abdelghani Chakhchar, Said Wahbi, Zainab El Alaoui-Talibi, **Allal Douira et al. 2021**. Induction of early oxidative events in mycorrhizal olive tree in response to Verticillium wilt, **Archives of Phytopathology and Plant Protection**, DOI: 10.1080/03235408.2021.1907506

-Abir Mzibra, Abderrahim Aasfar, Redouane Benhima, Mehdi Khouloud, Rachid Boulif, **Allal Douira**, Ahmed Bamouh & Issam Meftah Kadmiri , 2021. Biostimulants Derived from Moroccan Seaweeds: Seed Germination Metabolomics and Growth Promotion of Tomato Plant. **Journal of Plant Growth Regulation**, 2021, 40(1), pp. 353–370.

-Chaachouay, N., **Douira, A.**, Zidane, L., 2021. COVID-19, prevention and treatment with herbal medicine in the herbal markets of Salé Prefecture, North-Western Morocco. *European Journal of Integrative Medicine*, 2021, 42, 101285

-Chaachouay, N., Benkhniq, O., **Douira, A.**, Zidane, L., **2021**. Poisonous medicinal plants used in the popular pharmacopoeia of the Rif, northern Morocco. **Toxicon**, 189, pp. 24–32.

-Salhi, S., **Douira, A.**, Zidane, L., 2021. Ethnobotanical survey of medicinal plants used by the population of the middle sebu region (Atlantic Morocco). **Plant Cell Biotechnology and Molecular Biology**, 2021, 22(11-12), pp. 61–82

-Boujraf, A., Dallahi, Y., Malki, F., Dahmani, J., **Douira, A.**, **2021**. Impact assessment of plant communities and ecological parameters on the cork growth in mamora forest, Morocco. *Plant Cell Biotechnology and Molecular Biology*, 2021, 22(29-30), pp. 35–42--Abir Mzibra, Abderrahim Aasfar, Redouane Benhima, Mehdi Khouloud, Rachid Boulif, Allal Douira, Ahmed Bamouh & Issam Meftah Kadmiri, 2020. Biostimulants Derived from Moroccan Seaweeds: Seed Germination Metabolomics and Growth Promotion of Tomato Plant. **J Plant Growth Regul** (2020). <https://doi.org/10.1007/s00344-020-10104-5>

- Imad Kotba, Abdelaziz Bouaichi, Hanane Lougraimzi, Khaoula Habbadi, Azeddine Errifi 1, Amina Ouazzani Touhami, **Allal Douira** and El Hassan Achbani, 2020. Effect of temperature, pH and essential oils on the mycelial growth of Rhizoctonia solani Kühn (Cantharellales: Ceratobasidiaceae) isolates. **J. Microbiol Biotech Food Sci.**, 10(3):461-466

-Khirallah, W., Mouden, N., Al Batnan, A.M., .Ouazzani Touhami, A., **Douira, A.**, **2020**. Effect of different fungicides in the control of Botrytis cinerea Pers. In vitro and in vivo in strawberry (Fragaria x ananassa Duch.). **Plant Cell Biotechnology and Molecular Biology**, 2020, 21(15-16), pp. 98-113.

-Msairi S., Chliyah M., Artib M., El Gabardi S., Selmaoui K., Ouazzani Touhami A., Benkirane R., **Douira A.**, **2020**. Effect of Endomycorrhizal Inoculum on the Growth and Protection of Olive Plants Against Phytophthora palmivora. **Tree Planters' Notes**. 2020; 63(1):19-28.

-Msairi S., Chliyah M., Ouazzani Touhami A ., Alaoui A.E., Selmaoui K., Benkirane R., Filali-Maltouf A., Modafar C.E., **Douira A.**, **2020**. First report of Colletotrichum lupini causing anthracnose disease on the olive fruits in morocco. **Plant Cell Biotechnology and Molecular Biology**, 21(5-6): 1-11.

- Sellal, Z., Touhami, A.O., Chliyah, M., Modafar, C.E., **Douira, A., 2020.** Effect of seeds treatment with *Trichoderma harzianum* on argan plants growth. **Plant Cell Biotechnology and Molecular Biology**, 21(11-12), pp. 69-77
- El Gabardi S, Chliyah M, OuazzaniTouhami A, Mouden N, Selmaoui K, Filali Maltouf A, Elabed S, Ibsouda Koraichi S, Amir S, Benkirane R, El Modafar C, and **Douira A 2020.** Effects of phospho-compost and mud from Phosphate sludges combined or not with an endomycorrhizal inoculum on the improvement of the agronomic parameters of maize *Zea mays* L.) **Plant Cell Biotechnology and Molecular Biology** 21(35&36):65-80.
- Maazouzi S, Aoujdad J, Selmaoui K, El Gabardi S, Artib M, Elantri S, Ouajdi M, Bellaka M, Kerdouh B, Ouazzani Touhami A, Benkirane R. and **Douira A. 2020.** Evaluation of the mycorrhizal status of acacias in the rhamna-sidi bouathman and the haha regions in Morocco. **Plant Cell Biotechnology and Molecular Biology**. 21(1&2): 1–18.
- Qostal, S., S. Kribel, M. Chliyah, K. Selmaoui, S. Serghat, R. Benkirane, A. Ouazzani Touhami, **A. Douira, 2020.** Management of wheat and barley root rot through seed treatment with biopesticides and fungicides. **Plant Cell Biotechnology and Molecular Biology** 21(35&36):129-143
- Sanae El Maaloum, Alae Elabed, Zainab El Alaoui-Talibi, Abdelilah Meddich, Abdelkarim Filali-Maltouf, **Allal Douira et al., 2020.** Effect of Arbuscular Mycorrhizal Fungi and Phosphate-Solubilizing Bacteria Consortia Associated with Phospho-Compost on Phosphorus Solubilization and Growth of Tomato Seedlings (*Solanum lycopersicum* L.). **Communications in Soil Science and Plant Analysis**, DOI: 10.1080/00103624.2020.1729376.
- Imad Kotba, Azddine Errifi, Abdelaaziz Bouaichi, Moulay Abdelaziz El Alaoui, Amina Ouazzani Touhami, El Hassan Achbani and **Allal Douira, 2020.** morphological and phylogenetic diversity of *Rhizoctonia solani* Kühn (Cantharellales: Ceratobasidiaceae) isolates affecting different hosts plants in Morocco. **Plant Cell Biotechnology and Molecular Biology** 21(11&12):24-34.
- Kribel S , Qostal S , Ouazzani Touhami A , Selmaoui K , Chliyah M , Benkirane R , Achbani EH and **Douira A, 2020.** Effects of *Trichoderma* on growth and yield of wheat and barley and its survival ability on roots and amended rock phosphate growing substrates. **Current Research in Environmental & Applied Mycology (Journal of Fungal Biology)** 10(1): 400–416
- Abderrahim Boutasknit , Marouane Baslam, Mohamed Ait-El-Mokhtar , Mohamed Anli , Raja Ben-Laouane , **Allal Douira et al., 2020.** Arbuscular Mycorrhizal Fungi Mediate Drought Tolerance and Recovery in Two Contrasting Carob (*Ceratonia siliqua* L.) Ecotypes by Regulating Stomatal, Water Relations, and (In) Organic Adjustments. **Plants** 9, 80; doi:10.3390/plants9010080
- Baha Eddine, S., El Yousfi, B., **Douira, A., 2020.** Effects of nitrogen forms and rates on *Fusarium culmorum* growth, fitness, aggressiveness and wheat, barley and triticale resistance to crown rot disease. **Plant Cell Biotechnology and Molecular Biology**, 2020, 21(63-64), pp. 107–129.

- Smail Abdellaoui, Aicha El Aissami, Omar Benkhemmar, Mostapha Arahou, Aamina Ouazzani Touhami and **Allal Douira, 2020**. Parasitic and pathogenic effects of *Fuaria oxysporum* f. sp. *albedinis* isolates on okra and collard plants. **Plant Cell Biotechnology and Molecular Biology** 21(5&6):16–23.
- El Gabardi, S., Chliyah, M., Ouazzani Touhami, A., ...El Modafar, C., **Douira, A., 2020**. Effects of phospho-compost and mud from phosphate sludges combined or not with an endomycorrhizal inoculum on the improvement of the agronomic parameters of maize (*Zea mays* L.) plants. **Plant Cell Biotechnology and Molecular Biology**, 2020, 21(35-36), pp. 65–80
- Boutaj, H., Meddich, A., Wahbi, S., Moukhli, A., El Alaoui-Talibi, Z., **Douira, A.,** Filali-Maltouf, A., El Modafar, C., 2020. Improvement of growth and development of olive tree by mycorrhizal autochthonous inoculum. **Research Journal of Biotechnology**. 15:76–84.
- Zineb Faddoul, Hajar Jamai, Soumaya El Gabardi, Mohamed Chliyah, Karima Selmaoui, Amina Ouazzani Touhami, Rachid Benkirane and **Allal Douira, 2020**. Mycorrhizal status of wheat (*Triticum aestivum* and *Triticum durum*) cultivated in north west of Morocco. **Plant Archives** Volume 20 No. 2, 2020 pp. 4139-4157
- Boutaj, H., Chakhchar, A., Meddich, A., Wahbi, S., El Alaoui-Talibi, Z., **Douira, A.** et al., 2020. Bioprotection of olive tree from *Verticillium* wilt by autochthonous endomycorrhizal fungi. **Journal of Plant Disease and Protection**. 127:349–357
- Boutaj, H., Meddich, A., Chakhchar, A., Wahbi, S., El Alaoui-Talibi, Z., **Douira, A.** et al., 2020. Arbuscular mycorrhizal fungi improve mineral nutrition and tolerance of olive tree to *Verticillium* wilt. **Archives of phytopathology and plant protection**. 53:673-689.
- Boutaj, H., Chakhchar, A., Meddich, A., Wahbi, S., El Alaoui-Talibi, Z., **Douira, A.,** et al., 2020. Mycorrhizal autochthonous consortium induced defense-related mechanisms of olive trees against *Verticillium dahliae*. **Journal of Plant Disease and Protection**. 1-13.
- Artib, M., Maazouzi, S., Chliyah, M., ...Ouazzani Touhami, A., **Douira, A. 2020**. Effect of seed treatment with an endomycorrhizal consortium on the development of *Citrus aurantium* L. plants. **Plant Cell Biotechnology and Molecular Biology**, 2020, 21(2122), pp. 7–15.
- Hanane Boutaj, Abdelghani Chakhchar, Abdelilah Meddich, Said Wahbi, Zainab El Alaoui-Talibi, **Allal Douira et al., 2020**. Mycorrhizal autochthonous consortium induced defense-related mechanisms of olive trees against *Verticillium dahliae*. **Journal of Plant Diseases and Protection** Pub Date : 2020-08-10 , DOI: 10.1007/s41348-020-00365-3
- Sanae El Maaloum, Alae Elabed, Zainab El Alaoui-Talibi, Abdelilah Meddich, Abdelkarim Filali-Maltouf, **Allal Douira et al., 2020**. Effect of Arbuscular Mycorrhizal Fungi and Phosphate-Solubilizing Bacteria Consortia Associated with Phospho-Compost on Phosphorus Solubilization and Growth of Tomato Seedlings (*Solanum lycopersicum* L.), **Communications in Soil Science and Plant Analysis**, DOI: 10.1080/00103624.2020.1729376

- Boutaj H, Meddich A, Chakhchar A, Wahbi S, El Alaoui-Talibi Z, **Douira A** et al.,. **2020**. Arbuscular mycorrhizal fungi improve mineral nutrition and tolerance of olive tree to Verticillium wilt. **Arch Phytopathol Plant Prot.** 0:1–17.
- Orch, H., Zidane, L., **Douira, A., 2020**. Ethnobotanical study of plants used in the treatment of respiratory diseases in a population bordering the forest of Izarène | Estudio etnobotánico de plantas utilizadas en el tratamiento de enfermedades respiratorias en una población que linda con el bosque de Izarène. **Journal of Pharmacy and Pharmacognosy Research**, 8(5), pp. 392-409.
- Hicham Orch, Ouafae Benkhniq, Mohamed Fadli, Lahcen Zidane, **Allal Douira, 2020**. Treatment of Urolithiasis: Ethnobotanical Study of Plants Used by the Population Bordering the Forest of Izarène. **Ethnobotany Research and Applications** DOI: 10.32859/era.19.33.1-15
- Outghouliast, H., Messaoudi, Z., Ouazzani Touhami, A., **Douira, A., Haddou, L.A., 2020**. Effect of pollen source on yield and fruits quality of date palm (Phoenix dactylifera L.) CV. 'Mejhoul' in moroccan oases. **Plant Cell Biotechnology and Molecular Biology**, 21(9-10), pp. 60-69.
- Ajana, M., El Kholfy, S., Ouabbou, A., Benkirane, R., **Douira, A., 2020**. Study of Panaeolus semiovatus (Sowerby) S. Lundell and Nannf., (1938), a coprophilous fungus. **Plant Archives**, Volume 20 No. 1, 2020 pp. 1856-1858
- Ajana Mohamed , Abdelkrim El-Assfour, Saifeddine EL Kholfy, Anas Nmichi, Amina Ouazzani Touhami, Rachid Benkirane and **Allal Douira, 2020**. A new decomposer of Quercus Suber (Morocco): Gymnopilus liquiritiae (Pers.) P. Karsten (1879). **Plant Archives** Volume 20 No. 1, pp. 2311-2312 ;
- Nadia Lotfi, Saifeddine El Kholfy, Abdesslam Bouchar, Anas Nmichi, Ali Outcoumit, Karima Selmaoui, Amina Ouazzani Touhami, Rachid Benkirane , **Allal Douira, 2020**. Lepiota pseudofelina J.E. Lange ex J.E. Lange, A new fungal taxon in Morocco. **Plant Cell Biotechnology and Molecular Biology** 21(7&8):1-5.

Chapitres de livres (2022_2023)

- Ourras S., EL Aymani I., Mouden N., Selmaoui K., Msairi S., Elouark M., Benkirane R., EL Modafar C., OuazzaniTouhami A., and **Douira A.. 2023**. Mycoflora of dormant Crocus Sativus Corms in Morocco. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health Springer Nature Switzerland AG 2023 J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): AI2SD 2022, LNNS 713, pp. 490–499,
- Bouchar A., Sellal Z., Maazouzi S., Msairi S., El Kholfy S., Benkirane R., Ouazzani Touhami A., and **Douira A. 2023**. Inventory of Corticolous Lichens and Argan Wood Fungi. International

Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health Springer Nature Switzerland AG 2023 J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): (Eds.): AI2SD 2022, LNNS 713, pp. 521–527, 2023. https://doi.org/10.1007/978-3-031-35248-5_47

-Boudoudou D., El Marrakchi S., Talha A., Kerroum B., Ouazzani Touhami A., **Douira A.**, and Benyahia H. 2023. Effect of Some Derivatives of Pyridazin-3 (2h) – Ones on the in Vitro and in Situ Development of Different Pathogenic Fungi on Citrus Fruits. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): AI2SD 2022, LNNS 713, pp. 536–551, 2023. https://doi.org/10.1007/978-3-031-35248-5_49

-Mouden N., Ouazzani Touhami A., Albatnan A., Selmaoui K., Benkirane R., and **Douira A.** 2023. Growth Promoting of Tomato Plants by Incorporation of Trichoderma asperellum Enriched Liquid Product via Foliar Spray and the Irrigation System. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): (Eds.): AI2SD 2022, LNNS 713, pp. 599–608, 2023. https://doi.org/10.1007/978-3-031-35248-5_54

-El Kaissoumi H., Berber F., Mouden N., Ouazzani Chahdi A., Albatnan A., Ouazzani Touhami A., Selmaoui K., Benkirane R., and **Douira A.** 2023. Effect of Trichoderma Asperellum on the Development of Strawberry Plants and Biocontrol of Anthracnose Disease Caused by Colletotrichum Gloeosporioides. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): AI2SD 2022, LNNS 713, pp. 609–622, 2023. https://doi.org/10.1007/978-3-031-35248-5_55

-Bourazza M., Chetto O., Talha A., **Douira A.**, and Benyahia H. 2023. Diversity of Arbuscular Mycorrhizal Fungi in the Rhizosphere of Four Citrus Genotypes. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): AI2SD 2022, LNNS 713, pp. 623–636, 2023. https://doi.org/10.1007/978-3-031-35248-5_56

-Msairi S., Chliyah M., El Gabardi S., El Alaoui Moulay A., Selmaoui K., **Mouria A.**, Benkirane R., Ouazzani Touhami A., and Douira A. 2023. Effect of Endomycorrhizae on the Pathogenicity of Rhizoctonia solani and the Growth of Olive Plants. International Conference on Advanced Intelligent Systems for Sustainable Development Volume 3 - Advanced Intelligent Systems on Agriculture and Health J. Kacprzyk, M. Ezziyyani V. E. Balas(Eds.): AI2SD 2022, LNNS 713, pp. 743–756, 2023. https://doi.org/10.1007/978-3-031-35248-5_65

-Nouredine Chaachouay , Abdelhamid Azeroual , Bouchaib Bencharki , **Allal Douira** , Lahcen Zidae, 2023 . Chapter 3 - Hormonal interactions during fruit development and ripening, in Hormonal Cross-Talk, Plant Defense and Development Plant Biology, Sustainability and Climate Change ,2023, Pages 37-46, <https://www.sciencedirect.com/science/article/abs/pii/B9780323953757000148>

-Zineb Sellal, Amina Ouazzani Touhami, Jamila Dahmani, Soukaina Maazouzi, Najoua Mouden, Mohamed Chliyah, Karima Selmaoui, Rachid Benkirane, Cherkaoui El Modafar and **Allal Douira, 2022**. Chapter 14 'Diversity of Arbuscular Mycorrhizal Fungi in the Rhizosphere of Argania spinosa in Morocco' p. 247-261, In IntechOpen 'Arbuscular Mycorrhizal Fungi in Agriculture' New Insights, Edited by Rodrigo Nogueira de Sousa DOI: 10.5772/intechopen.106162 <https://www.intechopen.com/chapters/83295>

- Samah Ourras, Ismail El Aymani, Najoua Mouden, Soumaya El Gabardi, Manal Adnani, Karima Selmaoui, Mariam Artib, Rachid Benkirane, Cherkaoui El Modafar, Amina Ouazzani Touhami and **Allal Douira, 2022**. Chapter 5 'Saffron Endomycorrhizae: Diversity and Effect on Plant Growth and Corm Formation', p.79-92. In IntechOpen 'Arbuscular Mycorrhizal Fungi in Agriculture' New Insights, Edited by Rodrigo Nogueira de Sousa. DOI: 10.5772/intechopen.106881 <https://www.intechopen.com/chapters/84052>

Thèses de Doctorat encadrées (2020-2023)

-Talha Abdelhak. Contribution à la recherche des porte-greffes d'agrumes performants en termes de production, qualité et de la résistance vis-à-vis de la salinité et de Phytophthora ssp. **Université Ibn Tofail 2023,**

-Elbouzaoui Amine. La fusariose du pois chiche au Maroc : diversité génétique de l'agent causal et recherche de nouveaux moyens de lutte, **Université Ibn Tofail, 2023 ;**

-Kotba Imad. Contribution à l'évaluation de l'impact des maladies telluriques sur l'état sanitaire de différentes cultures maraichères au Maroc et la recherche de moyens de lutte intégrée efficaces **Université Ibn Tofail, 2022 ;**

-El Hazzat Naila. Contribution à l'étude de la fusariose du pois chiche (Cicer arietinum) au Maroc et recherche de moyens de protection alternatifs, Université Ibn Tofail, 2021 ;

-Benjelloun Imane . Diversité phénotypique et moléculaire des bactéries endophytes nodulaires du pois chiche (Cicer arietinum) au Maroc, et effet de la co-inoculation de Mesorhizobium sp. et de PGPRs sur la nodulation et le rendement du pois chiche cultivé sous conditions de déficit en phosphore, **Université Ibn Tofail, 2021 ;**

-Rhimini Youssef. Etude de trois maladies de l'olivier dans quelques régions du Maroc : L'œil de paon, la tuberculose et la pourriture racinaire. **Université Ibn Tofail, 2021 ;**

-Senhaji Chaimae. Optimisation de la transformation génétique pour l'acquisition de la tolérance à la sécheresse et à la salinité chez le blé dur (Triticum durum). **Université Ibn Tofail, 2021 ;**

-Anas Nmichi. Etude des Basidiomycètes et Ascomycètes de quelques régions du Maroc **Université Ibn Tofail, 2021 ;**

-Saifeddine El Kholfy. Etude de la diversité fongique de quelques régions du Maroc. **Université Ibn Tofail, 2021;**

-Artib Mariam. Les champignons mycorhiziens arbusculaires de la rhizosphère des agrumes : Diversité et valorisation agronomique. **Université Ibn Tofail, 2021 ;**

-Baha Eddine Siham. Gestion raisonnée de la fertilisation (N, P, K) pour le contrôle de la pourriture sèche du collet induite par le *Fusarium culmorum*. **Université Ibn Tofail, 2021 ;**

-Qostal Safaa, 2021. Etude du complexe fongique responsable de la pourriture racinaire des céréales et recherche de quelques moyens de lutte alternatifs **Université Ibn Tofail, 2021 ;**

-Mohamed Ajana. Diversité fongique du Maroc : Contribution à l'étude de quelques Basidiomycètes et Ascomycètes du Maroc. **Université Ibn Tofail, 2020;**

-Aadel Hanane. Embryogenèse somatique et régénération des plantules à partir des embryons du blé tendre Marocain et l'intégration des gènes conférant la tolérance à la sécheresse chez le blé tendre par *Agrobacterium tumefaciens*. **Université Ibn Tofail, 2020 ;**

-Msairi Soukaina. Etude de *Phytophthora palmivora* et du complexe *Colletotrichum*, pathogènes de l'olivier au Maroc. Recherche de quelques moyens de lutte. **Université Ibn Tofail, 2020 ;**

-Bahouq M., 2020. Etude des champignons mycorhiziens arbusculaires du fraisier au Maroc : diversité et effets sur la croissance des plants et la lutte contre la verticilliose. **Université Ibn Tofail, 2020 ;**

Projets et contrats de recherche

1- Projet de recherche intitulé « Adaptation de l'olivier au changement climatique : Utilisation de la génomique et de la génétique d'association pour la sélection variétal (ClimGenOlive) »

Entre :

Le Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de l'Innovation, Rabat,

L'Académie Hassan II des sciences et techniques, Rabat,

L'Université Cadi Ayyad, Marrakech,

L'Université Ibn Tofail, Kénitra

et l'Institut National de la Recherche Agronomique, Rabat

Montant : 5 000 000 DH

Durée : 2022-2025

2-Projets de Recherche dans le domaine de la Valorisation des Plantes Médicinales et Aromatiques : 'Elaboration d'un produit biofertilisant et biopesticide, à base de champignons endophytes, adapté à la protection et l'amélioration de la productivité du safran au Maroc'

Durée. 2019/2023

Montant : 660 000 DH

3-Projet 'Rhizolive', financé par l'Académie Hassan II des Sciences et Techniques : Selection et utilisation de microorganismes rhizosphériques pour l'optimisation de la mycorhization de l'olivier au Maroc'. -Faculté des sciences de Rabat, Faculté des Sciences de Kénitra, Faculté des Sciences et Techniques de Marrakech, INRA de Meknès et de Marrakech, Domaine Agricole du Groupe Zniber, Meknès, Granada, Spain Departamento de Microbiologia del Suelo y Sistemas Simbioticos, Estacion Experimental del Zaidin (CSIC), 18008

Montant :1 000 000 DH

4-Projet autour des phosphates, AGR-DOI-01/2017, financé par l'OCP: Sélection et utilisation des Trichoderma spp. pour l'amélioration de l'efficacité des phosphates et la lutte contre la pourriture racinaire du blé au Maroc.

Dans le cadre de ce projet, un brevet a été déposé par OCP

Montant : 1 501 000 Dh

5- Membre du Projet R&D autour des phosphates n° BIO-MOD-01/2017, financé par l'OCP : Procédés biotechnologiques pour la valorisation des boues et des déchets miniers de phosphate : Formulation d'un phospho-compost biofertilisant pour application directe en agriculture biologique.

Montant : 4 500 000 Dh

Principales activités dans le domaine de transfert de technologie

Brevets

***1Brevet cédé à une société privée**

Ouazzani Chahdi A., Ouazzani Touhami A., Khir Allah W., Benkirane R. et Douira A., Brevet 'production, formulation and recycling of a biofungicidal and biostimulant product based on Trichoderma Asperellum' N° de publication : WO/2019/103588, N° de la demande internationale :PCT/MA2018/000023, Date de publication :31.05.2019, Date de dépôt international :20.12.2018,
<https://patentscope.wipo.int/search/fr/detail.jsf?docId=WO2019103588>, Brevet en vigueur : Demande N° : 41534, Date de délivrance : 29/11/2019

Cédé à une société privée, Agricultural And Trading Company (ATRACO SARL), le 18 janvier 2021 et signature d'un Contrat de recherche, d'expertise et de suivi entre l'Université Ibn Tofaïl Kénitra et la dite Société

Le travail effectué dans le cadre de cette coopération scientifique et technique dans le domaine agricole est 1/ la production et formulation de produits biologiques, 2/ la réalisation d'expérimentation sur le terrain : Traitements chimiques et/ou biologiques, suivis par des analyses au laboratoire, 3/ Les analyses mycologiques des échantillons de plantes provenant de différents champs, pépinières et domaines de production.

Durée : 2021-2025

*Deux brevets développés dans le cadre des projets AGR-DOI-01/2017, BIO-MOD-01/2017, autour des phosphates. Ces deux brevets, pris en charge par l'OCP, ne sont pas encore publiés.

2. Contrat de recherche entre l'Université Ibn Tofail et la Société IRIS AGRO pour a/ développer des inocula bio stimulants, de la croissance espèces végétales aromatiques, b/ étude floristique et moléculaires des plantes aromatiques cultivées par la société, c/ développement des méthodes de cultures in vitro de quelques espèces aromatiques, d/ diagnostic et détermination des maladies des cultures des plantes aromatiques et recherche de moyens de lutte biologique, e/ valorisation des fleurs de certaines espèces aromatiques par l'étude phytochimique et l'extraction des molécules actives

Durée : 2023-2025

3. Deuxième prix de la 7ème édition du « prix de la compétitivité, prix du partenariat université- entreprise' : Valorisation industrielle des procédés de production d'un biofongicide à base de Trichoderma asperellum et contrôle de qualité, <https://www.mcinet.gov.ma/fr/actualites/remise-des-prix-de-la-7eme-edition-du-prix-de-la-competitivite-prix-du-partenariat>

4. 3ème prix du Grand Prix Hassan II pour l'invention et la recherche dans le domaine agricole (12ème Edition, classe des Inventions et Techniques Pratiques), pour le Brevet d'invention MA 41 534 : »Production, formulation et recyclage d'un produit biofongicide et biostimulant à base de Trichoderma asperellum» Pr Ouazzani TOUHAMI Amina de la Faculté des Sciences de Kénitra

<https://fs.uit.ac.ma/le-professeur-ouazzani-touhami-amina-de-la-faculte-des-sciences-de-kenitra-recoit-le-3eme-prix-du-grand-prix-hassan-ii-pour-linvention-et-la-recherche-dans-le-domaine-agricole/>