Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-25 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

450	479	34	12
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

91.1% independent of 405 classified citing papers

Citation type	Count
Independent	369
Self-citation	17
Co-author	19
Same-institution	0

45 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher advanced sustainable agriculture by developing efficient biological alternatives to synthetic fertilizers, including novel encapsulation technologies for enhanced shelf life and controlled release.

The researcher established a foundational contribution to sustainable agriculture through the 2018 paper 'Biological alternates to synthetic fertilizers: efficiency and future scopes.' This core work appears to have initiated a focused line of inquiry into replacing synthetic inputs with biological solutions, setting the stage for subsequent technical developments in the field.

This line of work addresses the critical need for efficient, sustainable fertilizer alternatives. The progression from the 2018 conceptual framework to the 2020 study on phosphate-solubilizing bacteria in Punjab soils suggests an effort to identify and characterize specific microbial agents. The 2023 follow-up on rice bran-gum arabic encapsulation indicates a further evolution toward practical application, focusing on improving the shelf life and controlled release of these biofertilizers to enhance their agricultural utility.

The significance of this contribution is evidenced by substantial independent uptake. The core paper has accumulated 33 citations, while the follow-up studies have garnered 36 and 20 citations respectively. Notably, 91.1% of the scholar's total citations originate from independent researchers, indicating that this work has resonated widely beyond the researcher's immediate circle and has influenced the broader scientific community's approach to biological fertilizers.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 60 · **3 flagged influential by Semantic Scholar**

CORE PAPER

Biological alternates to synthetic fertilizers: efficiency and future scopes.

2018 · 33 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Plant growth promoting bacteria (PGPB)-induced plant adaptations to stresses: an updated review	Mizoram University	India	—
2	Root colonization dynamics of alginate encapsulated rhizobacteria: implications for Arabidopsis thaliana root growth and durum wheat performance	University Ferhat Abbas of Setif, University of Milan	Algeria, Italy	—
3	A Low-Cost NDIR-Based N2O Gas Detection Device for Agricultural Soils: Assembly, Calibration Model Validation, and Laboratory Testing	—	—	—
4	Effect of Plant Growth Promoting Bacillus spp. on Germination and Seedling Growth of Soybean.	Institute of Field and Vegetable Crops	Serbia	—
5	Soil Degradation vs Soil Retrogression: A Review.	Kerala Agricultural University	India	—
6	Techniques for improving microbial inoculants as a tool for sustainable development	—	—	—
7	Effects of Biopolymer Coating on Bacteria Inoculated Seed on Some Growth Parameters and Nodulation Values of Chickpea Plant	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
8	The effect of coating bacteria-inoculated seed with chitosan and sodium alginate biopolymers on some growth parameters of bean plant	—	—	—
9	Plant growth promoting rhizobacteria as biostimulants for plant and soil health: Current research and future challenges	—	—	—
10	Study the effect of different renewable carbon sources on the succinic acid biosynthesis by optimization culture composition using 4-liter scale bioreactor	University of Baghdad	Iraq	—
11	Growth with Some Biochemical Responses in Two Cultivars of Cicer arietinum L. to Fly Ash Amended Soil.	—	—	—
12	Insecticide resistance studies of Cypermenthrin 25EC and Chlorpyriphos 20EC against Spodoptera litura fabricius, 1775 (Lepidoptera: Noctuidae)	—	—	—
13	Effect of gel-biofertilizers and potassium on growth, yield and economics of aerobic rice	—	—	—
14	Present Scenario, Difficulties and Qualitative Development Policy Analysis of Urea Fertilizer Industrial Sector in Bangladesh: A Review.	—	—	—
15	A Gas Diffusion Analysis Method for Simulating Surface Nitrous Oxide Emissions in Soil Gas Concentrations Measurement	—	—	—
16	Elucidating the Molecular Mechanisms Influencing Anthracnose Disease Resistance and Biological Nitrogen Fixation to Enhance the Sustainability of …	Brazilian Agricultural Research Corporation	Brazil	—
17	Plant Growth Promoting Rhizobacteria as Biostimulant for Plant: Current Research and Future Challenges	—	—	—
18	Nutritional security, nitrogen economy and environmental benefits with pulses	Punjab Agricultural University	India	—
19	The Need to Develop a Cost-Effective Novel Biochemical Fertilizer to Control Leaching Problems for Sustainable Oil Palm Production: A Short Note on Special … (2024)	All Cosmos Bio-Tech Holding Corporation, Universiti Putra Malaysia	Malaysia	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Variation in the Phosphate Solubilizing Bacteria from Virgin and the Agricultural Soils of Punjab

2020 · 36 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Phosphate solubilizing microorganisms: A review	—	—	Influential
2	Increasing the bioavailability of phosphate by using microorganisms	University of Kelaniya, University of Peradeniya	Sri Lanka	Influential
3	Identification of the phosphorus-solubilizing bacteria strain JP233 and its effects on soil phosphorus leaching loss and crop growth	—	—	—
4	Phosphate-solubilizing bacteria isolated from phosphate solid sludge and their ability to solubilize three inorganic phosphate forms: Calcium, iron, and …	Université Moulay Ismail	Morocco	—
5	Multi-omics reveal the efficient phosphate-solubilizing mechanism of bacteria on rocky soil	—	—	Influential
6	Bioprotective mechanisms of Enterobacter sp. against arsenic, cadmium, and lead toxicity and its potential role in soil bioremediation	—	—	—
7	Unveiling the P-solubilizing potential of bacteria enriched from natural colonies of Red Sea Trichodesmium spp.	Ben-Gurion University of the Negev	Israel	—
8	Pseudomonas taetrolens ULE-PH5 and Pseudomonas sp. ULE-PH6 Isolated from the Hop Rhizosphere Increase Phosphate Assimilation by the Plant	Universidad de León	Spain	—
9	Beneficial effects of selected rhizospheric and endophytic bacteria, inoculated individually or in combination, on non-native host plant development	—	—	—
10	Boosting plant welfare and rhizospheric health through the application of phosphorus and potassium-solubilizing fungi from compost and vermicompost	University of Almería	Spain	—
11	Chlorpyrifos- and Carbofuran-Tolerant Phosphate-Solubilising Arthrobacter oxydans and Bacillus flexus Improved Growth and Phosphorus Content in Potato in …	—	—	—
12	Isolation of diverse phosphate-and zinc-solubilizing microorganisms from different environments	Colorado State University	United States	—
13	Phosphate-Solubilising Bacteria and the Phosphorus Crisis: Mechanisms, Applications, and Future Prospects	—	—	—
14	Biotechnological applications of phosphate solubilizing microorganisms: biological alternative to improve phosphorus availability	Université Moulay Ismail	Morocco	—
15	Characteristic microbiome and synergistic mechanism by engineering agent MAB-1	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
	to evaluate oil-contaminated soil biodegradation in different layer soil			
16	Phosphate Solubilizing Bacteria in Vermicompost Prepared from Spent Mushroom Substrate Using Esinia fetida	—	—	—
17	Pemanfaatan Serratia marcescens untuk meningkatkan ketersediaan fosfat dan produksi tanaman mentimun pada tanah alfisol	—	—	—
18	Improvement of inceptisol's biological properties under soil phosphorus manipulation by indigenous cellulolytic fungi-enriched organic fertilizers	—	—	—
19	Análisis y caracterización de poblaciones bacterianas solubilizadoras de P en un ensayo de larga duración con diferentes secuencias de cultivo	—	—	—
20	Unobserved variables and applications of stochastic processes in life sciences	Technische Universität München	Germany	—
21	Bacterial phosphorus turnover in agricultural soils and the effect of different fertilizer amendments	Technische Universität München	Germany	—
22	Comunidades bacterianas del intestino de escarabajos peloteros y del suelo en sucesión en la Reserva Tapichalaca	—	—	—
23	Análisis y caracterización de poblaciones bacterianas solubilizadoras de P en un ensayo de larga duración con diferentes secuencias de cultivo	National University of Comahue	Argentina	—
24	Macronutrients-availing microbiomes: biodiversity, mechanisms, and biotechnological applications for agricultural sustainability (2025)	Chandigarh University, Chitkara University, Dr. Khem Singh Gill Akal College of Agriculture, Eternal University	India	—

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FOLLOW-UP WORK

Development and characterization of Rice Bran-Gum Arabic Based Encapsulated Biofertilizer for Enhanced Shelf Life and Controlled Bacterial Release

2023 · 20 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Root colonization dynamics of alginate encapsulated rhizobacteria: implications for Arabidopsis thaliana root growth and durum wheat performance	University Ferhat Abbas of Setif, University of Milan	Algeria, Italy	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Enhanced efficiency fertilizers: Overview of production methods, materials used, nutrients release mechanisms, benefits and considerations	Ebonyi State University, Enugu State University of Science and Technology, Nnamdi Azikiwe University	Nigeria	—
3	Biofertilizers and Biological Control Agents Based on Microorganisms of the Rhizosphere	—	—	—
4	Биоудобрения и агенты биологического контроля на основе ризосферных микроорганизмов	—	—	—
5	Environmental Pollution and Management	Chinese Academy of Sciences, Shizuoka University	China, Japan	—
6	Advances and challenges in the production and use of native bacteria as plant probiotics in agronomic applications: A Mexican review	—	—	—
7	Solid inoculants: Bacterial immobilization routes on the degradation in the soil of alginate-starch-based biofertilizers	Austral University of Chile	Chile	—
8	Nano-Titanium-Chitosan Beads as a Biofungicidal Strategy against Anthracnose Stalk Rot in Maize	—	—	—
9	Considerations for microbial inoculation under dryland stress conditions	—	—	—
10	Potential carriers for biofertilizers: microstructural and entrapment properties	National Research and Innovation Agency	Indonesia	—
11	Development of bacterial bioformulations using response surface methodology	Indian Institute of Technology Delhi	India	—
12	Novel cyanobacteria-based seed coatings for enhancing germination, seedling vigour and iron nutrition in direct-seeded rice	—	—	—
13	Acacia Gums (AGs): Characterization and Applications	Qassim University	Saudi Arabia	—
14	Development of stimuli-responsive carriers for encapsulation of bioactives using sustainable eco-friendly polymers	Loughborough University	United Kingdom	—
15	Growth Rate and Chlorophyll Content of Liberica Coffee Leaves (Coffea liberica L.) with Addition Rhizosphere Bacterial Microcapsules from Eruption Soil of Mount ...	Universitas Pembangunan Panca Budi	Indonesia	—
16	CHARACTERIZATION OF NATIVE MULTIPHASIC RHIZOBACTERIAL COMMUNITIES ASSOCIATED WITH MANGO (Mangifera indica L.) IN HIMACHAL ...	Dr. Yashwant Singh Parmar University of Horticulture and Forestry	India	—
17	Ảnh hưởng của chất mang và tỷ lệ chủng đến khả năng sống và hoạt tính protease của Bacillus spp. trong chế phẩm vi sinh	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher advanced sustainable agriculture by establishing a foundational framework for microbial endophyte applications, subsequently expanding this scope through structural characterization and comprehensive methodological reviews.

The researcher's contribution centers on the application of microbial endophytes for sustainable agriculture and food security, anchored by a 2022 core paper. This work serves as the foundation for a broader research line that integrates practical agricultural goals with detailed biological and methodological investigations.

This line of work appears to address the need for both applied solutions and rigorous analytical tools in endophyte research. Following the initial framework, the researcher published a 2024 review on omics and microscopy techniques for studying endophytic adaptation, suggesting a push toward comprehensive methodological standards. Additionally, a 2025 study on the antifungal activity of compounds from endophytic Alternaria burnsii indicates a deepening focus on specific structural and functional characterizations.

The significance of this work is evidenced by substantial independent uptake. The core paper has accumulated 63 citations, while the methodological review has garnered 15 citations. Notably, 91.1% of the scholar's total citing papers originate from independent researchers, indicating that this line of work has resonated widely beyond the researcher's immediate institutional circle and is being utilized by the broader scientific community.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 73

CORE PAPER

Microbial endophytes: application towards sustainable agriculture and food security

2022 · 63 citations (GS)

Field-normalised: 42 Semantic Scholar citations place it in the top 10% of Agricultural and Food Sciences papers from 2022 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Current scenario and future prospects of endophytic microbes: promising candidates for abiotic and biotic stress management for agricultural and environmental …	—	—	—
2	Secondary metabolites produced by plant growth-promoting bacterial endophytes	University of Washington Bothell, University of Waterloo	Canada, United States	—
3	Plants and endophytes interaction: A "secret wedlock" for sustainable biosynthesis of pharmaceutically important secondary metabolites	—	—	—
4	Harnessing bacterial endophytes for environmental resilience and agricultural sustainability	Ain Shams University, King Saud bin Abdulaziz University for Health Sciences	Egypt, Saudi Arabia	—
5	Endophytic fungi as regulators of phytohormones production: Cytomolecular effects on plant growth, stress protection and importance in sustainable …	Ferdowsi University of Mashhad	Iran	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Modulating the plant microbiome: effects of seed inoculation with endophytic bacteria on microbial diversity and growth enhancement in pea plants	Lithuanian Research Centre for Agriculture and Forestry, McGill University	Canada, Lithuania	—
7	Actinomycetes are a natural resource for sustainable pest control and safeguarding agriculture	—	—	—
8	Frankia-actinorhizal symbiosis: a non-chemical biological assemblage for enhanced plant growth, nodulation and reclamation of degraded soils	—	—	—
9	Microbial inheritance through seed: a clouded area needs to be enlightened	—	—	—
10	Cultivable endophyte resources in medicinal plants and effects on hosts	Jiangsu Normal University	China	—
11	Changes in physicochemical properties and microbial community succession during leaf stacking fermentation	—	—	—
12	Genome-Driven Functional Validation of Bacillus amyloliquefaciens Strain MEPW12: A Multifunctional Endophyte for Sustainable Sweet Potato Cultivation	Jiangsu Normal University	China	—
13	Antifeedant, antifungal and nematicidal compounds from the endophyte Stemphylium solani isolated from wormwood	—	—	—
14	Co-Inoculation of Trichoderma harzianum and Bradyrhizobium Species Augment the Growth of Schizolobium parahyba var. parahyba (Vell.) Blake …	Universidade de Brasília	Brazil	—
15	Enhanced legume growth and adaptation to degraded estuarine soils using Pseudomonas sp. nodule endophytes	—	—	—
16	Chemical Signaling and Metabolomic Crosstalk in Endophytic Fungi–Medicinal Plant Symbioses for Natural Product Discovery and Sustainable …	—	—	—
17	Dynamic changes of endophytic bacteria in the bark and leaves of medicinal plant Eucommia ulmoides in different seasons	—	—	—
18	Unlocking the secrets of rhizosphere microbes: a new dimension for agriculture	Banaras Hindu University, Central University of Haryana, Chandigarh University	India	—
19	Simulated global warming affects endophytic bacterial and fungal communities of Antarctic pearlwort leaves and some bacterial isolates support plant growth at low …	—	—	—
20	Enhanced removal of heavy metals by wetland plant-microbiome symbiont: Prospect of poten-	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
	tial strategies and mechanisms for environmental heavy metal regulation			
21	The role of microbial seed endophytes in agriculture: mechanisms and applications	—	—	—
22	Effects of treating wheat (Triticum aestivum) seedling roots with Azospirillum lectins to improve abiotic stress tolerance	—	—	—
23	Bioprospecting of endophytic fungi from semi-desert candelilla (Euphorbia antisyphilitica Zucc): Potential for extracellular enzyme production	—	—	—
24	Screening of biocontrol agents against lily bulb rot caused by F. oxysporum and research on their fermentation process	Lanzhou University of Technology	China	—
25	Brevibacillus DesertYSK and Rhizobium MAP7 stimulate the growth and pigmentation of Lactuca sativa L.	Mansoura University	Egypt	—
26	Combination of atmospheric and room temperature plasma and ribosome engineering techniques to enhance the antifungal activity of Bacillus megaterium L2 against …	—	—	—
27	The functional identification and evaluation of endophytic bacteria sourced from the roots of tolerant Achyranthes bidentata to overcome monoculture problems of …	—	—	—
28	The role of endophytes in plant heavy metal accumulation: The detailed insights towards phytoremediation enhancement	Chengdu University of Technology, Chinese Academy of Sciences, Guizhou University	China, PR China	—
29	Trichoderma bio-organic fertilizer modulates the rhizosphere microbiome and Bacillus-assisted plant hormone regulation to promote pear rootstock growth	Jiangsu Academy of Agricultural Sciences, Nanjing Agricultural University	China	—
30	Enriching the endophytic bacterial microbiota of Ginkgo roots	—	—	—

Showing the 30 most-cited of 58 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Structural characterization, in-silico studies, and antifungal activity of 5-methylmellein isolated from endophytic Alternaria burnsii

2025 · 2 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Research progress of endophytes and their secondary metabolites in Morus plants	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Microbiomes of forage cacti Opuntia and Nopalea: comparative advances and potential for bioinoculants in semi-arid systems	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

From Microscopy to Omics: A Comprehensive Review of Tools and Techniques in Studying Endophytic Adaptation Under Abiotic and Biotic Stress

2024 · 15 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Endophytic fungal diversity and its interaction mechanism with medicinal plants	—	—	—
2	Leveraging endophytic fungi for enhancing plant resilience to abiotic stresses	—	—	—
3	Recent advances and developments in bacterial endophyte identification and application: A 20-Year landscape review	University of South Africa	South Africa	—
4	Endophytic Bacteria with Potential Antimicrobial Activity Isolated from Theobroma cacao in Brazilian Amazon	Universidade Federal de São Carlos, Universidade Federal do Pará	Brasil, Brazil	—
5	Latest progress (2020–2024) in bacterial endophyte research with special reference to plant disease management: achievements and challenges	—	—	—
6	Integrating allostasis and emerging technologies to study complex diseases	—	—	—
7	Unraveling the roles of plant specialized metabolites: in planta Development, defence regulators and crosstalk between the signaling pathways	—	—	—
8	Detection and Quantification of Successful Inoculation and Colonisation of Epichloë festucae in Lolium perenne Using ddPCR	—	—	—
9	Endophytic microbial advancement through NGS technology: Unlocking the power of the genome	—	—	—
10	Unveiling Hidden Endophytes by Optimising Identification of Endophytic Bacterial Communities from Wild Grassland Plant Roots	University College Dublin	Ireland	—
11	Recent Advances and Developments in Bacterial Endophytes Identification and Application: A 20-Year Landscape	University of South Africa	South Africa	—
12	From cryptic gene clusters to bioactive metabolites: the role of AI in advancing fungal endophytes research	London Metropolitan University, Sikkim University, University of Ulster	India, United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
13	Potencial de Beauveria spp. como agente de control biológico de insectos asociados a cultivos agrícolas	Universidad Técnica Estatal de Quevedo	Ecuador	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher established a foundational framework for zinc-solubilizing bacteria in soil fertility, subsequently expanding this work to address biofertilizer formulation technologies and carrier molecules.

CLAIM: The researcher's contribution centers on a 2020 comprehensive review of zinc-solubilizing bacteria for soil fertility, which serves as the core foundation for subsequent investigations into plant growth-promoting microbes and biofertilizer development technologies.

ORIGINALITY: This line of work appears to address the gap between theoretical microbial mechanisms and practical agricultural application. By progressing from a broad review of zinc solubilization to specific analyses of carrier molecules and formulation technologies in 2021, the researcher demonstrates a systematic effort to translate microbial potential into viable biofertilizer products.

SIGNIFICANCE: The core review has garnered 75 citations, indicating substantial engagement with the scientific community. Notably, 91.1% of the scholar's total classified citations originate from independent researchers, suggesting that this foundational work has been widely adopted and built upon by the broader field rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 59

CORE PAPER

Zinc solubilizing bacteria to augment Soil Fertility - A Comprehensive Review

2020 · 75 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Overview of biofertilizers in crop production and stress management for sustainable agriculture	—	—	—
2	A comprehensive overview of eco-friendly bio-fertilizers extracted from living organisms	—	—	—
3	Enhancing soil health and crop productivity: the role of zinc-solubilizing bacteria in sustainable agriculture	—	—	—
4	A comprehensive overview of nanotechnology in sustainable agriculture	Birla Institute of Technology, University of Petroleum and Energy Studies	India	—
5	Interaction of zinc mineral nutrition and plant growth-promoting bacteria in tropical agricultural systems: A review	Universidade Estadual Paulista	Brazil	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Synergizing biotechnology and natural farming: pioneering agricultural sustainability through innovative interventions	—	—	—
7	Soybean-nodulating rhizobia: ecology, characterization, diversity, and growth promoting functions	—	—	—
8	The importance of microorganisms for sustainable agriculture—A review	Nicolaus Copernicus University	Poland	—
9	An exopolysaccharide-producing novel Agrobacteriumpusense strain JAS1 isolated from snake plant enhances plant growth and soil water retention	King Saud University, Sant Longowal Institute of Engineering and Technology	India, Saudi Arabia	—
10	Maize zinc uptake is influenced by arbuscular mycorrhizal symbiosis under various soil phosphorus availabilities	—	—	—
11	Biogenic synthesis of zinc nanoparticles, their applications, and toxicity prospects	—	—	—
12	Harnessing the power of zinc-solubilizing bacteria: a catalyst for a sustainable agrosystem	DAV University	India	—
13	Unraveling the potential of microbial diversity in pesticide remediation: An eco-friendly approach for environmental sustainability	—	—	—
14	Isolation, characterization, and identification of zinc-solubilizing bacteria (ZSB) from wetland rice fields in Peninsular Malaysia	Universiti Putra Malaysia, Universiti Teknologi MARA	Malaysia	—
15	Application of a novel nanocomposite containing micro-nutrient solubilizing bacterial strains and CeO2 nanocomposite as bio-fertilizer	Gachon University, King Saud University, Sacred Heart College (Autonomous)	India, Saudi Arabia, South Korea	—
16	Zinc-solubilizing bacteria: an option to increase zinc uptake by plants	Kingston and St George's University, Sheffield Emergency Care Forum, University of Bath	United Kingdom	—
17	Comparative effects of dietary zinc nanoparticle and conventional zinc supplementation on broiler chickens: A meta-analysis	Andalas University, IPB University, University of Brawijaya	Indonesia	—
18	Enhancing wheat yield and zinc biofortification through synergistic action of potent zinc-solubilizing bacteria and zinc sulfate in calcareous soil	—	—	—
19	Rhizobacteria improve rice zinc nutrition in deficient soils	—	—	—
20	Role of soil rhizobacteria in utilization of an indispensable micronutrient zinc for plant growth promotion	—	—	—
21	Extremophilic bacteria as biofertilizer for agricultural wheat	Chandigarh University, Kemerovo State University	India, Russia	—
22	Organic Fertilizers: Types and Benefits of Organic Fertilizers	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
23	Diversity and functional assessment of indigenous culturable bacteria inhabiting fine-flavor cacao rhizosphere: Uncovering antagonistic potential against …	National University Toribio Rodríguez de Mendoza	Peru	—
24	Analyzes regarding the cytotoxicity of ZnSO 4 excess on cell division	University of Oradea	Romania	—
25	Endosaccharibacter trunci gen. nov., sp. nov. and Rhizosaccharibacter radicis gen. nov., sp. nov., two novel bacteria of the family Acetobacteraceae isolated …	Chulalongkorn University	Thailand	—
26	Development of microbes-based biofertilizer for zinc dissolution in soil	—	—	—
27	Pseudomonadota: Biodiversity, functional annotation for plant growth and biotechnological applications for agro-environmental sustainability	Chitkara University, Eternal University, Graphic Era University	India	—
28	Role of Zinc-solubilizing bacteria as biostimulants for plant growth promotion and sustainable agriculture	Central University of Kerala, Chhatrapati Shahu Ji Maharaj University	India	—
29	Influence of farmyard manure application on potential zinc solubilizing microbial species abundance in a ferralsol of Western Kenya	Kenyatta University, University of Embu	Kenya	—
30	Biofertilizers: A Sustainable Solution for Enhanced Crop Yield and Soil Health in Modern Agriculture	Lovely Professional University	India	—

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FOLLOW-UP WORK

Present scenario of plant growth promoting microbes and technologies used for biofertilizer development

2021 · 5 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Advances and challenges in the production and use of native bacteria as plant probiotics in agronomic applications: A Mexican review	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Microorganisms and carrier molecules used in biofertilizer formulations

2021 · Journal of Pharmaceutical Research International 33 (60B), 3952-3959, 2021 · 1 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A comprehensive overview of eco-friendly bio-fertilizers extracted from living organisms	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Chandigarh University	India	SCImago #4000 · QS =575	19
King Saud University	Saudi Arabia	SCImago #264 · THE 251–300 · QS 143	9
University of Waterloo	Canada	SCImago #491 · THE =162 · QS =119	4
GLA University	India	SCImago #6715 · THE 1001–1200	4
University of Córdoba	Spain	THE 801–1000	3
North-West University	South Africa	SCImago #2670 · THE 801–1000 · QS 951-1000	3
Universiti Putra Malaysia	Malaysia	THE 501–600 · QS =134	3
Manipal University Jaipur	India	THE 1201–1500	3
Texas A&M University	United States	THE =151 · QS 144	3
Universidad Nacional de Córdoba	Argentina	SCImago #3562	3
University Ferhat Abbas of Setif	Algeria	SCImago #7931	3
Lovely Professional University	India	SCImago #2684 · THE 501–600 · QS 901-950	3
University of Guelph	Canada	SCImago #1566 · THE 401–500 · QS =504	3
National Research Centre	Egypt	SCImago #2730	3
Saveetha University	India	SCImago #2745 · THE 351–400 · QS 901-950	3

Geographic distribution of citing authors

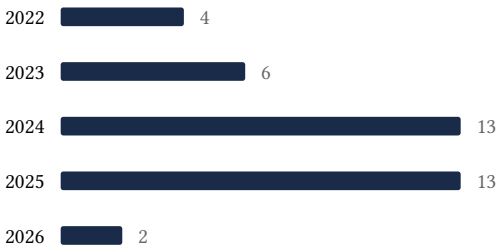
Country	Citing papers
India	65
China	19
United States	13
Saudi Arabia	13
Pakistan	11
Spain	10
Canada	9

Country	Citing papers
Brazil	9
Egypt	9
Indonesia	8
Malaysia	8
Iran	7

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Biological alternates to synthetic fertilizers: efficiency and future scopes.	60	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Microbial endophytes: application towards sustainable agriculture and food security	73	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Zinc solubilizing bacteria to augment Soil Fertility - A Comprehensive Review	59	Dhanasar — Prong 2 (well-positioned)