

"BSFL as viable feed option in Indian Scenario"

An Exploration of Sustainable Protein Source

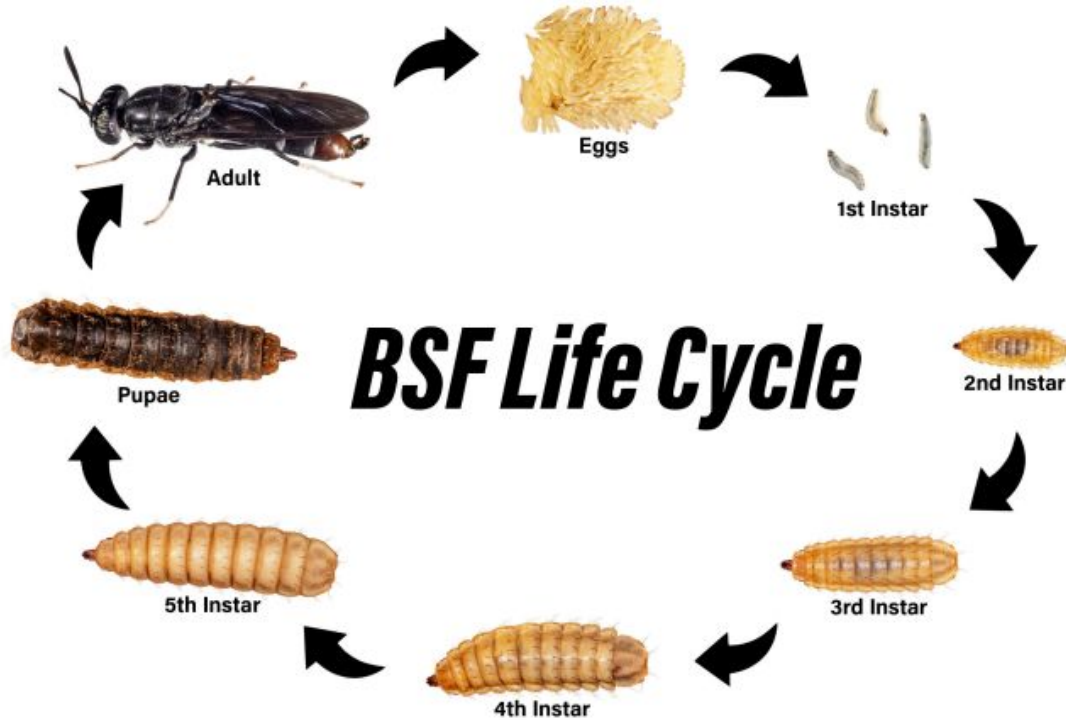


by **Anupa Velusamy,**
Founder, KovaiBSF



What is BSFL?

Black Soldier Fly Larvae





Why BSFL?

Why BSFL?

Many Feed Options &
Doesn't Compete
with Livestocks



Small &
Nutritious



Natural Feed
land Omnivorous

Native &
Safe



Nutrition

Amino Acid	Result	Unit
Alanine	3.2	g/100g
Arginine	1.8	g/100g
Aspartic acid	10.2	g/100g
Cystine	1.0	g/100g
Glutamic acid	14.1	g/100g
Glycine	2.5	g/100g
Histidine	1.2	g/100g
Isoleucine	1.9	g/100g
Leucine	8.9	g/100g
Lysine	7.6	g/100g
Methionine	2.8	g/100g
Phenylalanine	3.8	g/100g
Proline	5.5	g/100g
Serine	5.2	g/100g
Threonine	4.1	g/100g
Tryptophan	2.6	g/100g
Tyrosine	2.0	g/100g
Valine	4.5	g/100g

Spectrum of **18** **Amino Acids**

Data Source:

Test Report from Sample of
KovaiBSF BSFL meal



KovaiBSF[®]

Nutrition

Fatty acids	Lipid Numbers	Results (g/100g)
Capric acid	C10:0	1.5
Lauric acid	C12:0	26.24
Myristic acid	C14:0	5.24
Palmitic acid	C16:0	12.54
Palmitoleic acid	C16:1	1.5
Stearic acid	C18:0	8.2
Oleic acid (omega 9)	C18:1	18.25
Linoleic acid (omega 6)	C18:2	12.59
α Linolenic acid ((omega 3)	C18:3	0.8

Data Source: Test Report from Sample of KovaiBSF BSFL Oil.



Only non-plant fat with High Lauric Acid



Beyond Test Reports..

BSFL is
New ingredient for feed formulation
NOT for the Consumer

What do trials Say ?

- As per the studies, **Aqua Feed 50% replacement of Fish Meal** with BSFL meal is viable with *improved performance*.
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- In poultry, BSFL can be used upto **15-20% in the feed**. Boilers **100% replacement** of Energy source with BSFL oil shown good results.
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- In general, **3-5% inclusion** for overall health improved like immunity, Stress syndromes etc.,
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- **Oil supplement of 2-4%** in the nursery pig diet is found to show improved performance.
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Future Research can help with this Limitation by working on the **antinutritional factors**.

**Indian scenario..
Lot More to
be Done !!
Practical Trial
is the Key..**



BSFL Benefits

Antimicrobial Peptides: Insect's synthesized AMP is transfer into the feed, giving improved immunity against pathogens like Virus, Bacteria and Fungi.

Lauric Acid: BSFL oil high in Lauric Acid.. Highly bioavailable due to easy absorption. Great energy source for chicks, Nursery livestock. Improves gut health in matured animals.

Chitin : Tapped for improved immunity and inflammatory problems. Derived Prebiotic and nutraceutical applications are possible.





**BSFL a complete
replacement for
Fish Meal or Soya
Meal ?**

Theoretically **Maybe..!**
Practically, in near future **NO..**

$\frac{2}{3}$ of feed Protein is Soya.

Sustainable and Supplementing.

Replacement of 10% of Fish Meal by 2030 is the projection..

Every Incremental Percentage will translate to **2x**
Incremental Environmental Preservation.

At Present, **Can be a great Feed Supplement !!**



KovaiBSF





**Do we have the
volume...??**

Challenges of Feed ingredient

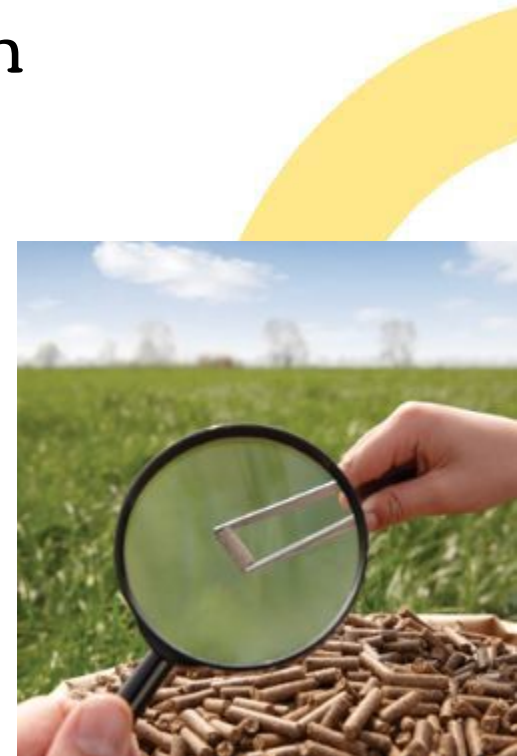
Quality
Consistent Supply
Price
Price fluctuations
Volume



**YES !! India has full
potential to dominant in
global BSFL Market..**

Potential for India

- Favourable Climatic Condition
- Need for effective wet waste processing
- Huge Local Market
- Shifting trend in the feed industry.



Dry Feed to Wet Feed

- Spoilage of Ethanol Digest.
- BSFL as live or Frozen feed

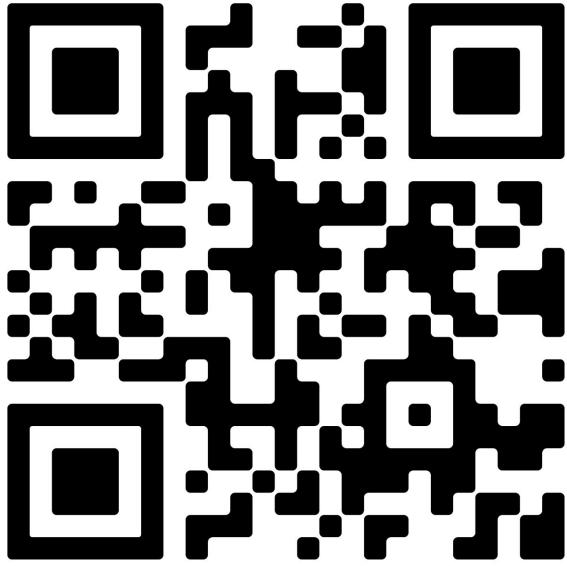
..when drying becomes expensive.. supply and storage technology, transportation, local sourcing may evolve.



Conclusion

BSFL as ingredient for Feed industry is evolving nutritional source, which has potential **more than a commodity.**





Thank you



Contact



Anupa Velusamy
anupa@kovaibsf.com
+91-9360467202