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TOHOKU
UNIVERSITY

RBO CURRENT STATUS & FUTURE PROSPECTS in JAPAN

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Big three cereals of the world

Rice



Wheat



Corn



World annual production

: each about 500 million metric tons (MMT)

**Half of the population of the world eat
rice as the staple food.**

World Vegetable Oil Consumption 2011*

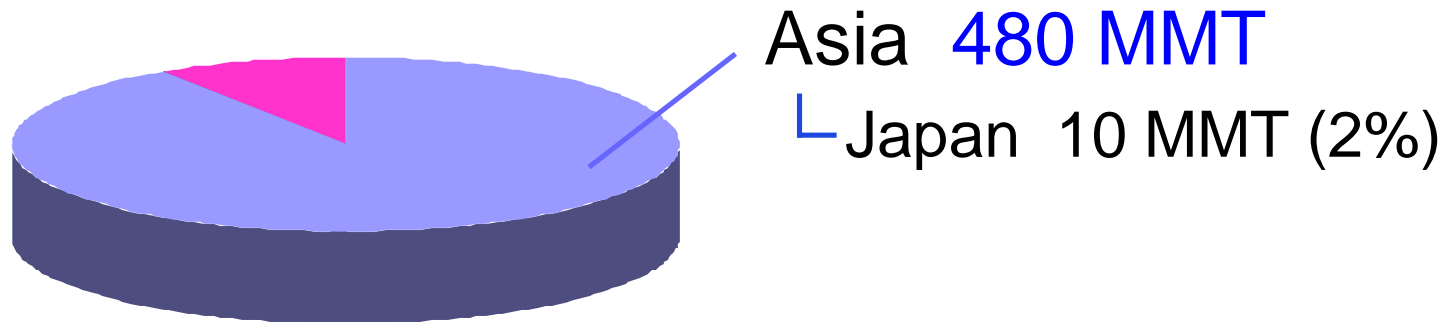
Oils	MMT (million metric tons)	
Palm	49.6	
Soybean	42.6	
Rapeseed	23.2	RBO is rich in Vitamin E and suitable for high-temperature cooking such as deep frying and a popular cooking oil in Asia.
Sunflower seed	12.9	
Cotton seed	5.2	
Peanut	5.2	
Palm kernel	5.1	
Coconut	3.9	
Olive	3.0	
Rice Bran	1.4	

*USDA

RBO is expected to expand the production to help ease shortages of edible oil supplies in Asia

Annual production of rice and rice bran oil

- Annual production of **rice** in the world
: **500 million metric tons (MMT)**



- **10% of brown rice is rice bran (Polishing)**
20% of rice bran is rice bran oil (RBO)

World annual production of **RBO**: **1.4 MMT***

Asian annual production of **RBO**: **1.3 MMT**

Japan annual production of **RBO**: **0.06 MMT**

RBO is 3% of annual consumption of vegetable oils in Japan

Production of rice and rice bran oil in Asia 2012* (MMT)

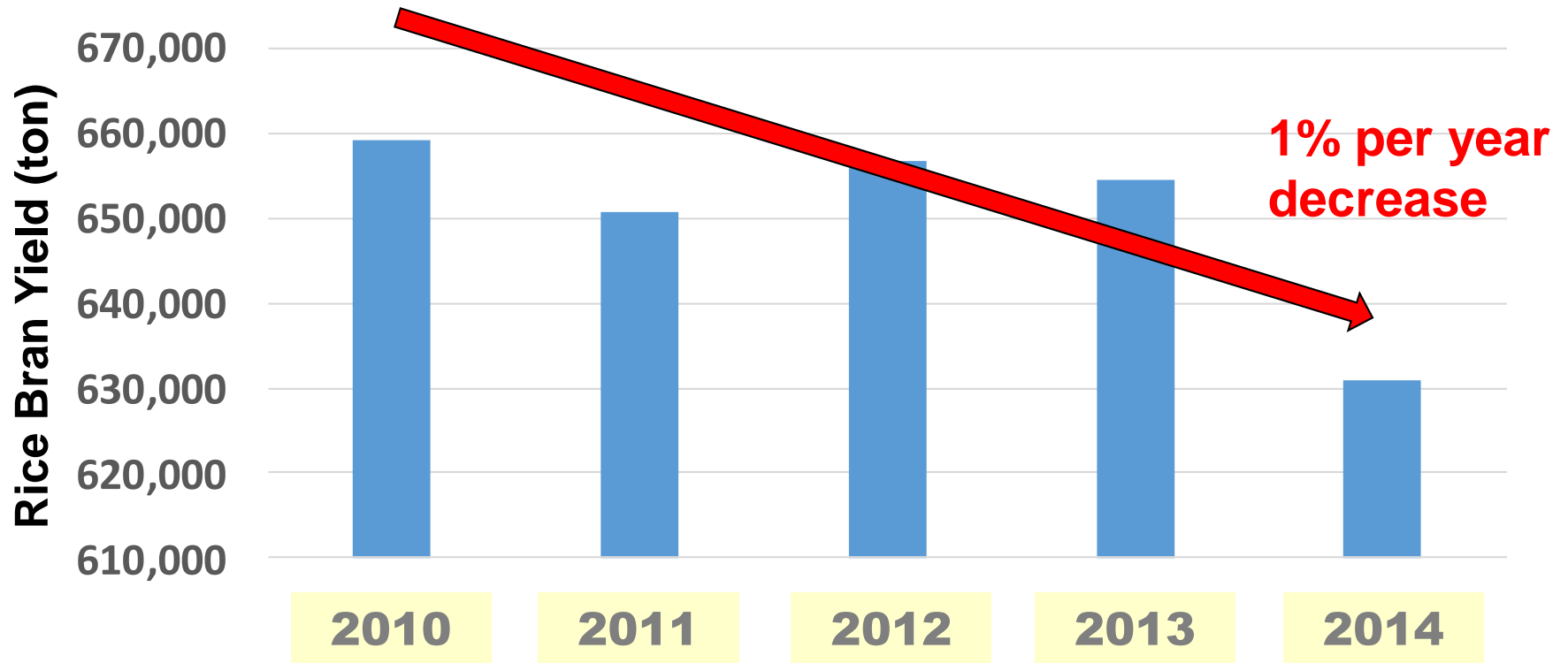
Country	Production of			
	Rice, actual	Rice Bran, potential	RBO (MMT)	
			Actual	Potential
China	>131.2	9.2	0.1 (6%)**	1.8
India	89.2	6.2	0.8 (61%)**	1.3
Indonesia	43.0	3.0	-	0.6
Bangladesh	31.8	2.2	-	0.5
Vietnam	26.0	1.8	0.01 (3%)**	0.4
Thailand	21.4	1.5	0.05 (16%)**	0.3
Philippines	10.8	0.8	-	0.2
Japan	10.0	0.8	0.08 (40%)**	0.2

* FAO 2012 etc. www.fao.org/crop/statistics/en.

** Percent of potential

China realizes 6% of its potential for RBO, India produces 61% of its potential. China, Vietnam and Thailand have big potential for future RBO production.

Rice Bran Yield in Japan

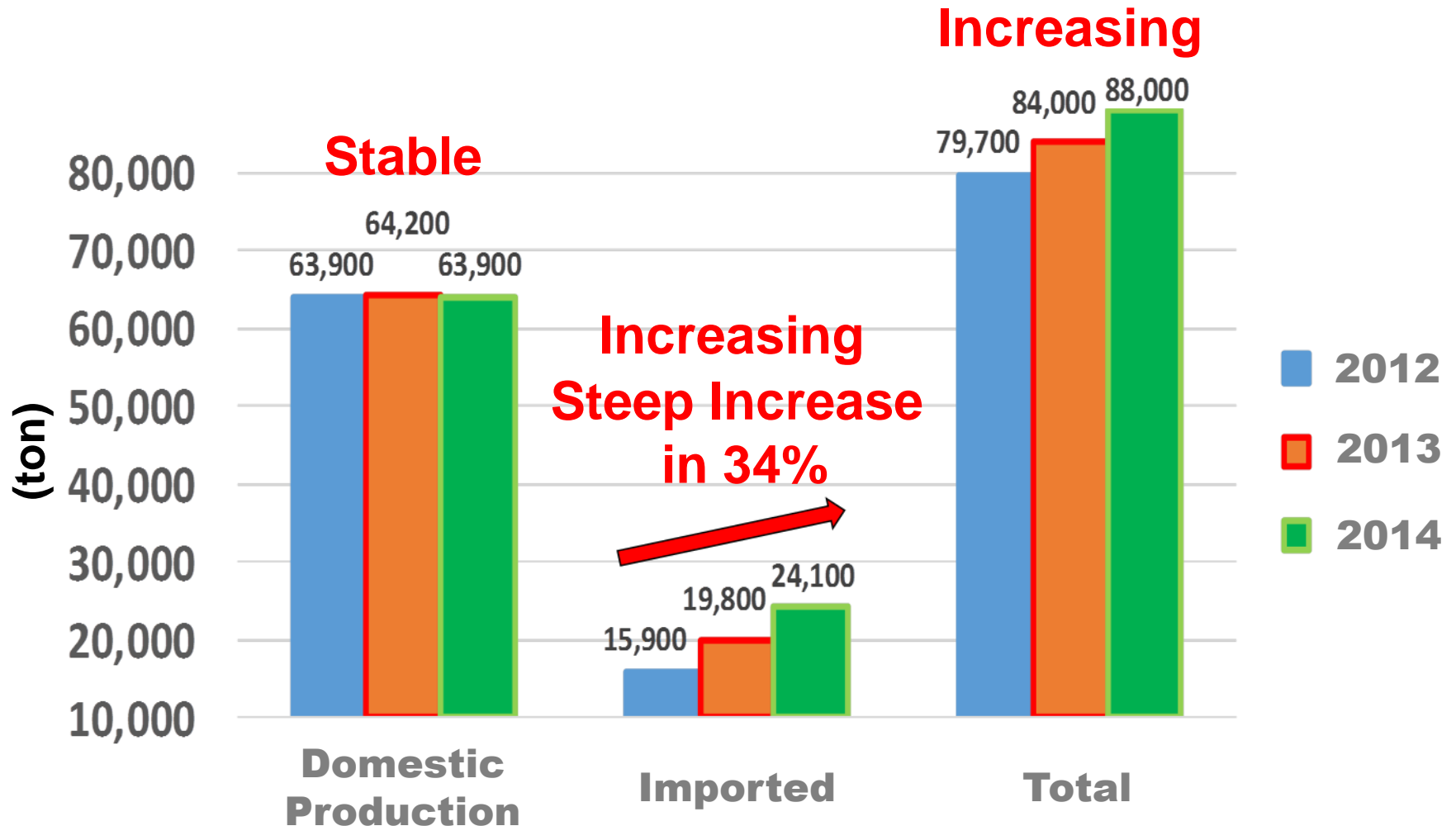


Imported crude RBO is from Vietnam (9318 ton), Thailand (970 ton) and Brazil (1779 ton) in 2014.

The rice bran yield is estimated by the amount of rice harvested (as a staple food) x 0.08.

from Ministry of Agriculture, Forestry and Fisheries "Crop Statistics" in Japan

Production and import of crude RBO in Japan



from the data of Ministry of Agriculture, Forestry and Fisheries, and Ministry of Finance in Japan

RBO market is expanding in Japan

Until Now

Potato Chips
Rice Snacks
School Lunches



From Now

Frying Oil
Healthy Oil

for household use &
restaurant due to high
stability of RBO

Dietician of nursery school recommends RBO as safe oil



食事と健康の
現場レポート

鹿児島県の保育園
栄養士さんの間で広がる

安心して使える 安全なごめ油の輪

子供たちの安心・安全な給食を支える「ごめ油」

鹿児島県鹿児島市にある、保育園
則は、0歳～5歳児6名が通う
保育園です。子供たちが安心して
食べられる、安全でおいしい給食
を体感している同保育園では、二
年ほど前から和食給食への移行を
開始。また調理に使用する油を、
すべて「ごめ油」に切り替えまし
た。そのきっかけとなったのは、
鹿児島県保育園連合会主催で行なわ
れた講演会でした。

講師として招かれたのは、以後
月刊「茶の葉」二〇一〇年一月号
で紹介した栄養士の渡辺佳穂先生
です。子供の食事には日本人の体
質にあった油を摂りたいという渡辺
先生の講演の中で、日本人の主食
である米の、米ぬか（〇〇%）を原
料としてつくられる「ごめ油」の

食の安全への意識が高まる昨今、
自分の体を作る食べ物には
どうしても敏感になることを覚悟させん。
特に幼い子供には、安心・安全なものを食べて
健康に育ってほしいというのは、親しみが尽く
憂鬱を願うではないでしょうか。そんな思いを強く抱き、
全国の保育園により良い給食を創出している
栄養士さんがいます。その方が鹿児島県に
目を向けている食料は「ごめ油」。
鹿児島県の保育園の現場で広がり始めた、
「ごめ油」の今に迫ります。



この日の給食のメインのおかずは、鹿児島県産の鶏肉揚げ。

安全性・信頼性についても紹介さ
れました。この講演を聞いた園
長や副園長の芳元廣和理事長はすぐ
さまざらの保育園で実践。より安
全で、安心できる給食を目指して
メニューの改善に取り組み、「ごめ
油」の使用を開始したのです。

**安全に肌を配る現場で
実感するごめ油の安心感。**

「保育園の給食の味を考えると
栄養士さん、白川香登先生にも、
「子供たちが毎日口にすることも
ですから、おいしいのはもちろん

In Japan, about 40% kindergarten, nursery, elementary and middle school use RBO for cooking during lunch and dinner meals.

RBO is considered as a healthy and good cooking oil for food such as tempura and tonkatsu.

For confectionary companies, RBO is used for making snack food such as potato chips, rice cracker, and so on, due to its good taste and color.

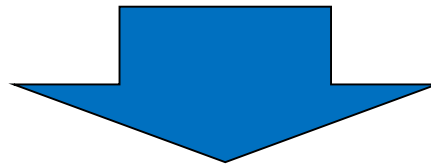
Market characteristics in Japan

Rice Bran Price < **Rice Bran Meal Price**

Historically until now, RBO market has been limited only in Japan. From now, it may expand more globally.

To utilize the **rice bran meal**, basic research has been extensively carried out and the market has been significantly developed in Japan.

The **rice bran meal (defatted rice bran)** is used for livestock feed, and for veterinary medicine.



The price of **rice bran meal** is comparatively higher than the price of **rice bran oil**.

Price of RBO in Japan

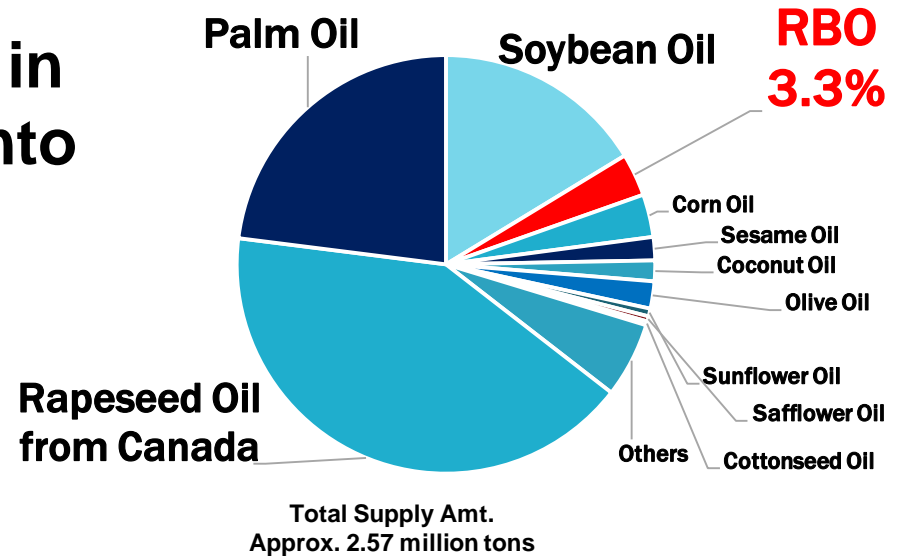
The price of RBO is rather higher than other cooking oils due to the time-consuming manufacturing processes.

120-150% of soybean oil and rapeseed oil price.

150-200% of palm oil price.

Due to the healthy oil trend in recent years, RBO comes into the spotlight as a new premium and healthy oil.

Vegetable Oil In Japan (2012)



from Japan Oilseed Processors Association Website

Reasons why RBO is popular in Japan

(1) For Cooking

- 1 **No tired ! (Heta-ra-nai)**
- 2 **No bad smell ! (nio-wa-nai)**
- 3 **No bad taste ! (kuse-ga-nai)**

Used for a wide variety of products including snack food such as potato chips, and *karinto* (fried dough cookies), fried rice crackers, and instant noodles, and even professional chefs prefer and use it.



RBO is approximately 1.5 times stable against oxidation than rapeseed oil and soybean oil and lasts longer... So it is **greatly effective** for small scale shops and restaurants.

Reasons Why Expensive Rice Bran Oil is Popular in Japan

(2) For Nutrition

- Anti-oxidative

γ -ORYZANOL

- Menopausal symptom improving
- Hyperlipidemia improving
- ... 300 mg/day (minimum required)
- Anti-oxidation

Vitamin E (VE) \rightarrow Toc + Toc-3
Super Vitamin E = TOCOTRIENOL

- Anti-oxidation
- Cholesterolemia reduction and prevention
- Arteriosclerosis prevention
- Anti-tumor

- Cholesterol-lowering

Plant Sterol

- Cholesterol-lowering



Foods for Specified Health Uses (**FOSHU**)

Reasons Why RBO is Popular in Japan

Introduced on TV

RBO the oil which prevents arteriosclerosis
Super Vitamin E



Grad school, Tohoku University
Professor Teruo Miyazawa

On TV Tokyo program “*Shujii ga mitsukaru shinryô jo* (Clinic For Finding a Doctor)”

RBO future prospects in Japan

Current issues

- Reliably securing raw materials for RBO and maintaining the quality.
- Effective utilization of RBO by-products.
- Foreign crude RBO with a suitable quality and price.
- Improvement of added value of defatted rice bran from overseas.

Future prospects

- The great nutritional properties of RBO are taken into account, more consumers will be attracted to and purchase the RBO product.

RBO is “A TASTY AND HEALTHY OIL” for promoting our longevity.