List of publications/Reimund P. Rötter (as of November 2026)

Classification is based on the recommendation of the Academy of Finland .

A) Peer-reviewed scientific articles

A1 Journal article (refereed), original research

2026

A 190
Bae, S., Westphal, C., Ammer, C., Hostert, P., Hüttel, S., Kis-Katos, K., Kneib, T., Kreft, H., Paul, C., Plieninger, T., Putzenlechner, B., **Rötter, R. P.**, Schlund, M., Seidel, D., Siebert, S., Wiegand, K., Knohl, A. (2026). Landscape heterogeneity is structured by multidimensional components and land-cover proportion interactions. *Scientific Reports*, 16, 36272. DOI: https://doi.org/10.1038/s41598-026-77097-1

A 189
Collin, A., Dewi, E. S., Milani, L. A., Ponikwia, D., Abdulai, I., Chmielewska, B., Sahu, K. K., **Rötter, R. P.,** Schreiber, M., Waugh, R., Daszkowska-Golec, A. (2026). HvABI5 is an important ABA-dependent regulator of drought stress response at heading time in barley. *Plant Science*, 362, 112848. DOI: https://doi.org/10.1016/j.plantsci.2025.112848

A 188
Hlaváčová, M., Klem, K., Pytela, J., Urban, O., Pernicová, N., Balek, J., Semerádová, D., Fischer, M., **Rötter, R. P.**, Appiah, M., Hlavinka, P., et al., Trnka, M. (2026). Traditional rye varieties exhibit drought tolerance traits but maintain lower yields than modern varieties under drought stress. *Scientific Reports*. DOI: https://doi.org/10.1038/s41598-026-51544-5

A 187
Manu, R., Hoffmann, M., Manu, O. A., Asante, W. A., **Rötter, R. P.,** Abdulai, I. (2026). Carbon stocks and yields in smallholder cocoa agroforestry systems along a climatic gradient in Ghana. *Agroforestry Systems*. DOI: https://doi.org/10.1007/s10457-026-01593-6

A 186
Hakim, A., Ur-Rahman, M. H., Hamza, A., Hoffmann, M. P., Shelia, V., Owais, M., Khan, N., Ibtesam, M. S., Rashid, M., **Rötter, R. P.** (2026). Evaluation of YOLOv7-v13 models for multi-class small insect pest detection using the five-pest dataset. *Scientific Reports*. DOI: https://doi.org/10.1038/s41598-026-52108-3

A 185
Hussain, I., Ur-Rahman, M. H., Ikram, R. M., Hussain, M. B., Ahmad, S., **Rötter, R. P.** (2026). Silicon seed inoculation enhances antioxidant defenses, physio-biochemical mechanisms and yield traits in maize hybrids under heat stress conditions at vegetative and tasseling stages. *Field Crops Research*, 346, 110572. DOI: https://doi.org/10.1016/j.fcr.2026.110572

A 184
Feng, Z., Carciochi, W. D., He, P., Grassini, P., **Rötter, R. P.,** Ur-Rahman, M. H., Aramburu-Merlos, F., Xu, Y., Zhang, W., Dobermann, A., Chen, X., Zhang, F. (2026). Underestimated potassium supply from crop residue return in China's major cereal systems. *Field Crops Research*, 342, 110470. DOI: https://doi.org/10.1016/j.fcr.2026.110470

A 183
Joseph, J. E., Whitbread, A. M., Akinseye, F. M., Dhulipala, R., Worou, O. N., Faye, A., Kebe, N. A., Seck, B., Konte, O., **Rötter, R. P.** (2026). Evaluating iSAT climate-informed agro-advisories for farm decisions and system performance in Senegal's drylands. *Scientific Reports*, 16, 10493. DOI: https://doi.org/10.1038/s41598-026-44231-y

A 182
Köster, M., Appiah, M., Hoffmann, M. P., Abdulai, I., Schulmann, A. H., Maurer, A., Pillen, K., Trnka, M., Semenov, M. A., **Rötter, R. P.** (2026). Projected shifts in climate and spring barley yields under future (CMIP6) scenarios across eight environmental zones in Europe. *Agricultural and Forest Meteorology*, 378, 111024. DOI: https://doi.org/10.1016/j.agrformet.2026.111024

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Munene, R., Mustafa, O., Loftus, S., Suba, V. O., Withanage, N., Schmücker, N., Bulli, P., **Rötter, R. P.,** Otieno, D. O., Ahmed, M. A., Dippold, M. A. (2026). Beneath the Drought: Rhizosphere Processes Shape Genotype-Specific Sorghum Responses to Drought-Induced N Limitation. *Plant, Cell & Environment*. DOI: https://doi.org/10.1111/pce.70845

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Hussan, M., Hussain, S., Farooq, M., Ur-Rahman, M. H., Jinjin, W., Zahra, N., Wang, Q., Yan, M., **Rötter, R. P.,** Siddique, K. (2025). Interactive effect of biochar and nano-calcium oxide on alfalfa cadmium detoxification: Boosting antioxidant defense, regulating gene expression, and remediating soil. *Journal of Cleaner Production*, 533, 146852. DOI: https://doi.org/10.1016/j.jclepro.2025.146852

A 179
Shen, J., Zafar, Z., Fahd, S., Rebouh, N. Y., Kraiem, H., **Rötter, R. P.,** Ur-Rahman, M. H. (2025). A scalable remote sensing and machine learning framework for high-resolution land surface temperature modeling. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 18. DOI: https://doi.org/10.1109/JSTARS.2025.3597395

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Kaium, A., Ahmed, S., Ur-Rahman, M. H., Islam, S., Ratry, Y. A., Helal, M. U., Siddquy, M. A. F., Haque, M., Raza, A., Mansour, F., Alotaibi, M., Sabagh, A. E., **Rötter, R. P.** (2025). Modeling impacts of climate-induced yield variability and adaptations on wheat and maize in a sub-tropical monsoon climate – using fuzzy logic. *Scientific Reports*, 15, 25882. DOI: https://doi.org/10.1038/s41598-025-09820-3

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Liu, H., Grant, B. B., Smith, W. N., Porter, C. H., Cammarano, D., Vogeler, I., Hoogenboom, G., Pullens, J. W. M., Olesen, J. E., Bindi, M., Semenov, M. A., Abrahamsen, **P., Rötter**, R. P., Kumar, U., Abalos, D. (2025). Towards an improved representation of the relationship between root traits and nitrogen losses in process-based models. *Agricultural Systems*, 228, 104400. DOI: https://doi.org/10.1016/j.agsy.2025.104400

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Dewi, E. S., Appiah, M., Abdulai, I., **Rötter, R. P.** (2025). Comparative analysis of water-use behavior and drought resilience in selected tropical sorghum (*Sorghum bicolor* L.) cultivars. *Journal of Agriculture and Food Research*, 22, 102093. DOI: https://doi.org/10.1016/j.jafr.2025.102093

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Munawar, S., Ikram, R. M., **Rötter, R. P.,** et al. (2025). Silicon seed inoculation enhances antioxidants, physiology and yield of hybrid maize under heat stress. *BMC Plant Biology*, 25. DOI: https://doi.org/10.1186/s12870-025-06399-9

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Munene, R., Mustafa, O., et al., **Rötter, R. P.,** et al. (2025). Contribution of arbuscular mycorrhiza and exoenzymes to nitrogen acquisition of sorghum under drought. *Frontiers in Plant Science*, 16, 1514416. DOI: https://doi.org/10.3389/fpls.2025.1514416

A 172
Han, J., Luo, Y., et al., **Rötter, R. P.,** Tao, F. (2025). Planting area and production decreased for winter-triticeae crops but increased for rapeseed in Ukraine with climatic impacts dominating. *Geography and Sustainability*, 6. DOI: https://doi.org/10.1016/j.geosus.2024.08.006

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Bringhenti, T., Moriondo, M., Abdulai, I., et al., **Rötter, R. P.,** et al. (2025). Adopting and evaluating a simple model for macadamia tree transpiration in periodically water-scarce subtropical regions. *Scientia Horticulturae*, 341, 113970. DOI: https://doi.org/10.1016/j.scienta.2025.113970

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Pohanková, E., Hlavinka, P., Kersebaum, K. C., et al., **Rötter, R. P.,** et al. (2025). Climate change impacts on two European crop rotations via an ensemble of models. *European Journal of Agronomy*, 164, 127456. DOI: https://doi.org/10.1016/j.eja.2024.127456

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Abdulai, I., Hoffmann, M. P., et al., **Rötter, R. P**. (2025). Functional groups of leaf phenology are key to build climate-resilience in cocoa agroforestry systems. *Agriculture, Ecosystems & Environment*, 379, 109363. DOI: https://doi.org/10.1016/j.agee.2024.109363

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Dueri, S., Brown, H., Asseng, S., Ewert, F., Webber, H., George, M., Craigie, R., Guarin, J., Pequeno, D., Stella, T., Ahmed, M., Alderman, P., Basso, B., Berger, A., Bracho-Mujica, G., Cammarano, D., Chen, Y., Dumont, B., Rezaei, E., Fereres, E., Ferrise, R., Gaiser, T., Gao, Y., Garcia-Vila, M., Gayler, S., Hochman, Z., Hoogenboom, G., Kersebaum, K., Nendel, C., Olesen, J., Padovan, G., Palosuo, T., Priesack, E., Pullens, J., Rodríguez, A., **Rötter, R. P.**, Ruiz Ramos, M., Semenov, M., Senapati, N., Siebert, S., Srivastava, A., Stöckle, C., Supit, I., Tao, F., Thorburn, P., Wang, E., Weber, T., Xiao, L., Zhao, C., Zhao, J., Zhao, Z., Zhu, Y. (2024). Winter wheat experiments to optimize sowing dates and densities in a high-yielding environment in New Zealand: Field experiments and AgMIP-Wheat multi-model simulations. *Open Data Journal for Agricultural Research*, 10, 14–21. DOI: https://doi.org/10.18174/odjar.v10i0.18442

A 166

Fronzek, S., Webber, H., **Rötter, R. P.**, Ruane, A. C., Ewert, F. (2024). A daily time-step observed and scenario climate dataset on a European grid for crop modelling applications. *Open Data Journal for Agricultural Research*, 10, 28–34. DOI: https://doi.org/10.18174/odjar.v10i0.16398

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Kahiluoto, H., Sakieh, Y., Kaseva, J., Kersebaum, K.-C., Minoli, S., Franke, J., **Rötter, R. P.**, Müller, C. (2024). Redistribution of nitrogen to feed the people on a safer planet. *PNAS Nexus*, 3(5), pgae170. DOI: https://doi.org/10.1093/pnasnexus/pgae170

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Yazdan Bakhsh, S., Ayisi, K., **Rötter, R. P.,** Twine, W., Feil, J. H. (2024). Typologies of South African small-scale farmers and their risk perceptions: an unsupervised machine learning approach. *China Agricultural Economic Review.* https://doi.org/10.1108/CAER-09-2022-0201

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Han, J., Luo, Y., Zhang, Z., Xu, J., Chen, Y., Asseng, S., Jägermeyr, J., Müller, C., Olesen, J. E., **Rötter, R. P.,** Tao, F. (2024). Planting area and production decreased for winter-triticeae crops but increased for rapeseed in Ukraine with climatic impacts dominating. *Geography and Sustainability*. Advance online publication. https://doi.org/10.1016/j.geosus.2024.08.006

A 162

Appiah, M., Bracho-Mujica, G., Svane, S., Styczen, M., Kersebaum, K. C., **Rötter, R. P.** (2024). Insights from utilizing data of different quality levels for simulating barley performance under Nordic conditions: The Agricultural Production Systems SIMulator model evaluation. *In Silico Plants,* 6(2), Article diae010. https://doi.org/10.1093/insilicoplants/diae010

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Pohanková, E., Hlavinka, P., Kersebaum, K. C., Nendel, C., Rodríguez, A., Balek, J., Dubrovský, M., Gobin, A., Hoogenboom, G., Moriondo, M., Olesen, E. J**., Rötter, R. P.,** Ruiz-Ramos, M., Shelia, V., Stella, T., Hoffmann, M. P., Takáč, J., Eitzinger, J., Dibari, C., Ferrise, R., Bohuslav, J., Bláhová, M., Trnka, M. (2024). Expected effects of climate change on the soil organic matter content related to contrasting agricultural management practices based on a crop model ensemble for locations in Czechia. European Journal of Agronomy, 156, 127165. DOI:https://doi.org/10.1016/j.eja.2024.127165

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Dewi, E.S., Abdulai, I., Bracho-Mujica, G., Appiah, M., **Rötter, R.P**. (2023): Agronomic and Physiological Traits Response of Three Tropical Sorghum (Sorghum bicolor L.) Cultivars to Drought and Salinity.

Agronomy 13(11), 2788.

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Appiah, M., Abdulai, I., Schulman, A.H., Moshelion, M., Dewi, E.S., Daszkowska-Golec, A., Bracho-Mujica, G., **Rötter, R.P**. (2023): Drought response of water-conserving and non-conserving spring barley cultivars. Frontiers in Plant Science 14, 1247853. https://doi.org/10.3389/fpls.2023.1247853

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Guarin, J.R., Martre, P., Ewert, F., Webber, H., Dueri, S., Calderini, D., Reynolds, M., Molero, G., Miralles, D., Garcia, G., Slafer, G., Giunta, F., Pequeno, D., Stella, T., Ahmed, M., Alderman, P., Basso, B., Berger, A., Bindi, M., Bracho-Mujica. G., Cammarano, D., Chen, Y., Dumont, B., Rezaei, E. E., Fereres, E., Ferrise, R., Gaiser, T., Gao, Y., Garcia-Vila, M., Gayler, S., Hochman, Z., Hoogenboom, G., Hunt, F., Kersebaum, K.C., Nendel, C., Olesen, J., Palosuo, T., Priesack, E., Pullens, J., Rodriguez, A., **Rötter, R.P**., Ramos, M.R., Semenov, M., Senapati, N., Siebert, S., Srivastava, A., Stockle, C., Supit, I., Tao, F., Thorburn, P., Wang, E., Weber, T., Xiao, L., Zhang, Z., Zhao, C., Zhao, J., Zhao, Z., Zhu, Y., Asseng, S. (2023): A high-yielding traits experiment for modeling potential production of wheat: field experiments and AgMIP-Wheat multi-model simulations. Data Journal for Agricultural Research 9, 26-33. DOI: https://doi.org/10.18174/odjar.v9i0.18573

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Bringhenti, T., Joubert, E., Abdulai, I., Hoffmann, M. P., Moriondo, M., Taylor, P. J., **Rötter, R. P**. (2023). Effects of environmental drivers and irrigation on yields of macadamia orchards along an altitudinal gradient in South Africa.Scientia Horticulturae 321, 112326. DOI: https://doi.org/10.1016/j.scienta.2023.112326

A 155

Liu, B., Martre, P., Ewert, F., Webber, H., Waha, K., Thorburn, P.J., Ruane, A.C., Aggarwal, P.K., Ahmed, M., Balkovič, J., Basso, B., Biernath, C., Bindi, M., Cammarano, D., Cao, W., Challinor, A.J., Sanctis, G.D., Dumont, B., Espadafor, M., Rezaei, E., Fereres, E., Ferrise, R., Garcia-Vila, M., Gayler, S., Gao, Y., Horan, H., Hoogenboom, G., Izaurralde, R.C., Jabloun, M., Jones, C.D., Kassie, B.T., Kersebaum, K.C., Klein, C., Koehler, A.K., Maiorano, A., Minoli, S., San Martin, M.M., Müller, C.M., Kumar, S.N., Nendel, C., O'Leary, G.J., Olesen, J.E., Palosuo, T., Porter, J.R., Priesack, E., Ripoche, D., **Rötter, R.P**., Semenov, M.A., Stöckle, C., Stratonovitch, P., Streck, T., Supit, I., Tao, F., Velde, M.V., Wang, E., Wolf, J., Xiao, L., Zhang, Z., Zhao, A., Zhu, Y., Asseng, S., (2023). AgMIP-Wheat multi-model simulations on climate change impact and adaptation for

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A 153

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Ferreira, N. C.R., **Rötter, R. P.**, Bracho-Mujica, G., Nelson, W. C. D., Lam, Q. D., Recktenwald, C**.,** Abdulai, I., Odhiambo, J., Foord, S. (2022). Drought patterns: their spatiotemporal variability and impacts on maize production in Limpopo province, South Africa. Int J Biometeorol 67, 133–148. DOI: 10.1007/s00484- 02202392-1

A 149

Appiah, M., Bracho-Mujica, G., Ferreira, N. C.R., Schulman, A. H., **Rötter, R. P.** (2022). Projected impacts of sowing date and cultivar choice on the timing of heat and drought stress in spring barley grown along a European transect. Field Crops Research 291, 108768. DOI: 10.1016/j.fcr.2022.108768

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Guarin, J. R., Martre, P., Ewert, F., Webber, H., Dueri, S., Calderini, D., Reynolds, M., Molero, G., Miralles, D., Garcia, G., Slafer, G., Giunta, F., Noleto Luz Pequeno, D., Stella, T., Ahmed, M., Alderman, P.

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Rötter, R. P. and Köster, M. (2022). Klimawandel und Ernährungssicherheit: Inwieweit könnte eine angepasste Landwirtschaft in der Europäischen Union zur globalen Ernährungssicherheit beitragen? In: Ifo- Institut für Wirtschaftsforschung (Hrsg.), Ifo-Schnelldienst-Ifo-Institut für Wirtschaftsforschung. München. Jahrgang 75, 08.2022, S. 10-14. https://doi.org/10.5194/bg-2022-61

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B1 Non-refereed journal articles

B1-5
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B1-4
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B1-2
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B2-4
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B3-36

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B3-35

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B3-34

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B3-33

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B3-28

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B3-25

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Thorburn, P., Rosenzweig, C., Cammarano, D., Hatfield, J., Aggarwal, P., Angulo, C., Basso, B., Bertuzzi, P.,
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B3-24

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B3-23

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B3-22

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D) Publications intended for professional communities (a selection)

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D4 Textbook, professional manual or guide, dictionary

D4-2
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E) Research-related pulications directed to the general public (a selection)

E1 Popularised article

E1-3
Rötter, R. P., Köster, M. (2022). Klimawandel und Ernährungssicherheit: Inwieweit könnte eine angepasste Landwirtschaft in der Europäischen Union zur globalen Ernährungssicherheit beitragen?. *Ifo Schnelldienst*, 75(8), 10-13.

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E2 Popularised monograph

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F) Theses

F1 Doctoral dissertation (monograph)

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G) Other pieces of work (audiovisual material, ICT software -a selection)

G1 Audiovisual material

G1-1
Websites (and associated CD-ROMS)

- IRMLA project (EU-INCO) documentation website: or via www.splu.nl
- RMO Beijing (LNV-DLO-IC) documentation website: www.rmo-beijing.alterra.nl
- SUMAPOL 2005 website: www.sumapol2005.org (proceedings also available on CD-ROM)
- SysNet 99 Conference website: www.irri.sysnet99.org (proceedings also available on CD-ROM)
- SysNet (Systems Research Network documentation) website: www.irri.sysnet.org
- MODAGS (2012-1015) (Multi-level integrated modelling and analysis of agrifood systems) website: www.mtt.fi/modags

G2 ICT software

G2-1
CD-ROMS containing software (models, expert systems) developed

- WOFOST 7.1 crop growth simulation model; www.wofost.wur.nl (Alterra, 2002)
- SysNet Tools for interactive land use scenario analysis (IRRI and Wageningen UR,1999)
- SysNet MGLP user interface (IRRI and Wagenigen UR, 2001)*
- TechnoGIN3: Technical coefficient generator for Sout-east Asia (PPS and Alterra, 2004)**
- IRMLA tools for land use systems analysis (Wageningen UR, 2005)*** - Nordic AgriCLIM calculation of agro-climatic indicators for Finnish crops****

[* see, Laborte et al., 2001. SysNet Tools II; ** see, Ponsioen et al., 2006, Agricultural Systems 87, 80-100 (=A.34) and Ponsioen et al., 2004. QASA Report 26 *** see, www.irmla.alterra.nl **** outputs shown on www.mtt.fi/modags/]