canolacouncil OF CANADA

April 11, 2014

Michael S. Waugh
Chief, Transportation Fuels Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95812 USA

Dear Sir:

Re: Low Carbon Fuel Standard – Proposed Carbon Intensity Values for Canola

The Canola Council of Canada (CCC) is a non-profit industry organization that encompasses all aspects of the canola value chain. Our members include canola growers, life science companies, canola exporters, processors, food and feed manufacturers and governments. Our mission is to advance the growth and outlook of the canola industry, which contributes $19.3 billion to the Canadian economy each year (as of 2013).

Canola is Canada's most valuable agriculture crop with about 90% of canola exported in the form of seed, oil, animal feed or biodiesel. The Canadian canola industry is a large supplier of feed ingredients for the dairy sector in California as well as an important supplier of feedstock for biodiesel used in the California transportation fuels market.

The California Low Carbon Fuel Standard (LCFS) biodiesel market is an important market for our members and the CCC appreciates this opportunity to provide comments on the reauthorization of the LCFS and the estimation of an indirect land use change emission value for canola biodiesel.

The Canola Council notes that the ILUC issue is a controversial concept; we believe that there are very significant opportunities to produce ILUC free feedstocks. Canadian producers have been expanding canola production and reducing summer fallow area for decades. The canola industry also has a plan to increase yields at more than double the historical average, provided new markets for the increased production can be found.

Our technical comments also reference GREET, an important aspect of determining the final Carbon Intensity number for canola.

We look forward to opening a dialogue with CARB soon on the issues we have raised in our attached comments.

Yours sincerely,

Patti Miller
President, Canola Council of Canada

cc. Fred Gorrell, A/Assistant Deputy Minister, Agriculture and Agri-Food Canada
Christine McKee, Consul and Trade Commissioner, Government of Canada
Ryan Pederson, US Canola Association
Mike Livergood, Archer Daniels Midland
Todd Ellis, Imperium Renewables

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Comments to California Air Resources Board on GREET and ILUC
April 9, 2014

1. GREET 2013

a. The Canola Council supports the use of the latest tools and data available by CARB for the determination of the carbon intensity of various fuel pathways including canola.

b. We support the view that CARB's modeling must be open and transparent to assure all parties of the integrity of the LCA models being used. We therefore support the use of the Excel version of GREET 2013 over the .net version of the model due to its higher degree of transparency.

c. The Council's analysis shows the new Canola pathway that has been added to GREET substantially overstates the Carbon Intensity of canola grown in Canada and the United States.

d. The reason is that the rapeseed pathway in GREET is populated with European data that is not representative of Canadian and US agronomics for canola (Stratton et al, 2010[1]). The Stratton report states:

> *Rapeseed cultivation was assumed to take place predominantly in the United Kingdom (UK) and France based on data from Mortimer and Elsayed (2006), Edwards et al. (2007), Richards (2000) and Prieur et al. (2008). The analysis was supplemented by additional data from Sweden and Denmark from Bernesson et al. (2004) and Schmidt (2007). This was deemed appropriate due to the relative similarity in climate among southern Sweden, Denmark, France and the UK.*

European rapeseed is almost exclusively winter rapeseed compared to the spring canola varieties planted in North America. This European data is more than 10 years old in some cases.

e. The Canola Council has the most complete, up to date set of data on Canola production in North America. This data and the GHG emissions from producing Canadian canola have been analyzed and peer reviewed by independent parties and is being used to meet regulatory requirements in Europe.

f. The CCC would be pleased to share this data with CARB and develop an appropriate canola biodiesel pathway in GREET 2013.

2. INDIRECT LAND USE CHANGE EMISSIONS

The Canola Council, while appreciative of the efforts undertaken by CARB to improve the GTAP model, has concerns about the model. It is the Council's view that the model does not properly represent the real world impacts of increased canola demand and canola/rapeseed production around the world to meet this demand. We think that the approach undertaken by CARB to use the data collected between the 2004 base year in GTAP and the present time to validate the model is helpful. However, we believe that the available data supports our position that the GTAP model is not currently reflecting the reality of canola/rapeseed production around the world.

1. GTAP Land Pools

   a. The CCC supports any effort that is made to update the land pools within GTAP.

[1] Stratton, R., Wong, H., Hileman, J. 2010. Life Cycle Greenhouse gas Emissions from Alternative Jet Fuels. http://web.mit.edu/aeroastro/partner/reports/proj28/partner-proj28-2010-001.pdf

b. Updating the land pools is very important for idle/fallow/abandoned cropland as the data shows that this is the first land that comes back into production to meet increased demand.

   Yet, with the exception of a portion of this land in the United States and Brazil, the GTAP model has no method to access the idle/fallow/abandoned cropland and instead converts forest land and pasture land to new crop production. Canadian data shows that this is not factually correct for Canada where canola has basically replaced fallow land.

c. This deficiency in GTAP has a significant negative impact on canola's CI number as the model overestimates the GHG emissions from land use change.

d. The cropland pools that are currently in GTAP are shown in the following table.

   i. The crops column is the total cropland in the model. The Conservation Reserve Program (CRP) land is only included for the United States and it is not active in the model that CARB is using. There is Cropland Pasture area for the United States and Brazil, but this category exists for many other regions in the world.

   ii. The harvested area is from the GTAP model and is the sum of the area for all of the segregated crops. Net cropland not in crops and the net double cropped areas are calculated from the area in crops less CRP less cropland pasture less the harvested area. If the calculated value is positive it indicates that some cropland is idle or in cropland pasture and if the value is negative, then some of the land is being used to produce multiple crops in one year.

   iii. Even after accounting for CRP in the United States and cropland pasture in the US and Brazil there is almost 200 million hectares of agricultural land that is not in production that could be brought back into production.

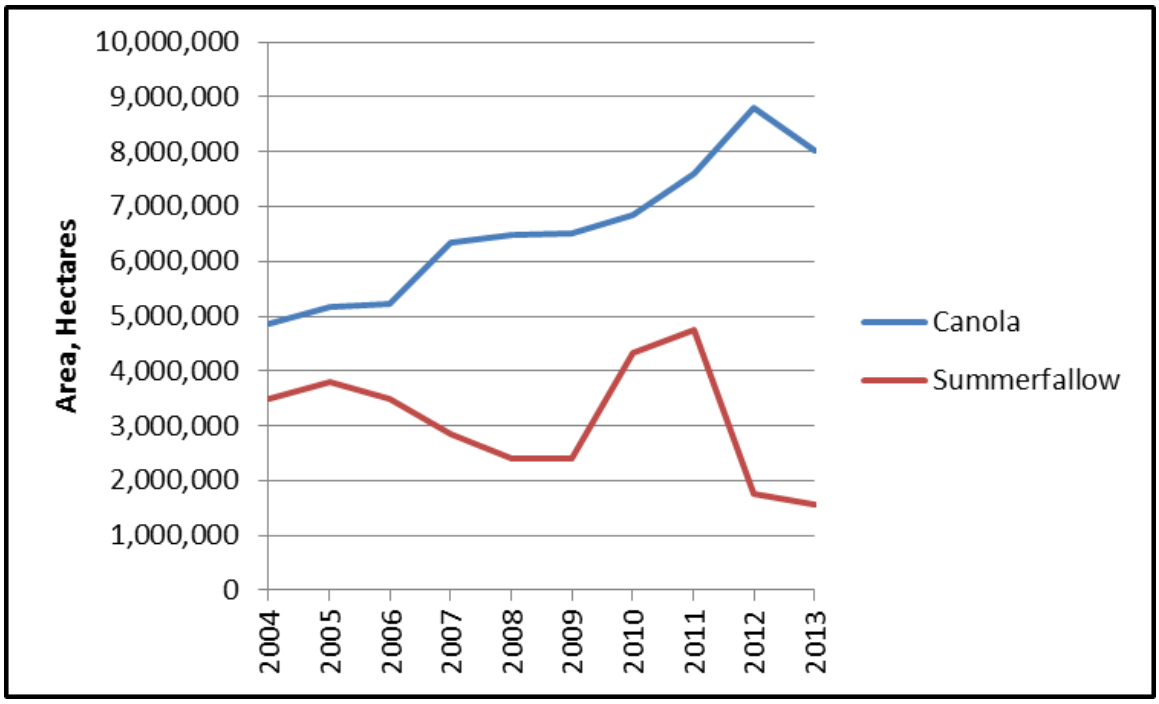
Region	**Crops**	**CRP**	**Cropland Pasture**	**Harvested Area**	**Net cropland not in Crops**	**Net double cropped**
	Hectares					
USA	175,807,007	14,046,000	25,024,000	127,989,000	8,748,007	
EU27	124,830,687			115,729,000	9,101,687	
BRAZIL	60,724,257		23,573,000	62,830,000		-25,678,743
CAN	39,573,515			33,514,000	6,059,515	
JAPAN	3,680,435			4,185,000		-504,565
CHIHKG	140,644,611			160,840,000		-20,195,389
INDIA	171,418,998			186,799,000		-15,380,002
C_C_Amer	56,671,461			26,687,000	29,984,461	
S_o_Amer	58,603,527			56,585,000	2,018,527	
E_Asia	5,190,174			4,852,000	338,174	
Mala_Indo	71,571,068			35,999,000	35,572,068	
R_SE_Asia	53,207,433			60,163,000		-6,955,567
R_S_Asia	46,956,517			43,712,000	3,244,517	
Russia	124,542,334			81,229,000	43,313,334	
Oth_CEE_CIS	111,522,274			94,998,000	16,524,274	
Oth_Europe	933,565			1,160,000		-226,435
MEAS_NAfr	53,633,308			49,933,000	3,700,308	
S_S_AFR	211,016,073			175,792,000	35,224,073	
Oceania	33957545			42,181,000		-8,223,455
Total	1,544,484,789	14,046,000	48,597,000	1,365,177,000	**193,828,945**	-77,164,156

e. When the GTAP data on agricultural land pools is compared to the official statistics published by the Government of Canada for the year 2004 GTAP underestimates all land pools. The net cropland not in crops in GTAP can be explained by the fallow area and the seeded pasture area.

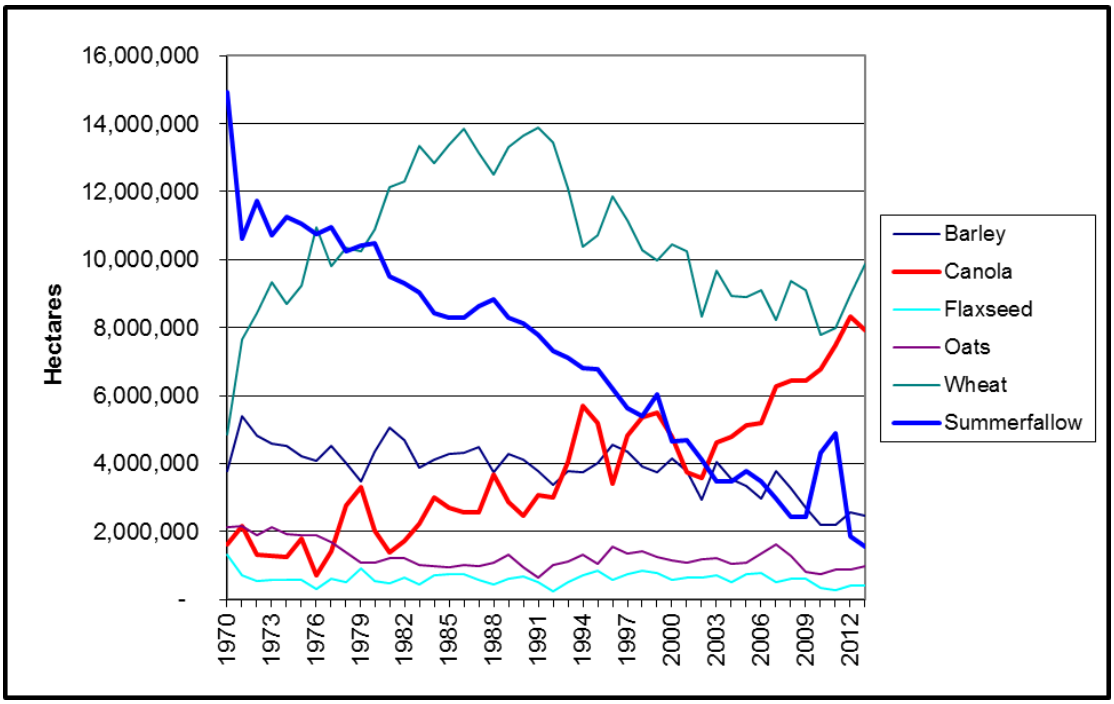
	GTAP	**Statistics Canada**
	Hectares	
Cropland	39,573,515	45,398,000
Harvested Area	33,514,000	36,759,000
Net cropland not in crops	6,059,515	
Summer fallow		3,465,000
Seeded pasture (Cropland Pasture)		5,173,000

f. For canola the important regions are Canada, Europe, and Australia and all three regions have significant fallow land and cropland pasture.

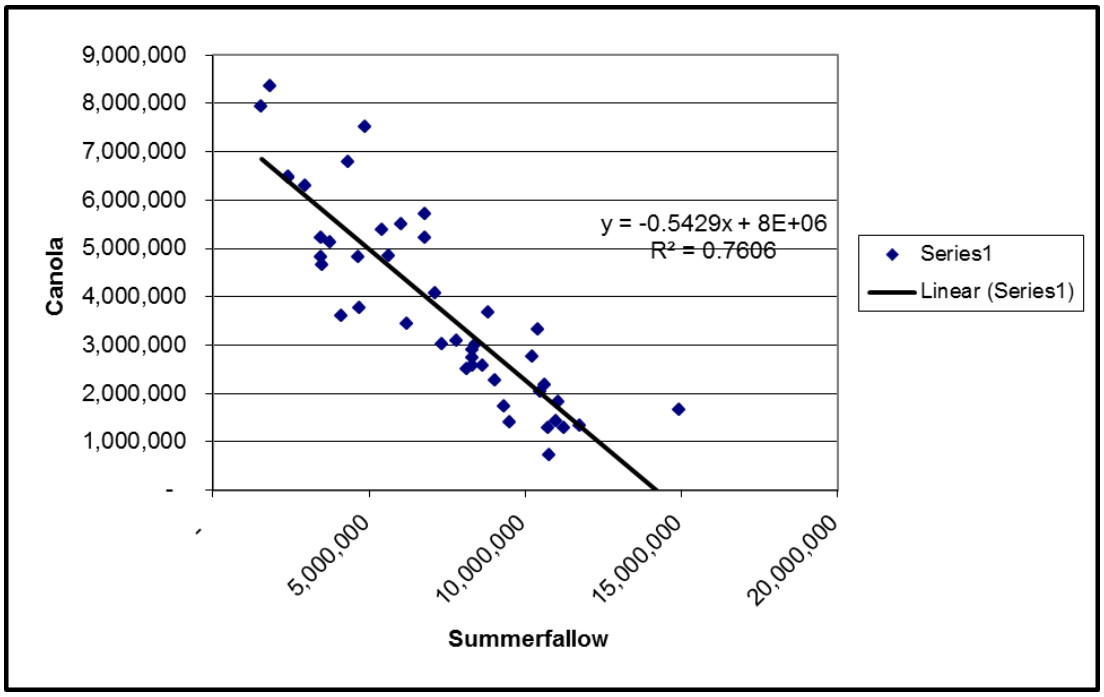
g. Between 2004 and 2013 the cropland area in Canada has been stable but there have been some shifts in summer fallow, seeded pasture and in crops such as canola. The canola and summer fallow areas are shown in the following figure. 2010 and 2011 were very wet years that resulted in many areas of western Canada not being seeded at all and were left fallow.



h. There is also a longer term trend with respect to Canadian canola and summerfallow which is shown in the following figure. This puts the 2010 -11 spike in context.



i. A regression analysis of the summer fallow area and the area of the major crops indicates that canola is the only crop with a correlation with summer fallow. This is shown below.



j. This increase in canola/rapeseed area at the expense of summer fallow is also apparent in Europe where area of rapeseed, wheat and fallow is shown in the following table. There is no change in wheat area but fallow area has declined and rapeseed area has increased.

Land Type	2005	2007	2010
	Hectares		
Fallow	8,534,220	8,574,880	7,413,020
Rapeseed	4,825,590	6,553,450	7,189,910
Wheat	26,334,720	25,376,330	26,322,020

k. The evidence for canola/rapeseed is clear; much of the increased production in the period from 2004 has come from a reduction in summer fallow land and not from the clearing of forests or use of pasture land as the GTAP model currently assumes.

l. This land pool of idle land is not included in GTAP, and until it is, GTAP is not capable of correctly estimating the ILUC emissions for canola or any of the other crops.

3. NESTING STRUCTURE

a. CARB's Expert Working Group (EWG) studying elasticity parameters in GTAP identified the Constant Elasticity of Transformation (CET) function as something that needed revision. They noted that the method used in GTAP produced a responsiveness to deforestation that was more than an order of magnitude higher than reported in the literature and that it was factually incorrect.

b. The EWG recommended using a revised nesting structure with different CET values for pasture and forest (i.e., a nested structure). This would provide more flexibility and allow for better calibration with the available data. Given that this was an important recommendation from the EWG and the fact that the GTAP developers have addressed the issue and the latest version of GTAP has this capacity, it should be used by CARB.

c. The issue raised by CARB at the workshop on reforestation happening with the revised model is not a reason to avoid using the new model. Almost all GTAP model runs have some reforestation happening somewhere in the world and this is primarily a function of the way that the forest sector is modeled rather than a nesting structure issue. It must be remembered that GTAP does not track land in any sector but rather the economic activity that is happening on that land.

4. PRICE YIELD ELASTICITY

a. CARB's Elasticity Expert Working Group made a number of recommendations with respect to the price yield elasticity depending on the capacity of the GTAP model to accept multiple values for the price yield elasticity. Since there currently isn't a version of GTAP that can accept multiple values the EWG recommended a value of 0.25 be used.

b. The EWG studied all of the available literature on this issue up to 2010 when they made this recommendation. Only new information published after 2010 should be considered by CARB if CARB's position is that a value different than 0.25 should be used.

c. The EWG did recommend that higher values be used for regions that have more double cropping. As shown earlier in the first table there is a significant quantity of double cropped land already in GTAP.

d. The profitability of canola production has been one of the drivers behind the increased production of Canadian canola in the past decade. As the availability of summer fallow area for expanded canola production is declining, future growth must come from intensification of the existing land base. The Canadian canola industry has a goal to increase yield from 34 to 52 bu/acre in the next 11 years. This will require an average annual gain of 4% per year, significantly above the historical trend. This goal was established in part by studying the performance of top producers and understanding the factors leading to increased yields. The components of the expected yield increase are:

    i. Genetic improvements, up to 10 bu/acre.

    ii. Plant establishment, improving seed mortality, 3 bu/acre.

    iii. Fertility management, fully meet the nutritional requirements of the plant, 3 bu/acre.

    iv. Integrated Pest Management, yield gains can be realized through improved management of pests – weeds, diseases, and insects, 2 bu/acre.

    v. Harvest Management, research is showing that we are losing 2 to 5 bu/acre at harvest. Improved swathing timing and adoption of straight cutting have been shown to put more yield in the bin and less seed on the ground, 2 bu/acre

All of this supports higher rather than lower price-yield elasticity values.

5. FOOD CONSUMPTION

a. The Council supports the approach CARB has used to not try and model a “constant food” consumption scenario. We are of the view that GTAP is not capable of modelling such a scenario, as it only can model dollars expended on food and not calories.

b. There are many ways in which food expenditures can be reduced without impacting calories, such as switching from red to white meats and/or from meats to cereals. Since the model is not capable of tracking the food use in this detail any attempt to maintain food expenditures will result in decreased modelling precision, not more.

6. ETA (NEW CROPLAND PRODUCTIVITY)

a. CARB has suggested that it is looking at alternative values for ETA (the productivity of new land). One of the recommendations of the CARB Expert Working group was to move to the Terrestrial Ecosystem Model (TEM) method that is used in the new version of GTAP. It is not clear what value is being added by varying ETA in the various scenario runs. This value has a big impact on the quantity of land required. Unless CARB has a better method of predicting the productivity of new cropland it should continue to use the default values of ETA that are in GTAP.