

# Tallow based Biodiesel - specific production and quality issues

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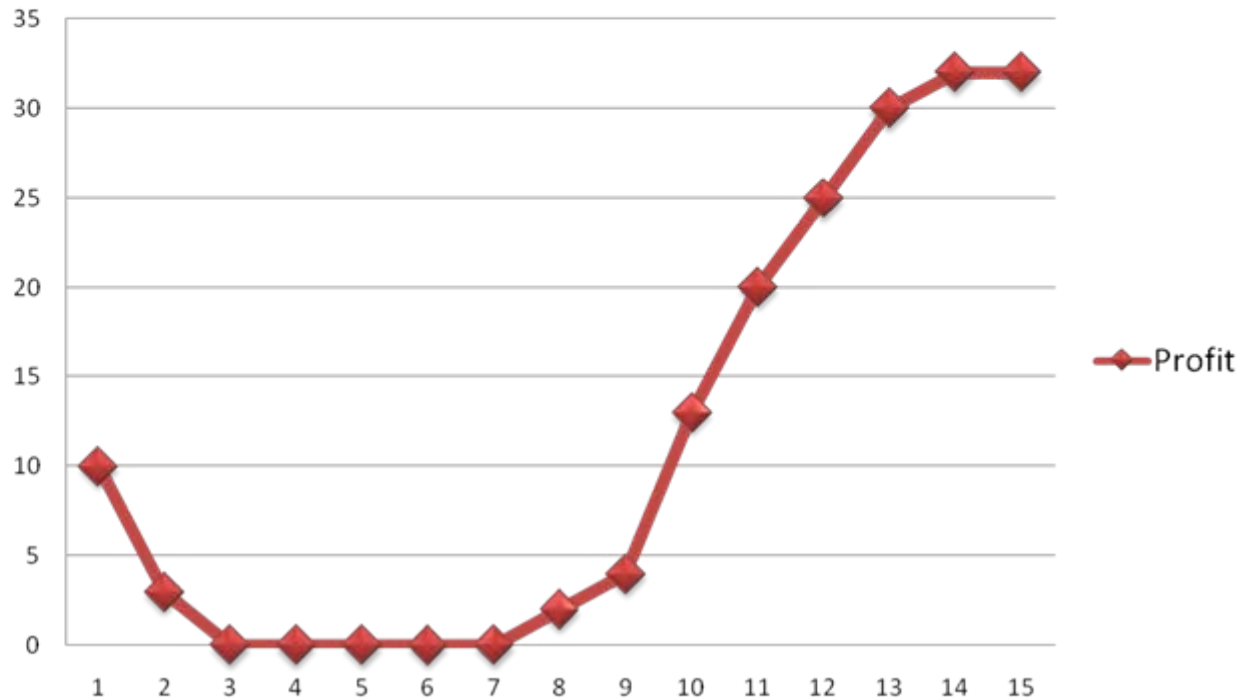
# Governing Regulations and Requirements

- Engine Fuel Specifications Regulations 2008 (SR 2008/138)
- International biodiesel standards eg ASTM D6751, EN14214, NZS7500
- Customer specific eg CFPP, Cold soak



# Profitability is linked to quantity and quantity is dependant on quality

Profit vs Production Volume



  
fuels for our future

# Tallow Specific Quality Issues

- Ester content EN14103
  - Colour
  - Viscosity
- Total Contamination
  - Monoglycerides
- Oxidation Stability
  - CFPP IP309
  - FBT IP387
  - Cold soak



# Ester content EN14103

Issue

1. Interference with heptadecanoic ME  
internal standard

Resolution

1. Modified test method to be approved by  
MED



# Colour

## Issue

1.High colour of Biodiesel from highly coloured Tallow. Customer spec <3

## Resolution

1.High quality Tallow

2.Tallow bleaching

3.Biodiesel decolourisation



# Viscosity

## Issue

1. Higher viscosities with Tallow Esters

## Resolution

1. NZ specification increased to 6 mm<sup>2</sup>/s
2. Highly processed Tallow ME



# Total Contamination

## Issue

1. Tallow ME often fails TC test

## Resolution

1. Higher quality Tallow

2. Biodiesel filtration



# Monoglycerides

## Issue

1. EFSR max 0.80%
2. Customer often require max 0.20%

## Resolution

1. Multistep transesterification
2. Monoglyceride precipitation
3. Monoglyceride absorption



# Oxidation Stability

## Issue

1. Plant oil ME have greater OS than Tallow
2. Low grade Tallows have low OS

## Resolution

1. Use of oxidation stabilisers



# CFPP IP309

## Issue

1. Tallow ME display high CFPP points

## Resolution

1. Higher quality Tallow (low PE)

2. Tallow pre processing

3. Multistep transesterification



# FBT IP387

## Issue

1. Tallow ME can display poor filterability

## Resolution

1. Higher quality Tallow (low PE)

2. Tallow pre processing

3. Multistep transesterification



# Cold Soak

## Issue

1. Tallow Me can display poor cold soak performance

## Resolution

1. Higher quality Tallow (low PE)

2. Tallow pre processing

3. Multistep transesterification

4. Monoglyceride removal



# Conclusion

1. Tallow is more difficult to process than Vegetable oils
2. Some factors (eg CP) cannot be controlled
3. Attention to detail in processing will address most issues
4. Completeness of reaction most critical factor

