

Room temperature Canola methyl ester exposed to 5 degrees Fahrenheit



Perkins diesel powered tractor operating on 100% Canola methyl ester



Canola methyl ester after 12 hours at 5 degrees Fahrenheit



## Canola Methyl Ester operation in Northern Climates

Operating diesel engines in northern climates can be a challenge; operating diesel engines on bio-fuels such as Canola methyl ester can be even more of a challenge. Temperatures in North Dakota can range from 35 degrees Fahrenheit to -30 degrees Fahrenheit during the winter months. Canola methyl ester, when exposed to these temperature extremes can be fluid or can have the consistency of margarine.

Operating equipment using bio-fuel is possible, but only with planning and preparation. Prior to the arctic months of a North Dakota winter, bio-fuel must be preconditioned. Additives, anti-gelling agents, bio-diesel tank mixed with #1 diesel and warm storage can make winter use of Canola methyl ester possible. Some manufacturers are equipping their fuel systems with heaters and recirculation systems.

The North Central Research Extension Center in Minot, ND has been conducting a research demonstration project since April 2005 to test the limitations of bio-fuel use in northern climates.

Canola Bio-fuel for this project donated by Archer Daniels Midland Co., Velva, North Dakota

December in North Dakota!



Case IH diesel tractor after 6 years Operating on 100% bio-diesel



Canola methyl ester with the addition of 30% #1 diesel (left), after 12 hours at 5 degrees Fahrenheit

