

From waste to wealth – the journey from Africa to the Pacific of the black soldier fly

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About *icipe*

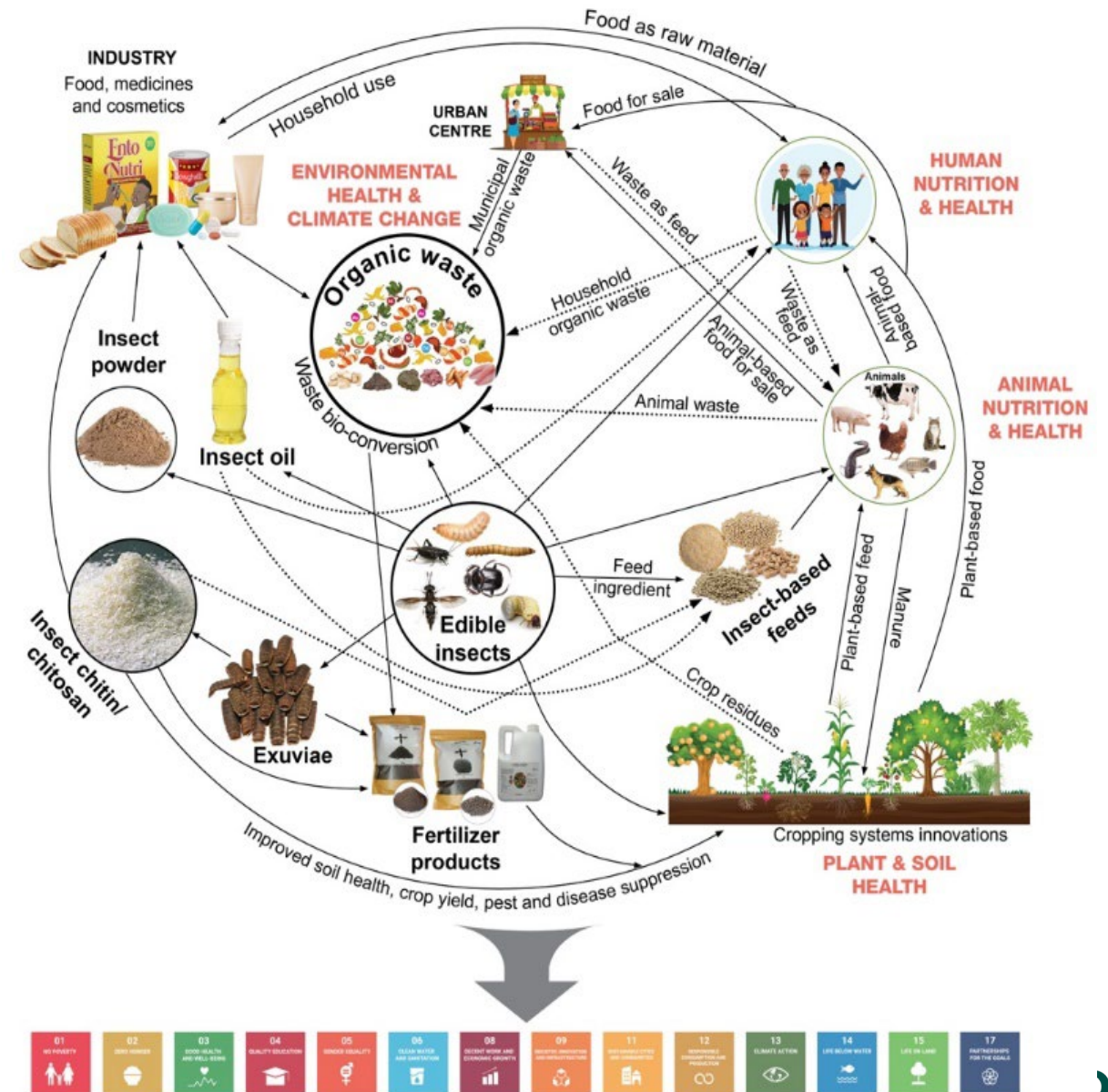
- A centre of excellence in Africa – for research and capacity building for insect science.
 - Operates in 41 countries in Africa
- An intergovernmental organization with > 50 years of existence
- > 570 staff with >40 nationalities
- Hosts > 180 graduate students annually
- Collaborates with > 300 partners worldwide



100%
Solar

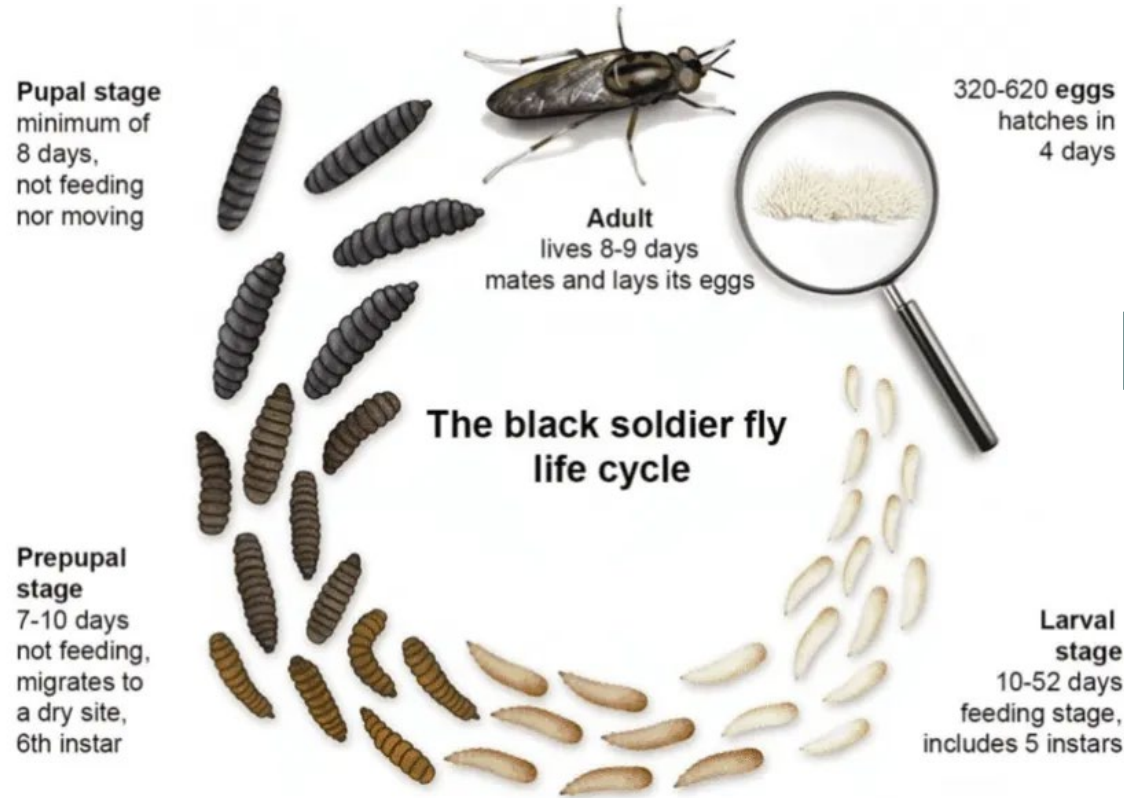
Insect-based circular bioeconomy

Rethinking waste: Insects transform organic waste into feeds, fertilizer and biorationals, promoting regenerative agriculture for enhanced food security, climate resilience, and improved livelihoods.



Black soldier fly waste recycling technology

Black soldier fly (BSF) = Farmers' Friend



≤ 5 weeks

**BSF for
waste
recycling**

9 – 14 days



1 tonne



300 - 400 kg
of organic fertilizer



30 - 40 kg BSF larval meal

icipe milestones on BSF: Feed Products

At least 50 BSF-based feed formulations developed for poultry, piggery, fish, dairy cattle, and small ruminants (goats, rabbits, and Guinea pigs) and pets



Validation of BSF-based feeds



15-25% egg production

- 5-8% higher crude protein
- Improved gut health



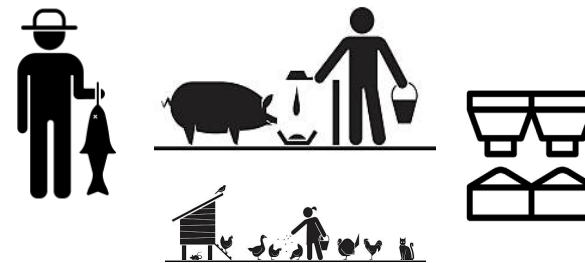
- 37% faster growth rate
- 23% higher body weight
- 7-10% higher proteins



- 1.5 – 2 months faster maturity
- More lean meat
- Treatment of diarrhoea



- 12 – 30% higher milk yield
- 40% higher profits
- 29 – 40% lower GHG emissions



85 - 90% willingness among farmers and feed processors



Organic fertilizers and biorational products

>20 products developed for different crops, pests and diseases



Powdered

- Fast-release fertilizer
- Suitable for all crops



Granulated

- Slow-release fertilizer
- Suitable for perennial crops



Liquid and chitin-fortified

- Multipurpose
- Pest and disease suppression

Validated frass fertilizers for crop production



- ✓ Improved soil health
- ✓ 20%+ yield increase
- ✓ 44% profitability
- ✓ 2 – 3-fold increase in crude protein
- ✓ 2 – 8-fold increase in minerals

Insect-based value chain development

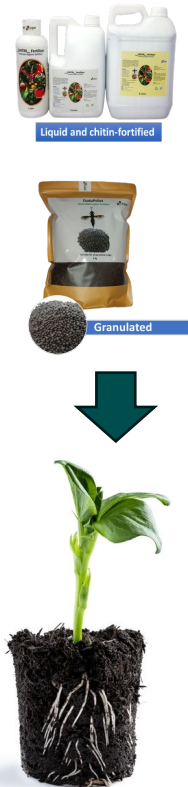
LIVESTOCK & FISH FEED



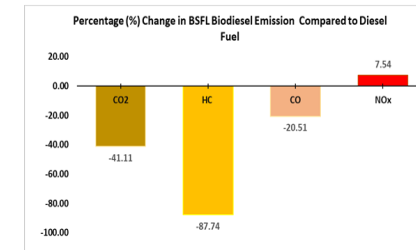
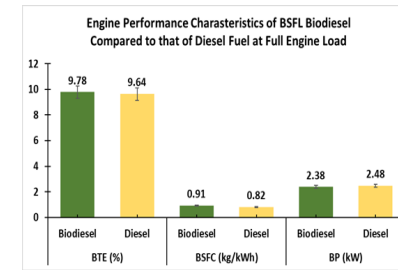
FOOD



FERTILIZER



FUEL [Biodiesel]



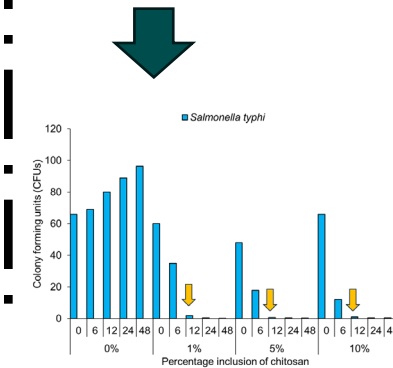
BIOTHERAPEUTIC



Pupa exuviae



Chitin/chitosan



OTHERS



Cosmetic products



Supplement products



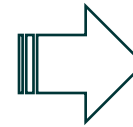
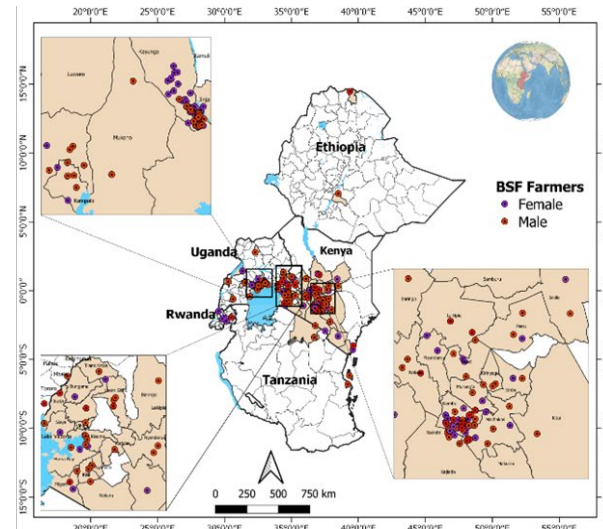
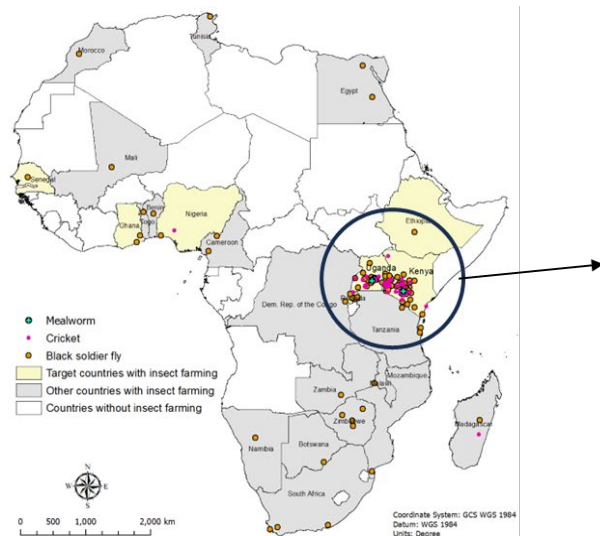
Capacity building & partnerships for edible insect innovations

Leveraging public-private partnerships to scale up utilization and profitability of insect-based fertilizers for enhanced agricultural productivity

- > 165,000 farmers trained
- 450 extension officers
- 6 Postdocs, 10 PhD and 54 MSc students
- 3000 enterprises established
- 15 harmonised African continental standards to edible insect value chains

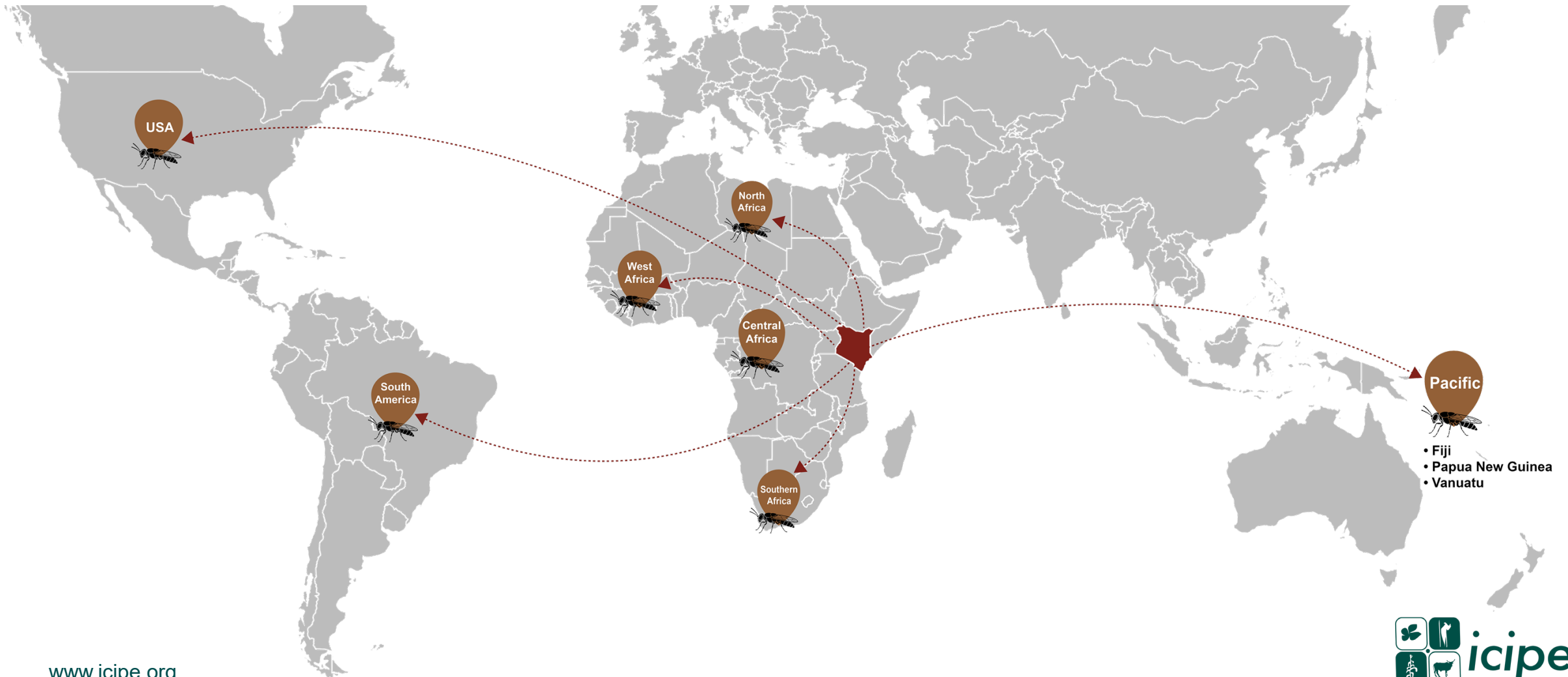


HE Uhuru Kenyatta (Ex. Kenyan President)



Scaling of black soldier fly by *icipe*

- Working with different stakeholders to scale proven BSF technologies globally, including the Pacific



Scaling BSF to the Pacific by ACIAR and *icipe*



- Online engagements with stakeholders from Fiji, PNG and Vanuatu
- Exposure visit to Kenya



Reconnaissance visit to the Pacific

- BSF identification survey
- Assessed local conditions
- Raised awareness

Scaling BSF to the Pacific...

Stakeholder consultants

- Identified country-specific needs for Fiji, PNG and Vanuatu
- Co-selected country champions

Fiji



- Ministry of Agriculture (MOAW)
- Fiji National University
- Agricultural marketing authority
- Poultry, piggery and fish farmers

Papua New Guinea



- NARI (Labu and Keravat)
- UNITECH
- Santos Foundation - Moro
- Australia's DFAT
- Edai township

Vanuatu



- Agric. Research Center (VARTC)
- Agriculture College (VAC)
- Municipalities
- Ministry of Agriculture
- Entrepreneurs,
- Australian Embassy

Scaling BSF to the Pacific...

Capacity building: Trained 30 farmers, researchers and entrepreneurs to become country champions



Scaling BSF to the Pacific...



Ongoing activities

- Pilot BSF rearing demos
- Training
- Community sensitisation

Collaborative 4-year regional project (2027 – 2030)

- To adapt BSF technologies in Fiji, PNG, and Vanuatu
- Establish the business potential
- Generate evidence for scaling and commercialization

Take-home message

- *icipe* has demonstrated the benefits of edible insects on waste management, food security, climate resilience, and livelihoods in Africa.
- Scaling BSF to the Pacific will address similar challenges.
 - Adaptation and validation of the BSF technology is key for success
 - Capacity building, partnerships, and commercialization are essential for sustainable scaling
- Standards and enabling policies are critical for scaling, quality control, commercialization, and higher adoption.
- What we once called waste is becoming one of our most powerful tools— BSF technologies are helping farmers rebuild soil health, increase yields, and farm in harmony with nature.

Donor Acknowledgement



Australian Government
Australian Centre for
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BMZ



Federal Ministry
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