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Egyptian Cotton and Sustainable Fibre Production: A Critical Assessment of Fibre Sustainability Methodologies and the Expansion of Cotton Cultivation into Desert and Newly Reclaimed Lands

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Abstract

The sustainability of textile fibres is increasingly evaluated through life-cycle assessment (LCA), material-impact indices and policy-oriented environmental studies. This paper combines a critical assessment of selected United Nations publications on textile and apparel fibres with a case study of Egyptian cotton cultivation in desert and newly reclaimed lands. The first component draws on the 2026 report by Veronica Bates Kassatly and Terry Townsend, which questions the comparability and methodological robustness of some fibre assessments and highlights issues concerning the treatment of synthetic fibres, natural fibres, socio-economic dimensions and the use of the Higg Materials Sustainability Index (MSI). The second component examines field research conducted by the Cotton Research Institute on Egyptian cotton under challenging conditions, including salinity, high temperatures, limited water availability and desert soils. Evidence from East Qantara, Port Said, El-Dabaa, South Sinai, East Oweinat, Siwa, the Bahariya Oasis and Upper Egypt indicates that several Egyptian cotton varieties and genetic materials have demonstrated promising adaptation under sprinkler, centre-pivot and drip irrigation systems. The paper does not conclude that cotton is inherently more sustainable than synthetic fibres. Instead, it argues that meaningful fibre comparison requires transparent, comparable and sufficiently comprehensive methodologies that account for environmental, agricultural, technological, economic and social dimensions across the relevant life cycle. The Egyptian case provides a useful example of how genetic improvement, irrigation technology and mechanisation can alter the production context of a natural fibre and should therefore be considered in future sustainability assessments.

Keywords: Egyptian cotton; sustainable fibres; life-cycle assessment; synthetic fibres; polyester; Higg MSI; desert agriculture; reclaimed lands; irrigation; mechanisation; fibre sustainability.

1. Introduction:

The environmental sustainability of textile fibres has become an increasingly important subject for governments, international organisations, brands, manufacturers and agricultural producers. Comparative assessments frequently rely on Life Cycle Assessment (LCA) and material-impact databases to quantify selected environmental indicators. Such approaches can provide valuable information, but their conclusions depend on system boundaries, functional units, allocation procedures, temporal scope, inventory data and other methodological choices.

The report by Bates Kassatly and Townsend examined four recent publications associated with UNEP, UNFCCC and UNCCD and argued that some of the underlying fibre comparisons contain inconsistencies or methodological limitations. The authors specifically questioned the treatment of synthetic fibres and the representation of natural fibres, and highlighted the use of Higg MSI in apparel-related assessments. The report itself states that it is a factual analysis of information and alleged misuse of information and that it does not offer recommendations.

A separate body of evidence from Egypt provides a useful practical

dimension to this debate. Research by the Cotton Research Institute has evaluated Egyptian cotton in newly reclaimed and desert areas, including environments characterised by salinity, high temperatures and water constraints. These trials provide an opportunity to consider how agricultural innovation, genetic improvement, irrigation technology and mechanisation can influence the sustainability profile of a natural fibre.

The purpose of this paper is therefore not to establish a universal ranking between cotton and synthetic fibres. Rather, it is to examine whether fibre sustainability assessments are sufficiently comprehensive to capture the different environmental, agricultural, economic and social characteristics of alternative fibre systems.

2. Methodological Considerations in Fibre Sustainability Assessment

LCA was originally developed principally for assessing industrial production systems and has subsequently been applied to agricultural commodities and other biological systems. The source report argues that natural production systems involve complex physical processes and broader boundaries, making results particularly sensitive to methodological assumptions. It further notes that studies cited in UN fashion-

related publications may produce materially different estimates and assign different shares of impact to stages of the apparel supply chain.

This observation does not mean that LCA is unsuitable for agricultural fibres. Rather, it demonstrates the importance of methodological transparency and comparability. Two assessments cannot necessarily be compared directly if they use different functional units, system boundaries, datasets, allocation rules or temporal assumptions.

Another important distinction is between environmental indicators and sustainability as a broader concept. A fibre assessment focused primarily on selected greenhouse-gas, water or land indicators may not fully capture employment, farmer livelihoods, rural development, biodiversity, resource security, pollution pathways or end-of-life impacts. The source report specifically criticises the absence of a socio-economic variable in the Higg MSI and argues that natural fibres can have an important economic role in developing and least-developed countries.

Accordingly, a scientifically useful fibre comparison should distinguish between what a particular metric measures and what it does not measure. A lower score for one environmental indicator

should not automatically be interpreted as a complete sustainability judgment.

3. The Treatment of Synthetic and Natural Fibres

The Bates Kassatly–Townsend report raises concerns about the representation of plastic fibres in selected UN publications. In particular, it argues that the environmental impacts associated with plastics production and plastic pollution may not be fully represented in some of the assessments examined, while certain impacts associated with farmed natural fibres may receive greater attention.

The report also discusses the role of Higg MSI as a source used in apparel-related assessments. Its criticism focuses on the age, representativeness and comparability of some underlying data and on the potential consequences of relying heavily on a single material-impact framework. These are methodological questions that merit examination independently of any broader conclusion about the intentions of the organisations involved.

At the same time, the existence of methodological limitations in one assessment does not by itself establish that polyester or another synthetic fibre has a greater overall environmental impact than cotton in every application. Fibre

performance depends on the specific product, use phase, manufacturing route, energy mix, recycling pathway and other assumptions. A balanced analysis should therefore avoid replacing one oversimplification with another.

The more defensible conclusion is that environmental comparisons should be transparent about their boundaries and should consider the full range of relevant impacts. For synthetic fibres, this may include fossil-resource dependence, polymer production, emissions, microfiber release, waste and end-of-life pathways. For natural fibres, it may include cultivation inputs, irrigation, soil, fertilisation, land use, biodiversity and processing.

4. Egyptian Cotton as a Case Study in Agricultural Innovation

The Egyptian cotton case illustrates why agricultural production should be assessed as a dynamic technological system rather than as a fixed production model. The Cotton Research Institute has conducted extensive trials to determine the feasibility of cultivating Egyptian cotton in newly reclaimed and desert lands. One objective is to increase the cultivated cotton area while taking advantage of large, consolidated fields that can support integrated mechanised operations from land preparation through harvesting.

In East Qantara, Ismailia and Sinai, cultivation expanded over more than ten years from approximately 4 hectares to 500 hectares. Super Giza 94 has been cultivated there and has produced a very good average yield, with further expansion reported.

In Port Said, cotton was introduced into newly reclaimed areas irrigated with blended and treated water. Despite relatively high salinity, the trials reported good fibre quality and high average yields, and the cultivated area subsequently exceeded 2,000 hectares.

In El-Dabaa, Super Giza 86 was evaluated under centre-pivot sprinkler irrigation and achieved an average yield of approximately 900 kg per hectare.

During the 2025 season, cotton was cultivated for the first time in the Tor Desert in South Sinai. Super Giza 94, Super Giza 86 and Super Giza 97, together with three promising hybrids, were evaluated under drip irrigation. The first-season results were reported as very good in terms of yield and fibre characteristics, with further expansion planned to obtain additional evidence.

In East Oweinat, Giza 95 and Giza 98 were evaluated under centre-pivot sprinkler irrigation. An average yield of approximately 800 kg per hectare was

reported, with satisfactory crop performance despite high temperatures and dust storms. A fully mechanised production programme was also implemented, extending from crop management through mechanical harvesting.

Additional trials are being conducted in Siwa and the Bahariya Oasis, where water scarcity is an important constraint. The objective is to identify cotton genetic materials capable of maintaining satisfactory productivity under these conditions. Similar work has been conducted for more than six years at the Marashda Research Station in Qena Governorate, where several genetic materials have shown promising performance under desert conditions and sprinkler or drip irrigation.

5. What the Egyptian Case Adds to the Fibre Sustainability Debate

The Egyptian experience does not demonstrate that cotton is universally more sustainable than synthetic fibres. It does, however, demonstrate that the environmental profile of cotton is not static. Cultivation practices can change through genetic improvement, irrigation technology, land development, mechanisation and improved agronomic management.

This is important when interpreting fibre LCAs. If an assessment relies on historical agricultural datasets, it may not accurately represent production systems that are undergoing technological change. Conversely, claims of improved sustainability should also be supported by measured field data rather than assumptions.

The Egyptian trials provide several dimensions that could be incorporated into future assessments: productivity per hectare; irrigation technology and water source; tolerance to salinity; performance under high-temperature conditions; mechanisation; genetic adaptation; and the potential socio-economic value of expanding productive agriculture into newly reclaimed areas.

The evidence also suggests that the relationship between cotton and land should be considered carefully. The cultivation of cotton in newly reclaimed areas is materially different from simply increasing pressure on long-established agricultural land. A robust assessment should therefore identify the origin and characteristics of the land, the water source, the infrastructure required, the opportunity cost of land and water, and the actual environmental outcomes.

Similarly, mechanisation may change labour requirements, productivity and

production costs. These changes can have both environmental and socio-economic implications and therefore should be assessed rather than assumed to be either positive or negative.

6. Toward a More Comprehensive Fibre Sustainability Framework

The combined evidence supports a broader framework for evaluating textile fibres. Such a framework should retain the quantitative discipline of LCA while recognising that sustainability encompasses multiple dimensions.

Environmental dimensions

greenhouse-gas emissions; water consumption and water source; soil impacts; biodiversity; chemical inputs; microplastic pollution; fossil-resource consumption; waste and end-of-life impacts.

Agricultural dimensions

yield per hectare; land characteristics; irrigation efficiency; salinity tolerance; climate adaptation; genetic improvement; mechanisation; and input efficiency.

Economic and social dimensions

farmer livelihoods; employment; rural development; value creation; supply-chain resilience; market access; and the distribution of benefits and costs.

Scientific and methodological dimensions

transparent system boundaries; consistent functional units; representative and current datasets; independent review; uncertainty analysis; and clear separation between measured evidence and interpretation.

7. Discussion

A central lesson from the two source documents is that sustainability claims require methodological discipline. The critique of selected UN publications highlights the consequences of combining studies with different methodologies or relying heavily on a material-impact index without clearly communicating its boundaries. The Egyptian case study, meanwhile, demonstrates that agricultural systems evolve and that current field performance can differ substantially from assumptions based on older production systems.

The appropriate response is not to reject LCA or international sustainability assessments, but to strengthen them. Comparative studies should disclose the datasets and assumptions used, test sensitivity to methodological choices, and avoid presenting a single indicator as a complete representation of sustainability.

The same principle should apply to cotton. The documented success of

Egyptian cotton trials in desert and reclaimed areas is encouraging, but additional multi-year measurements are needed before broad conclusions can be drawn about environmental performance. Future research should quantify water productivity, energy use, fertiliser and crop-protection inputs, soil effects, greenhouse-gas emissions and economic outcomes alongside yield and fibre quality.

This approach would also improve the quality of international policy discussions. Rather than framing natural and synthetic fibres as inherently sustainable or unsustainable categories, policy should encourage evidence-based comparisons of specific production and product systems.

8. Conclusions

The sustainability debate surrounding textile fibres would benefit from a more comprehensive and methodologically transparent approach. The critical report by Bates Kassatly and Townsend identifies important questions concerning the comparability of fibre-impact studies, the use of Higg MSI in selected UN-related assessments, and the representation of synthetic and natural fibres. These observations should be treated as methodological questions requiring careful verification rather than as proof of institutional intent.

The Egyptian cotton case provides complementary empirical evidence. Cotton Research Institute trials have demonstrated promising cultivation of Egyptian cotton in a range of desert and newly reclaimed environments, including areas with salinity, high temperatures and water constraints. Several varieties have shown satisfactory or very good performance under sprinkler, centre-pivot and drip irrigation, while mechanised production and harvesting have also been demonstrated.

Taken together, these findings support a central principle: textile-fibre sustainability should not be reduced to a single score or a single environmental dimension. A scientifically robust assessment should consider the full relevant life cycle and integrate environmental, agricultural, technological, economic and social evidence.

Egyptian cotton's expansion into newly reclaimed and desert lands offers a valuable case study for this broader approach. Continued field research, transparent measurement and independent scientific assessment can help determine the environmental and socio-economic implications of these production systems and contribute evidence to the international discussion on sustainable textile fibres.

9. Recommendations for Further Research

- Develop multi-year life-cycle inventories for Egyptian cotton cultivated under conventional and desert/reclaimed-land systems.
- Measure water productivity and distinguish between irrigation-water sources and qualities.
- Quantify energy use, fertiliser inputs, crop-protection inputs, soil impacts and greenhouse-gas emissions under the different irrigation and mechanisation systems.
- Evaluate the environmental implications of genetic improvement and the adoption of varieties adapted to saline, hot and water-limited environments.
- Assess the socio-economic contribution of cotton cultivation in newly reclaimed areas, including employment, farmer income and regional value creation.
- Ensure that fibre comparisons use consistent functional units, system

boundaries and current, representative datasets.

- Complement environmental LCA with transparent reporting of biodiversity, microplastic, resource-security and socio-economic considerations where relevant.
- Subject major comparative fibre claims to independent scientific review and clearly distinguish measured evidence from interpretation or policy recommendation.

References and Source Basis

Bates Kassatly, V., & Townsend, T. (2026). UN Agencies and Their Treatment of Plastic Fibres. Report commissioned by the international cotton industry and published by the Bremen Cotton Exchange. The report states that its findings and conclusions are those of the authors and do not necessarily reflect the views of the funder or Bremen Cotton Exchange.

Cotton Research Institute. Cultivation of Egyptian Cotton in Desert and Newly Reclaimed Lands.

Cotton pests: towards a comprehensive approach to implementing strategies and methods for the agroecological management of their populations

Les insectes du cotonnier: pour une approche globale dans la mise au point et le développement de stratégies et de moyens de gestion agroécologique de leurs populations

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Published in French in early 2025 by Quae, the book by Pierre J. Silvie and Bernard Papierok, * *Les arthropodes du cotonnier. Diversité et modalités de gestion des ravageurs* [Arthropods of the Cotton Plant: Diversity and Pest Management Approaches] *, aims to provide an informative and critical overview of the insects and mites that attack the cotton plant, their natural regulation, and the strategies and methods available to control them.

Compared with previously published works on the subject, this new contribution is based on observations and experimental investigations carried out by the authors in African and South American countries, and therefore in a variety of contexts. Thanks to this original approach, the book addresses, in a practical way, the reality on the ground: those of family farms (smallholders) in sub-Saharan African countries and Paraguay, and that of agribusiness as observed in Brazil.

The focus on natural enemies – whether predators, parasitoids or pathogens – is another of the book's strengths. The pages devoted to them feature a wealth of color illustrations. More widely speaking, nearly a hundred photographs illustrate the various aspects covered in the book, further highlighting its originality given that the vast majority of them were taken by the first

author during his numerous stays in tropical countries.

Publié en français début 2025 par les éditions Quae, l'ouvrage de Pierre J. Silvie et Bernard Papierok, *Les arthropodes du cotonnier. Diversité et modalités de gestion des ravageurs*, propose un état des lieux à la fois informatif et critique des insectes et des acariens s'attaquant au cotonnier, de leur régulation naturelle ainsi que des stratégies et des moyens disponibles pour les contrôler.

Comparativement aux ouvrages publiés antérieurement sur le sujet, cette nouvelle contribution repose sur des observations et sur des investigations expérimentales conduites par les auteurs dans des pays africains et sud-américains, et donc dans des contextes différents. Grâce à cette approche originale, l'ouvrage aborde, d'une manière concrète, la réalité du terrain, celle des exploitations agricoles familiales (petits producteurs) des pays d'Afrique subsaharienne ou du Paraguay, et celle de l'agro-business observé au Brésil.

L'accent mis sur les ennemis naturels, qu'ils soient prédateurs, parasitoïdes ou agents de maladie, représente un autre point fort de l'ouvrage. Les pages qui leur sont consacrées bénéficient d'une importante iconographie en couleur. Plus largement, près d'une centaine de photographies illustrent les différents aspects traités dans l'ouvrage, soulignant d'autant plus son

riginalité qu'il s'agit, majoritairement, de photographies prises par le premier auteur au cours de ses nombreux séjours sur le terrain.

Finally, drawing on a wide-ranging review of the extensive literature on the subject, the authors sought to trace the evolution of strategies for controlling populations of plant-feeding arthropods, starting from the awareness of the problems posed by chemical insecticides (risks to human health, the development of resistance in target arthropods, environmental pollution, etc.).

The book comprises 189 pages. Its ten chapters are divided into two parts of roughly equal length.

The first part begins with an overview of cotton cultivation and the variety of production methods used worldwide. It then examines the diversity of arthropods found on cotton plants and their natural enemies, as well as the range of quantitative and qualitative losses caused by pests.

Entomopathogenic fungi receive particular attention (Figure 1). In particular, the book reports previously unrecorded observations of several species, mainly from the order Entomophthorales (Zygomycetes), some of which have been found to cause epizootics in populations of Homoptera in sub-Saharan Africa.

A table provides a useful comparison of the diversity of pest species that attack the various parts of the cotton plant in Latin America and sub-Saharan Africa.

The second part deals with methods for managing arthropod populations on cotton plants. It begins with a general chapter devoted to the evolution of theoretical and practical approaches in this field. The text provides a clear and accessible overview of the path that led from biological control to integrated pest

management in its various forms, and then on to agroecological crop protection and plant health.

Enfin, veillant à s'appuyer sur une analyse aussi large que possible de l'importante bibliographie sur le sujet, les auteurs ont tenu à retracer l'évolution des stratégies de contrôle des populations d'arthropodes phytophages à partir de la prise de conscience des problèmes soulevés par les insecticides chimiques (risque pour la santé humaine, phénomènes de résistance des arthropodes cibles, pollution de arthropodes l'environnement, etc.).

L'ouvrage comporte 189 pages. Ses dix chapitres sont distribués dans deux parties d'importance sensiblement égale.

La première partie débute par un aperçu sur la culture du cotonnier et sur la variété de ses modalités de production au niveau mondial. Elle traite ensuite de la diversité respective des arthropodes rencontrés sur le cotonnier et de leurs ennemis naturels, ainsi que de l'étendue des pertes quantitatives et qualitatives occasionnées.

Les champignons entomopathogènes font l'objet d'une attention particulière (Figure 1). Mention est faite, notamment, d'observations inédites de plusieurs espèces, essentiellement des Entomophthorales (Zygomycètes), certaines se révélant responsables d'épizooties dans des populations d'Homoptères en Afrique sub-saharienne. Un tableau permet de comparer, d'une manière utile, la diversité des espèces s'attaquant aux différents organes du cotonnier en Amérique latine et en Afrique sub-saharienne.

La seconde partie traite des moyens de gestion et de contrôle des populations d'arthropodes du cotonnier. Elle débute par un chapitre de caractère général, consacré à l'évolution des approches théoriques et pratiques en la matière. Le texte parcourt d'une manière didactique le chemin qui a conduit de la lutte biologique à la protection

intégrée sous ses différentes composantes, puis à la protection agroécologique des cultures et à la santé des plantes.

The following chapter outlines the range of cotton protection practices used in natural, certified organic farming and conventional farming, covering, on the one hand, the use of resistant varieties – including genetically modified varieties – and, on the other, chemical control. With regard to the latter, spraying equipment – ranging from simple backpack sprayers to crop-spraying aircraft – is illustrated. Several tables present examples of application programmes for commercial insecticide formulations that have been implemented on large-scale farms in Brazil.

The next chapter focuses on research carried out in sub-Saharan Africa with the aim of reducing the use of synthetic insecticides. Conducted by the first author and his colleagues at CIRAD, in collaboration with their African partners, this research has led to the adoption of action thresholds; based on levels of crop damage or on pest abundance, they necessarily require prior field observations. The various programmes tested and disseminated in the French-speaking countries of the sub-Saharan African production belt are thus detailed and discussed.

In addition to the use of chemical insecticides or genetically modified varieties, other methods are mentioned, including the use of viruses and pheromones. Innovative practices identified on other continents are also highlighted (Figure 2).

Le chapitre suivant présente la diversité des pratiques de protection du cotonnier, en culture naturelle, en culture biologique certifiée et en culture conventionnelle, avec d'une part l'utilisation de variétés résistantes, dont les variétés transgéniques, et d'autre part la lutte chimique. Pour cette dernière, les outils de pulvérisation, du simple appareil à dos jusqu'à l'avion de traitement, sont illustrés. Des tableaux mentionnent certains programmes d'application de formulations commerciales insecticides qui ont pu être mis en place en grande exploitation au Brésil.

Les recherches menées en Afrique subsaharienne avec, comme objectif, la réduction de l'emploi des insecticides de synthèse, font l'objet du chapitre suivant. Réalisées par le premier auteur, par ses collègues du Cirad et en collaboration avec leurs partenaires africains, elles ont abouti à l'emploi de seuils avant intervention ; ces seuils, qui correspondent à des niveaux de dégâts ou de populations d'insectes, impliquent nécessairement des observations préalables au champ. Les différents programmes expérimentés et diffusés dans les pays francophones de la ceinture de production de l'Afrique subsaharienne sont ainsi précisés et discutés.

S'ajoutant à l'emploi d'insecticides chimiques ou de variétés transgéniques, d'autres méthodes sont mentionnées, notamment l'utilisation de virus ainsi que l'emploi de phéromones. Des pratiques originales recensées dans d'autres continents sont signalées (Figure 2).



Figure 1. Adult *Spodoptera frugiperda* killed by a fungal infection caused by *Akanthomyces* sp. (Brazil, Mato Grosso, Nova Mutum, June 2009).

Figure 1. Adulte de *Spodoptera frugiperda* mort de mycose par *Akanthomyces* sp. (Brésil, Mato Grosso, Nova Mutum, juin 2009).



Figure 2. Cotton plants sown under a cover crop in QuZhou (China).

Figure 2. Cotonniers semés sous une couverture végétale à QuZhou (Chine).

Furthermore, the practice of intercropping cotton with other crops, or even with trees (agroforestry), is discussed in some detail, both worldwide and in relation to farm size.

After outlining the numerous methods used to protect the cotton plant from pests, the authors discuss the potential difficulties in implementing them and the challenges to be overcome. First, they consider the problems associated not only with the definition but also with the application of thresholds, and then the difficulties posed by the adoption of genetically modified cotton varieties (such as the emergence of resistant populations among target pests). The authors emphasise, on the one hand, the potential benefits to be gained from certain organic cotton farming practices (such as plant extracts with insecticidal activity) and, on the other hand, the need to conduct an in-depth study of the role of plant diversity (within the crop itself, in its immediate surroundings and, more broadly, at the landscape level).

The final section, 'Conclusions and Perspectives', summarises and highlights several of the points covered in the book. The first concerns pests, their ecology and their taxonomic diversity. Comparing the entomological situation in the Americas and Africa – by identifying species present on one continent but absent from the other – serves to raise awareness of the risk of invasion by a particular species. Whilst the example of the beetle *Anthonomus grandis* – found in the Americas but not yet present in Africa or Asia – is the most striking, the possibility of invasion by other insects, some of which can reach high population levels, must not be overlooked. The authors therefore advocate a global inventory using modern identification techniques, an essential step in any comprehensive attempt at risk analysis in this field.

Par ailleurs, le fait d'associer le cotonnier à d'autres cultures, voire à des arbres (agroforesterie), est traité d'une manière assez détaillée, que ce soit à l'échelle mondiale ou en fonction de la taille des exploitations.

Les nombreuses méthodes mises en pratique pour protéger le cotonnier de ses déprédateurs étant ainsi présentées, les auteurs discutent alors des difficultés éventuelles de leur mise en œuvre et des défis à relever. Sont d'abord considérés les problèmes liés non seulement à la définition mais également à l'application des seuils, puis les difficultés posées par l'adoption des variétés de cotonnier transgéniques (apparition de populations résistantes chez les insectes-cibles,...). Les auteurs soulignent d'une part l'intérêt qu'il y aurait à tirer de certaines pratiques de la culture de coton biologique (par exemple les extraits de plante à activité insecticide), et d'autre part la nécessité d'étudier d'une manière approfondie le rôle de la diversité végétale (dans la culture proprement dite, dans ses alentours immédiats et plus largement à l'échelle du paysage).

La dernière partie, « Conclusions et perspectives », reprend en les soulignant plusieurs des points traités dans l'ouvrage. Le premier concerne les ravageurs, leur écologie et leur diversité taxinomique. La comparaison de la situation entomologique en Amérique et en Afrique, en permettant de repérer les espèces présentes sur un continent et absentes sur l'autre, a le mérite de sensibiliser au risque d'invasion de telle ou telle espèce. Si l'exemple du coléoptère *Anthonomus grandis*, présent sur le continent américain mais encore absent des continents africain et asiatique, est le plus frappant, la possibilité d'invasion d'insectes d'autres ordres, numériquement importants, ne doit en rien être ignorée. De fait, les auteurs prônent un inventaire mondial avec emploi des techniques modernes d'identification, une étape indispensable à une tentative globale d'analyse de risques dans ce domaine.

The authors also outline several avenues for further investigation, such as expanding research on the manipulation of plant genes that are important for insect physiology, on plant-pest-natural enemy interactions, and on the effects of soil-biota. The final aspect addressed is the need for all stakeholders across the value chain– from farmers and producers to researchers – to be involved in tackling the challenges that lie ahead: environmental challenges (namely the need to reduce the use of synthetic plant protection products), climate challenges and economic challenges, linked in particular to the rising cost of inputs.

Written in French, the book by P. J. Silvie and B. Papierok is aimed primarily at producers, NGOs, consultants and anyone fluent in this language who is interested in cotton cultivation. Its publishing benefited by financial contributions from several institutions, including ICRA. It is available at the following link:

<https://www.quae.com/produit/1912/9782759240012/les-arthropodes-du-cotonnier>

Les auteurs détaillent également plusieurs pistes d'investigation, comme celle de développer les recherches sur la manipulation de gènes qui, chez la plante, sont importants pour la physiologie de l'insecte, celles sur les interactions plante-ravageurs-ennemis naturels, ou encore celles sur les effets des composantes biologiques du sol.

Le dernier aspect abordé est celui de la nécessaire implication de tous les acteurs - du cultivateur/producteur au chercheur - de la chaîne de valeur face aux défis à relever dans l'avenir : défi écologique (celui de la nécessaire réduction de l'utilisation des produits phytosanitaires de synthèse), défi climatique et défi économique, lié notamment au coût croissant des intrants.

L'ouvrage de P. J. Silvie et B. Papierok s'adresse majoritairement aux producteurs, aux ONGs, aux consultants et à toute personne intéressée par la culture du cotonnier maîtrisant la langue française. Sa publication a bénéficié de la contribution financière de plusieurs institutions, don't l'ICRA. Il est disponible au lien suivant :

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