



Chinese castor seed crop and castor oil consumption outlook

**Hengshui Jinghua Chemical Co.,Ltd.
Ri Zhao Steel Group - China**

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RI ZHAO STEEL GROUP HENGSHUI JINGHUA CHEMICAL CO., LTD.

Ri Zhao Steel Group was set up in 2004, which has 26000 employees. Its main business is steel、 investment、 real estate、 chemicals etc. Its turnover is \$10 billion. Hengshui Jinghua Chemical Co., Ltd. is subordinate to Rizhao Steel Group. It's the biggest manufacturer of sebacic acid and has two automated production lines and produced 35.4 KT sebacic acid in 2015, which accounts for 52% of global market.

It consumes 70000mt of castor oil per year.

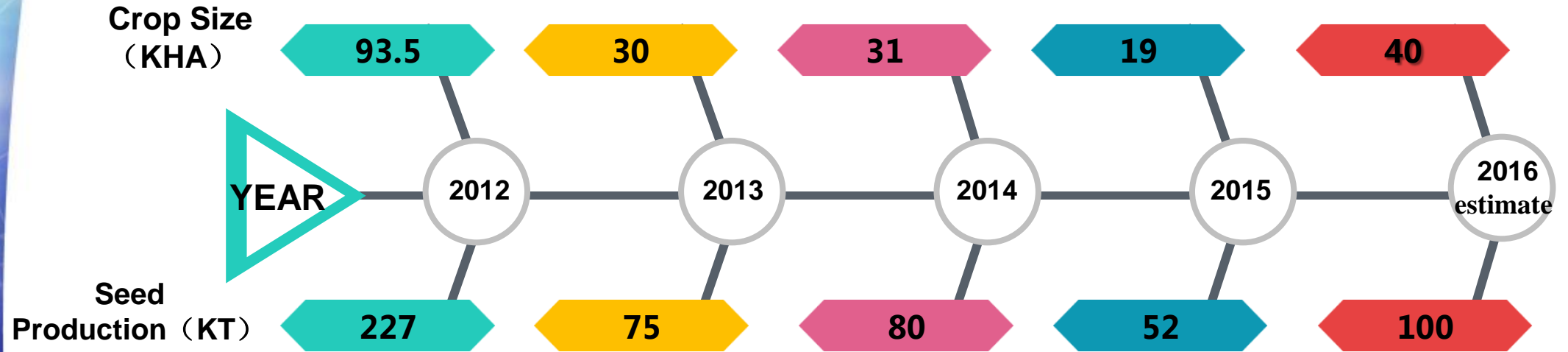
Castor oil is the main material of sebacic acid. About 1.9MT of castor oil can get 1MT of sebacic acid. The byproducts of sebacic acid are sec-octyl alcohols, fatty acid, glycerin, which are widely used in alcohol, plasticizer, painting and other industries.

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2012-2015 Chinese castor seed crop size and castor seed production



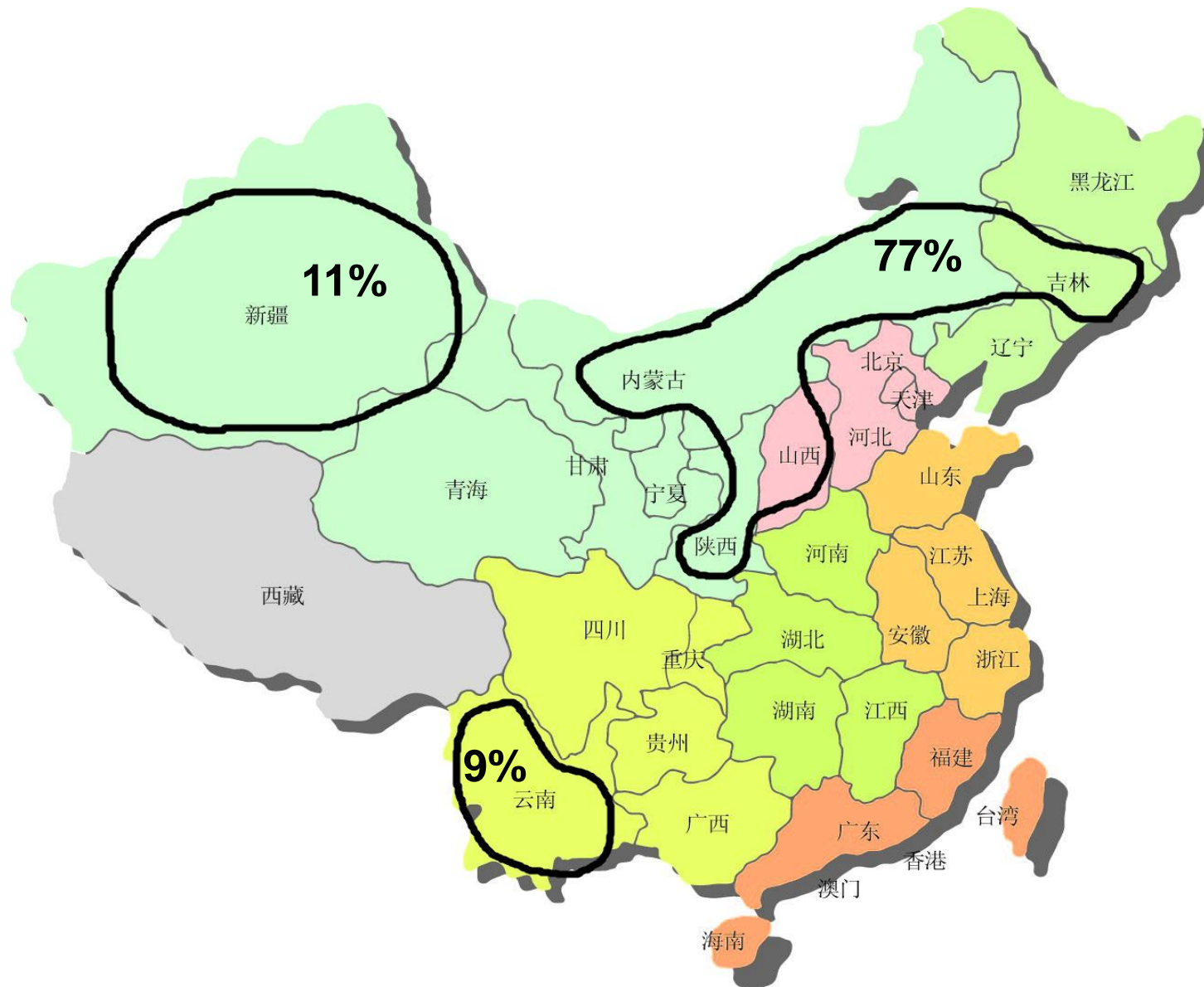
Since 2015, the price of world's major food crops fall constantly. Corn, wheat, cotton etc.had gone down by at least 26%. At the same time, Chinese government reduced the financial subsidies to the above mentioned crops. It causes the castor which doesn't have subsidy from the government , has the advantage to the other crops. Moreover the economic benefits of castor plant is gradually embodied, so the Chinese castor crop size will be enlarged by some extent from 2016, which is bound to influence Chinese castor oil import.



Chinese castor seed crop size distribution



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Ji Lin	40%
Nei Mong Gu	22%
Xin Jiang	11%
Shan Xi	10%
Yun Nan	9%
Shan Xi	5%
Others	3%



2012-2015 Chinese imports castor oil from India (MT)

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YEAR MONTH	2012	2013	2014	2015
JAN	6027	17500	17505	8300
FEB	4402	23708	11392	14734
MAR	15229	26814	17054	17120
APR	11358	14513	13211	19420
MAY	13030	24451	20388	20890
JUN	9922	28154	14650	19273
JUL	22521	26066	15837	14733
AUG	27709	17737	12350	16010
SEP	24173	15394	13004	14365
OCT	25498	9912	4986	18222
NOV	12613	6597	7527	24477
DEC	10031	16165	11597	20068
TOTAL	182513	227011	159501	207612

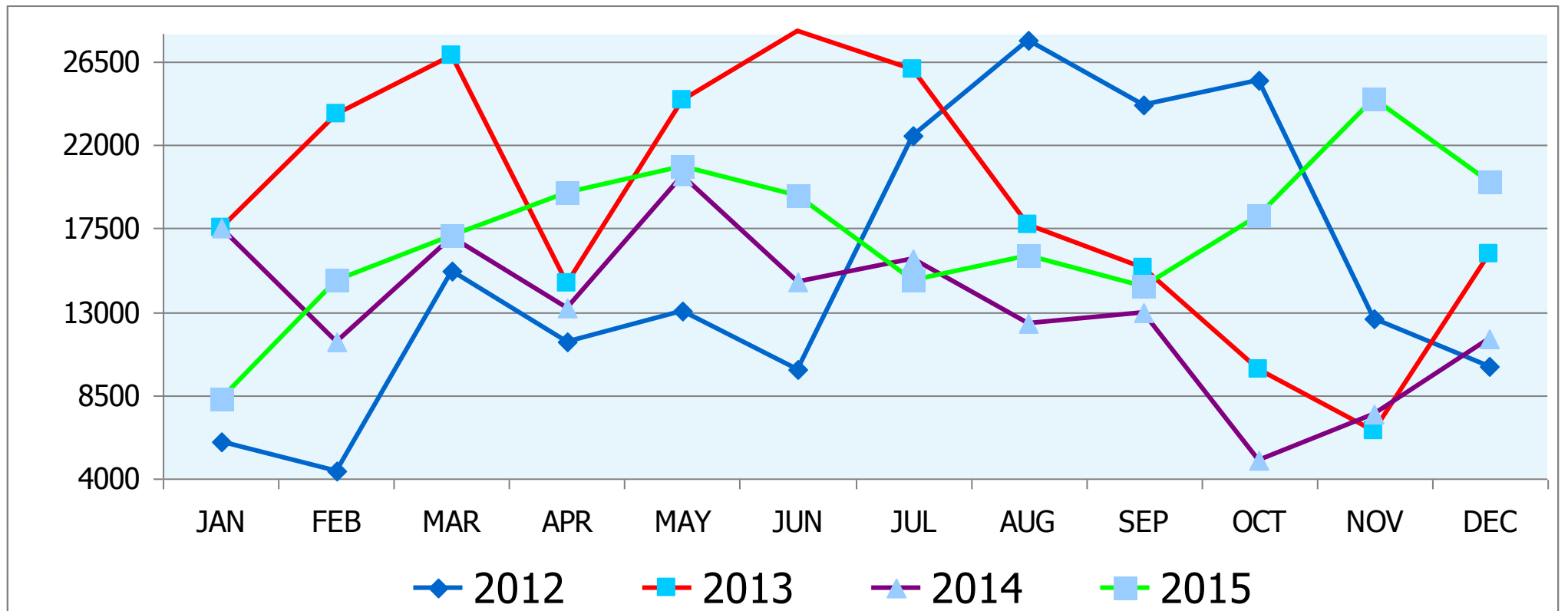




2012-2015 Chinese imports castor oil from India monthly



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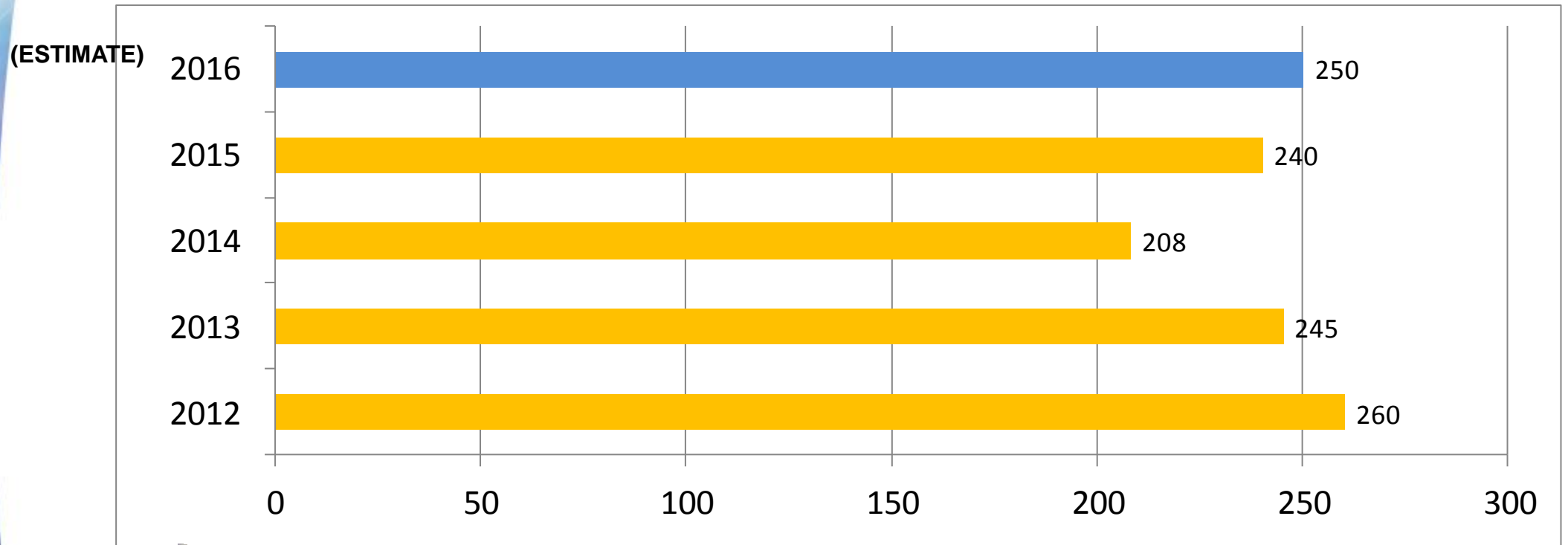


China purchases castor oil every month in the whole year, but the month highest and month lowest is different every year, there is no regular pattern.



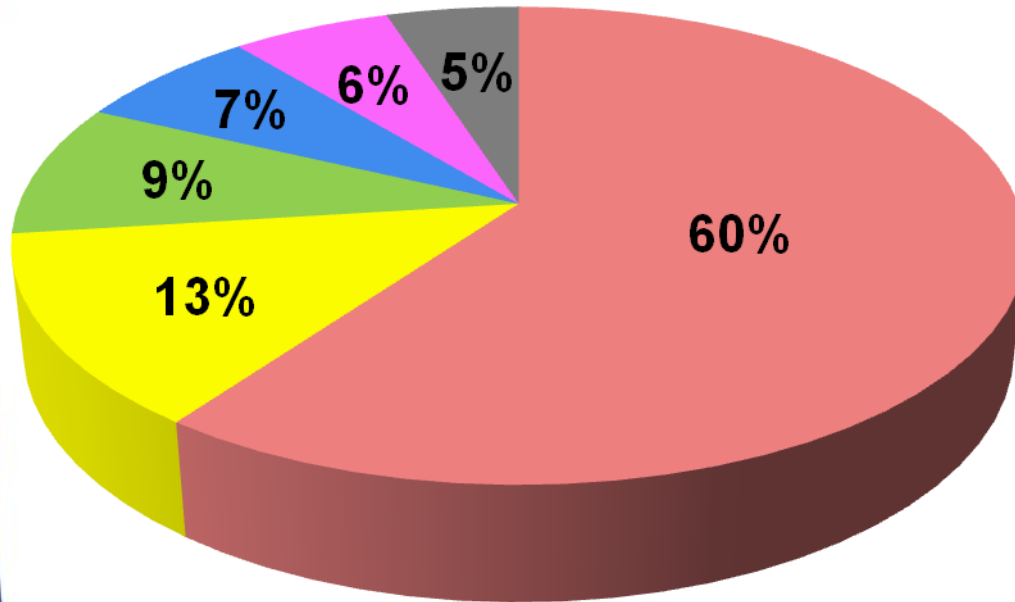
2012-2015 Chinese castor oil annual consumption(KT)

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Chinese castor oil usage distribution in 2015



- SEBACIC ACID
- 12 HYDROXY RICINOLEIC ACID
- PAINTING
- PRINTING AND DYEING
- ADHESIVE
- OTHERS

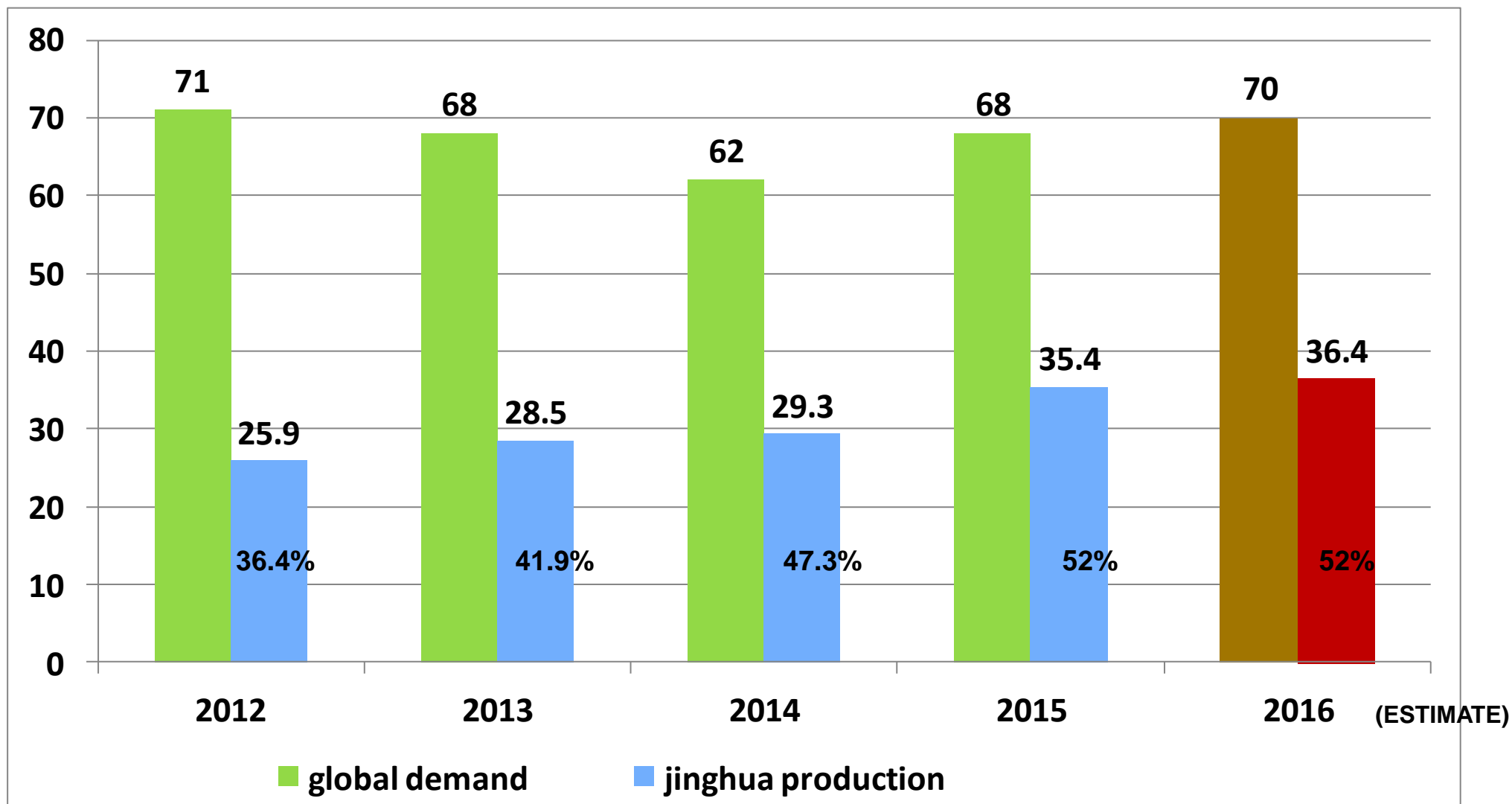
USAGE	KT
SEBACIC ACID	144
12HYDROXY RICINOLEIC ACID	31.2
PAINTING	21.6
PRINTING AND DYEING AUXILIARIES	16.8
ADHESIVE	14.4
OTHERS	12



2012-2015 Global sebacic acid demand and hengshui jinghua production (KT)



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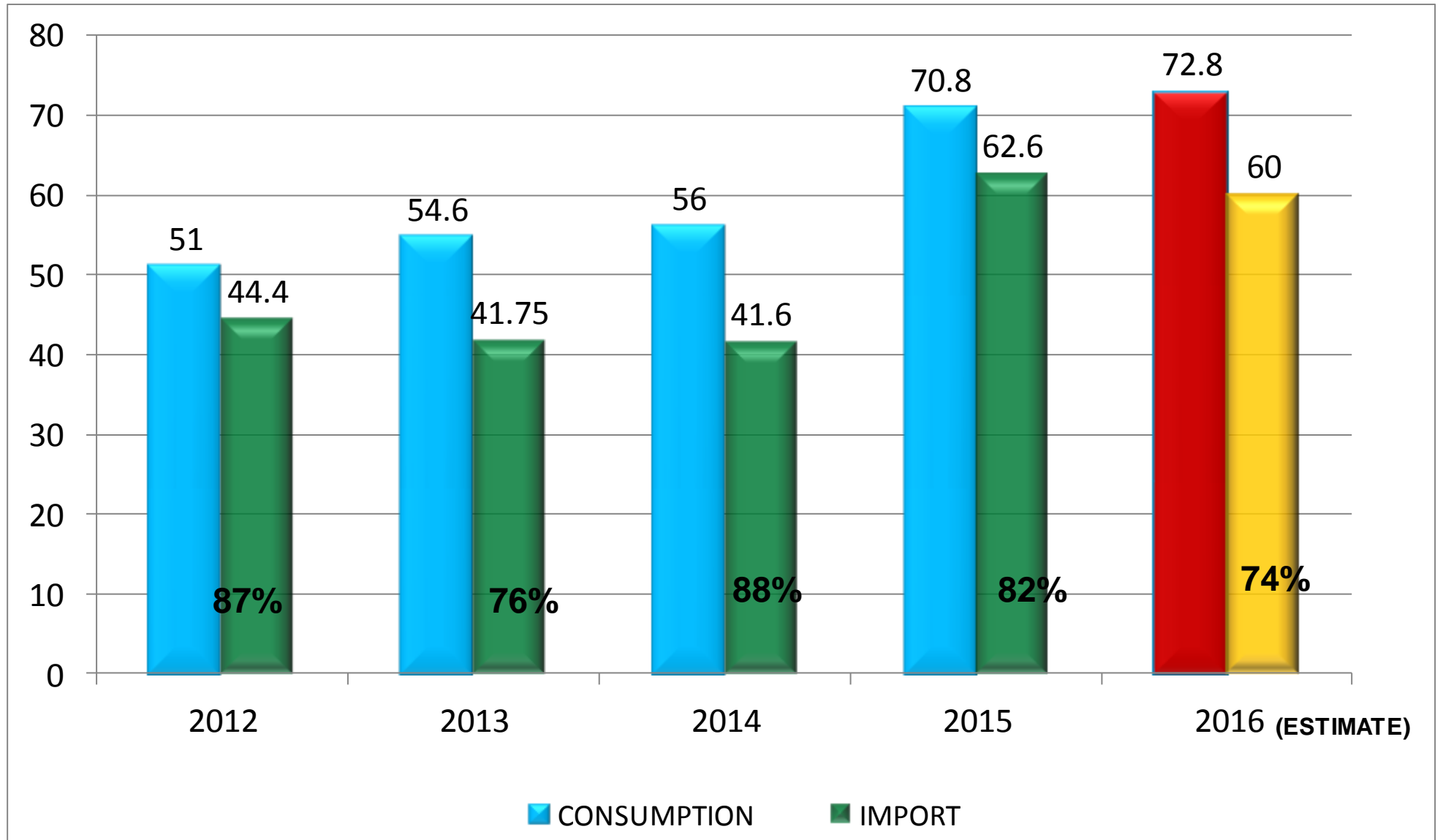




2012-2015 Hengshui jinghua castor oil consumption and imports (KT)



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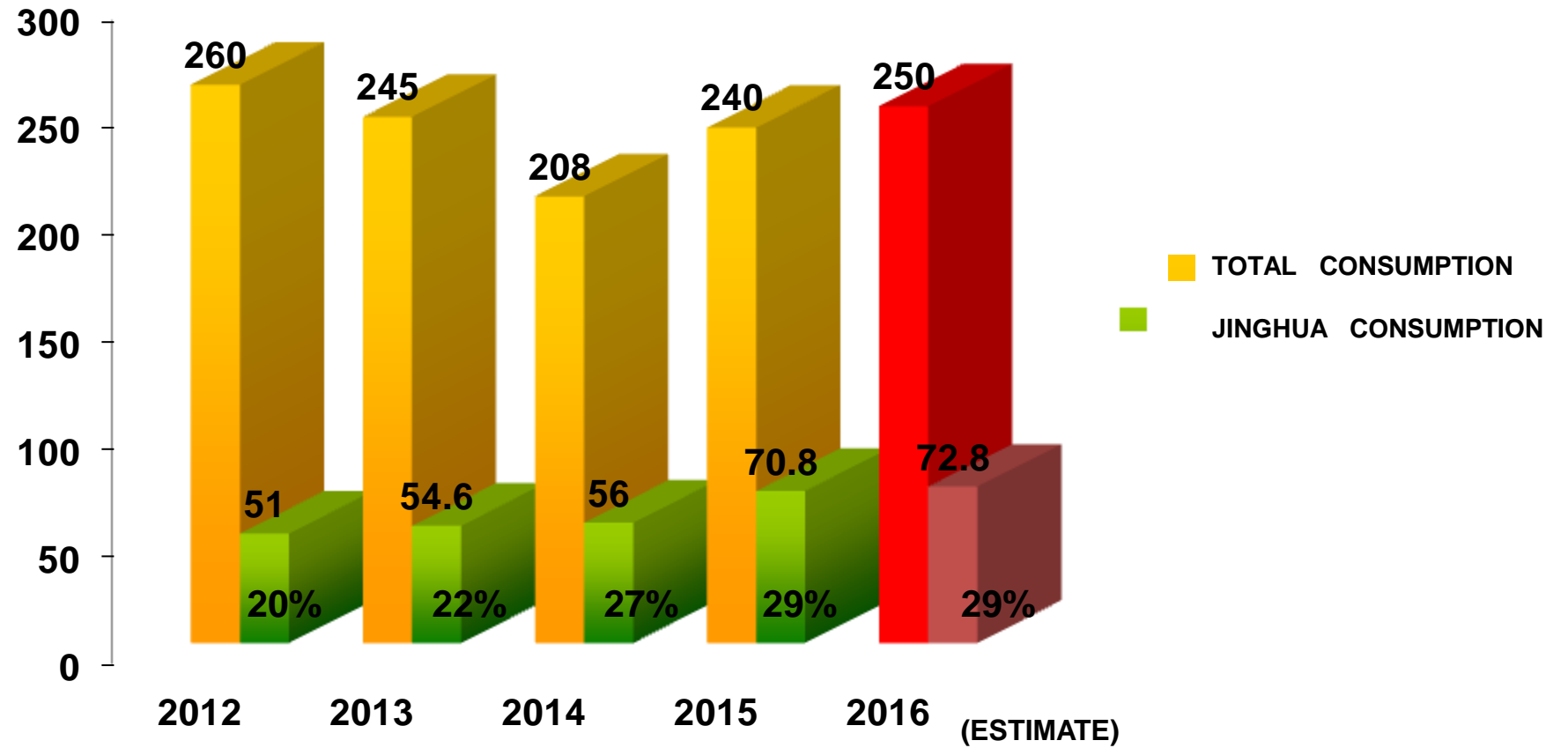




2012-2015 Chinese castor oil consumption and hengshui jinghua consumption (KT)



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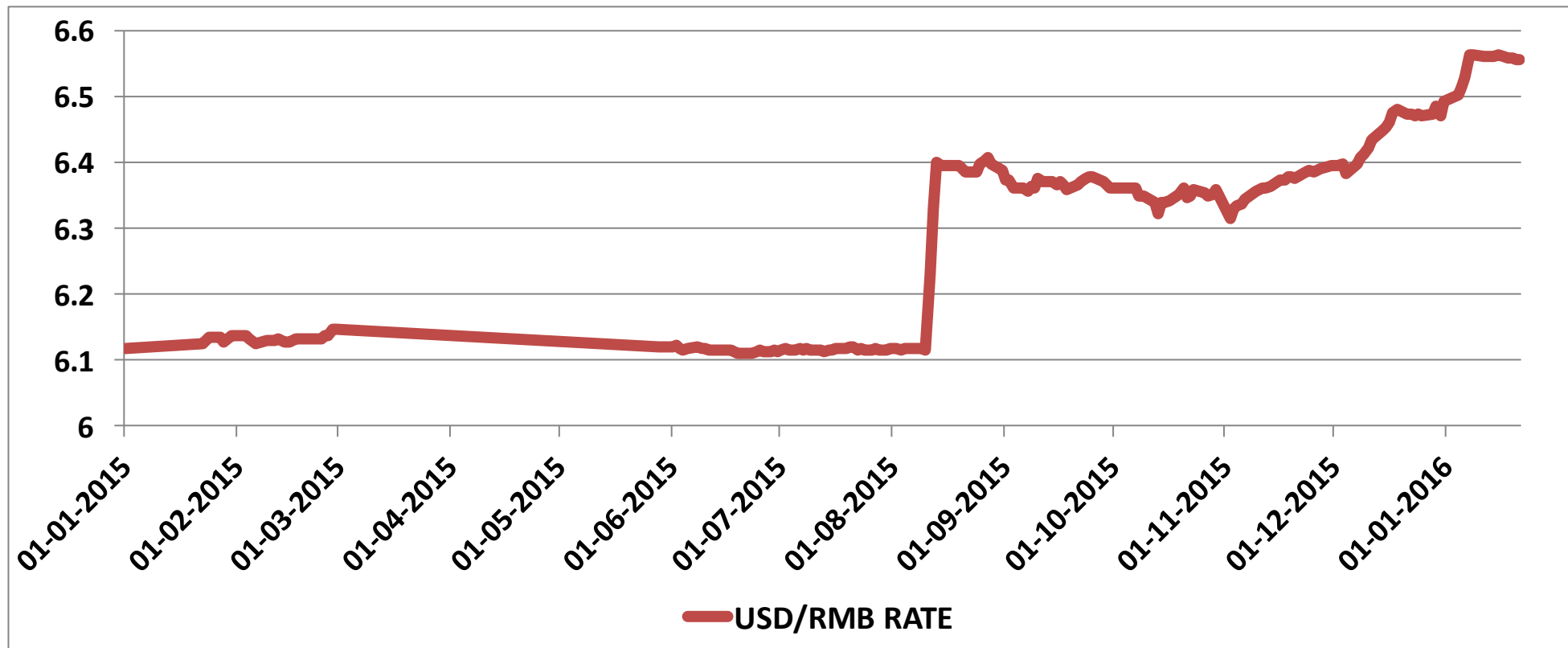




2015-2016 USD VS. RMB exchange rate



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Since Aug. 2015, the RMB devaluates rapidly, which leads to that the procurement price of castor oil had not fallen synchronously in the process of castor oil price fall.



Global sebacic acid manufacturers and capacity distribution

COMPANY	REACTOR	CAPACITY(KT)
JING HUA	64	40
CASDA	64	40
SI QING	29	18
WILMAR	40	25
DE LONG	16	10
XIAO YI TIAN YUAN	16	10
HE QU ZHEN GANG	8	5
TONG HE	24	15
BAI CHENG	6	4
ZHONG ZHENG	16	10
TIAN XING	24	15
WU XI YIN DA	16	10
INDIA		30
TOTAL		240

The global sebacic acid capacity are mainly concentrated in China, in addition, three are three in India and one in Japan . China's production capacity reaches to 210 thousand tons per year, and India's production capacity is about 30 thousand tons per year.



The situation of global sebacic acid

Sebacic acid is the main application of castor oil. There are 16 manufacturers globally among which are mostly in China. The total capacity is 240,000MT. A few of them like Jinghua and Casda cover 90% of the market share. They master the core technology of producing sebacic acid and take advantage in equipment automation、detailed management and clean production. China, as the major production country, has the complete production line from manufacturing to the processing by-product.

The traditional market of sebacic acid is Euro、USA、Japan and China. The downstream products of sebacic acid market is gradually transferring to China with the rapid economy development. The consumption is growing speedily and now China is the biggest in the world.



Brief introduction of sebacic acid



CURRENT SITUATION OF SEBACIC ACID

There's no fundamental change for the future market of sebacic acid. Nylon, esters and coolant are still the three major applications of sebacic acid and cover 40%, 30% and 10% separately of the consumption. China, Euro, USA and Japan are the main market of sebacic acid which take over 40%, 30%, 9% and 9% respectively. The customers change their purchasing habit according to stable production, good quality and reputation not only depend on price. At the same time, the research of sebacic acid application in biofuel has achieved great improvement. The research in high performance lubrication is doing now.

SITUATION OF BYPRODUCTS

2-Octanol It decreases as the additive in alcohol. The price and quality of plasticizer DCP is approaching DOP.

The price of fatty acid is going down which enlarged its application.

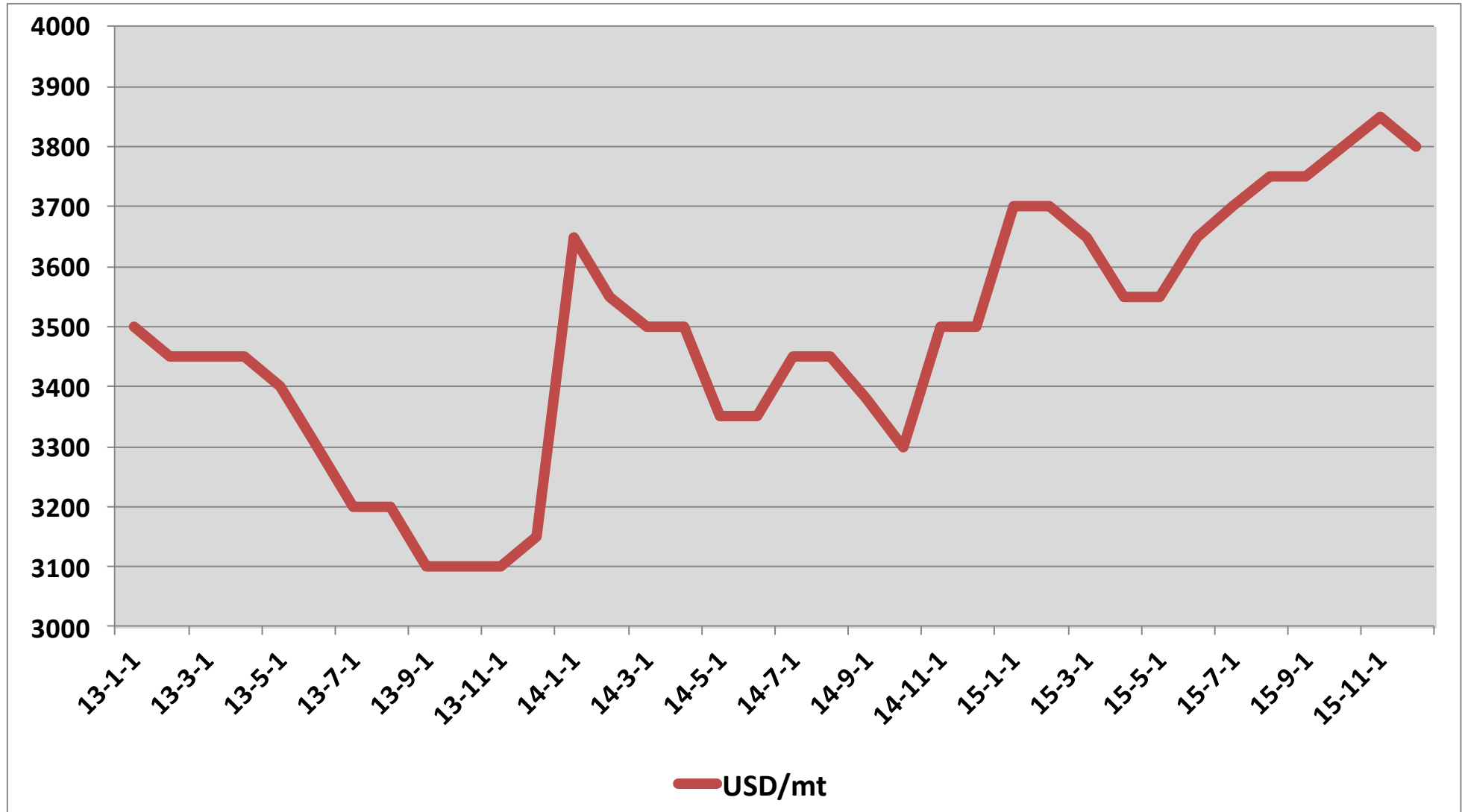
Sodium Sulfate now becomes the largest product which is twice of sebacic acid.



2013-2015 The price trend of sebacic acid



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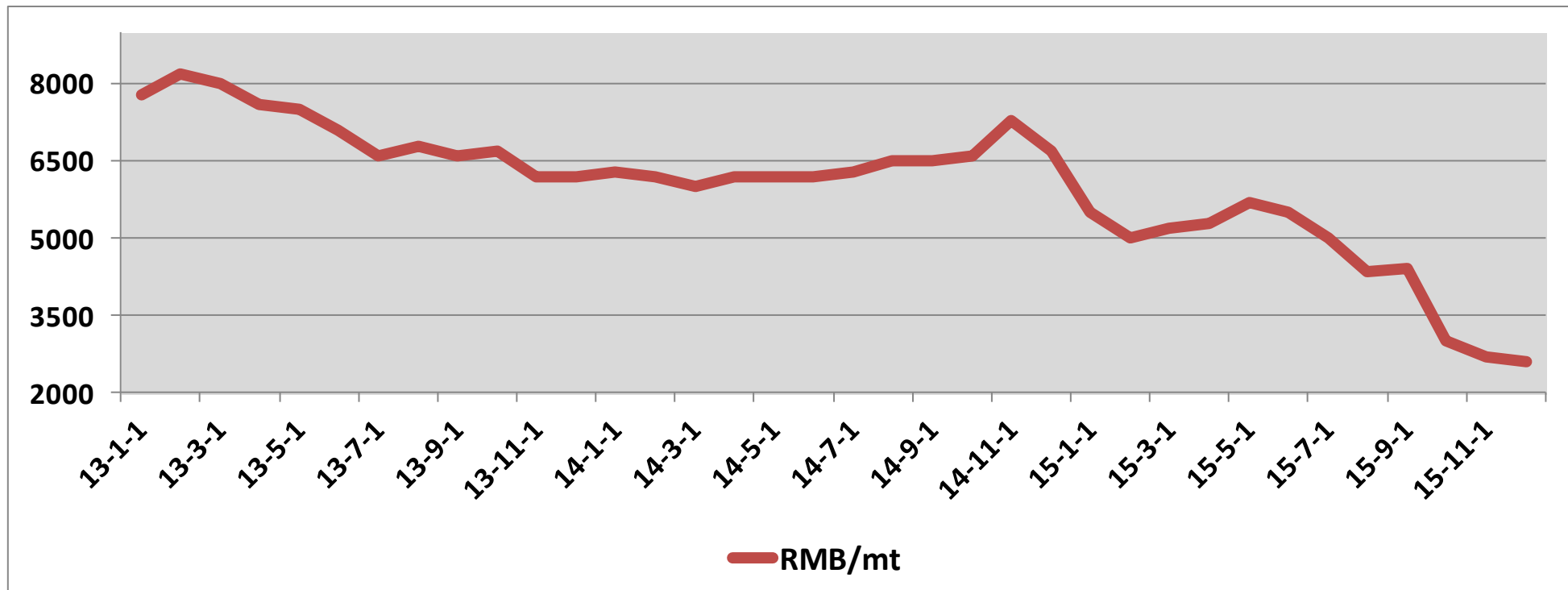




Introduction of by-product



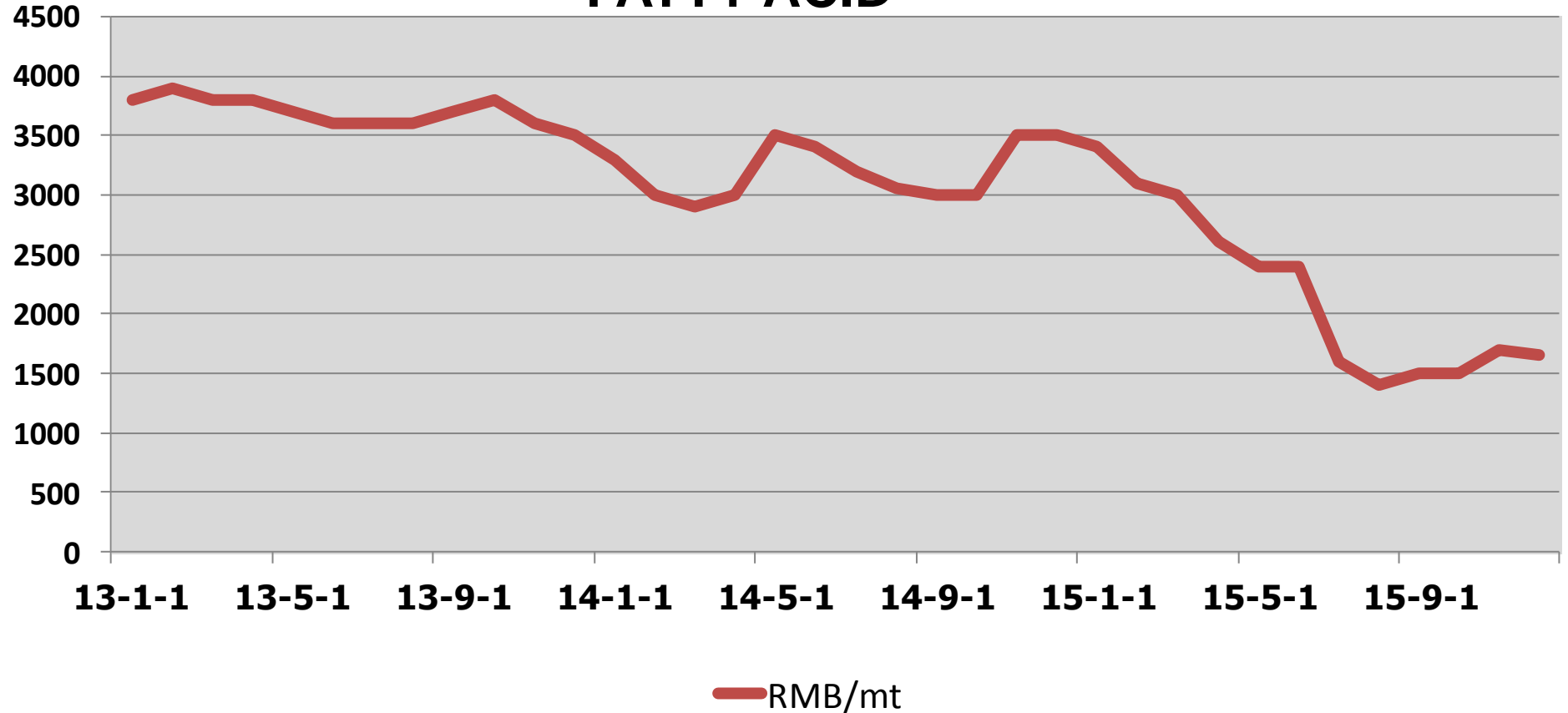
2-OCTANOL



2-Octanol is the largest by-product which is about 680kg when get 1MT of sebacic acid. The major application is ethyl caproate and DCP. The price is affected by octanol. The above is the price trend of 2-octanol in recent three years.



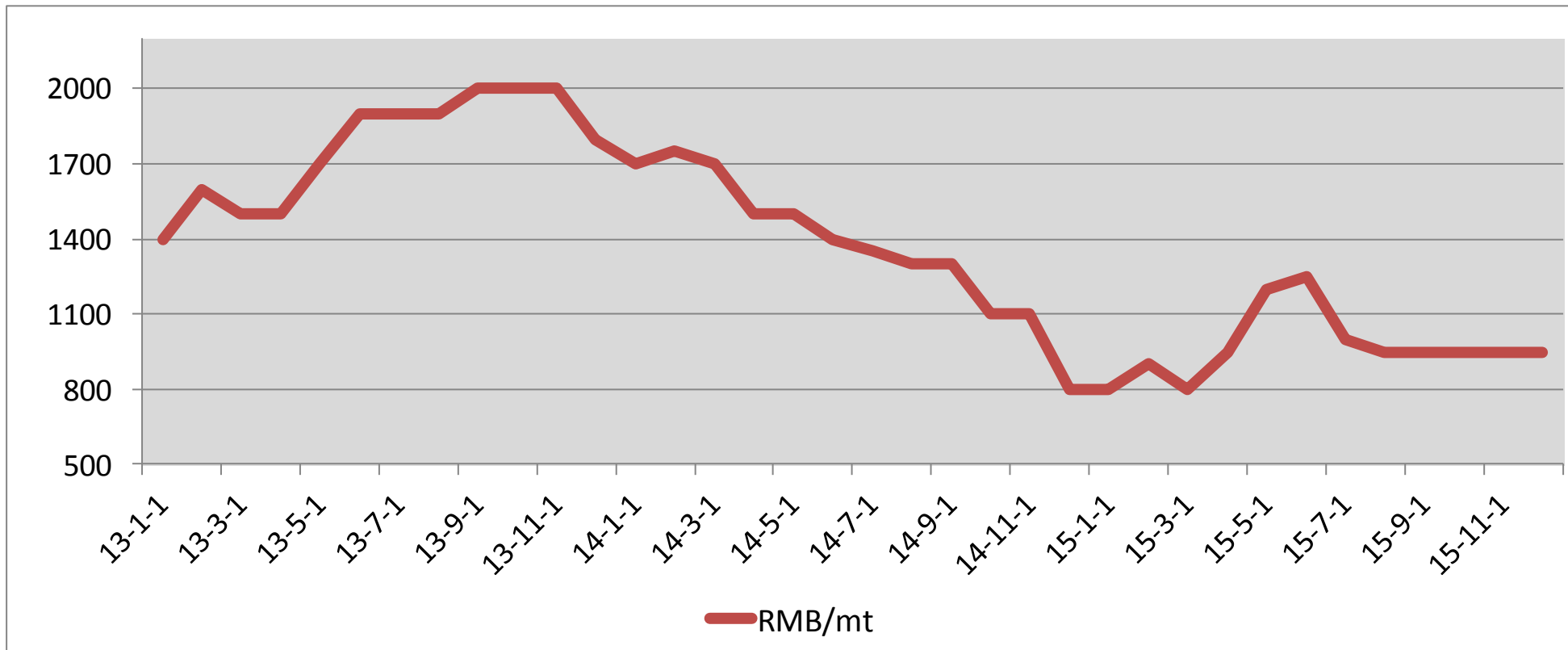
FATTY ACID



Fatty acid is another by-product of sebacic acid which is about 380kg when get 1MT of sebacic acid. It's a typical chemical material which can be used as the raw material of painting, bio deisel and fatty acid salt. Above is the price trend in recent three years.



GLYCERINE



110kg of glycerine can come out when producing 1 MT of sebacic acid. We only produce crude glycerine with the content of 80% which is the raw material of refined glycerine. The price is influenced by the import.



At present, the global capacity is 3.5 times of the global demand, the sebacic acid market competition is intense, it leads to that global two-thirds manufacturers are in a state of shutdown, which is also the main reason for the long-term poor benefit of sebacic acid market.

Thank You

