

Trend watch

Indian Mint Oils

The present and future outlook for India's production of *M. arvensis*, *M. piperita* and *M. spicata*

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Natural essential oils are not only important building blocks in modern day perfumery but are also the best sources for blending natural flavors/fragrances either by direct addition or through their isolates. During a recent conference, Christophe Maubert, the president of Robertet's fragrance division, said that "all the successful fragrances of the last 50 years have been based on naturals." Although perfumers have been using synthetic molecules very lavishly, they have to rely on natural essential oils in order to impart a uniqueness or naturalness to their creations.

With the advancement in mint oils, India has become the largest supplier of essential oils worldwide. In this article, I will discuss the present and future scenarios of mint oils from India.

M. arvensis Oil

China, an important producer of *Mentha arvensis* oil until 1991, has diversified into other more lucrative crops, leaving the field open for a new leading producer. India has answered the call and has accelerated its R&D efforts on cultivation as well as processing to guarantee its number one position in world markets; these R&D efforts have placed the country at least five years ahead of competing cultivators (see F-1). Now, India has positioned itself to be the most competitive source for *M. arvensis* oil for many years to come.

Factors in favor of India: There are many reasons Indian producers are able to face competition from other countries, specifically China. They include:

- Yield/hectare of oil (KOSI yield is 140-160 kg/hectare)
- Low cost of cultivation
- Not many alternate crops during the March to August period
- R&D efforts by Indian Institutes — introduction of KOSI by CIMAP
- Low margins of operations

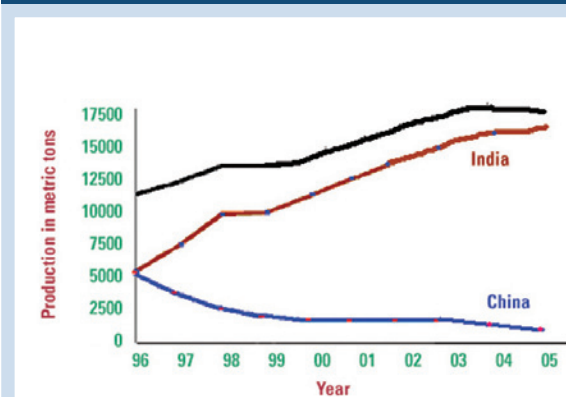
- Huge investments in trading of oil as *commodity*
- Appropriate investments in processing, value addition and R&D by industry

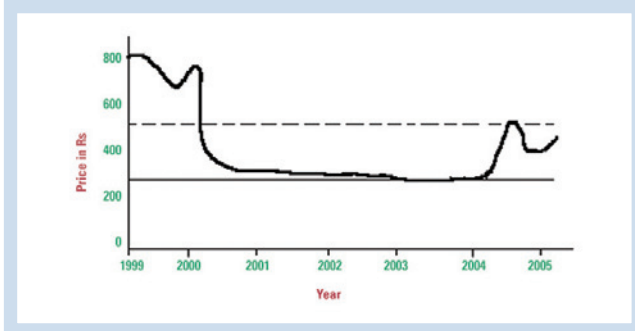
How India is able to sustain production: All of these factors have made India the most competitive source for mint oils. In addition, no other country will be able to surpass the Indian market's four features — quality, consistency, reliability, and most important, price — for years to come.

Prices of *M. arvensis* oil have been steadily below Rs. 400/kg for a long period (see F-2). Still, there exists a tendency for a spike in prices, such as what

Total world production of *M. arvensis* oil

F-1





happened in 2004. This raises two important questions:

- Why are such fluctuations so common in the Indian system?
- Is the production of oil just matching the consumption?

It is important to discuss these points in order to see the true position of *M. arvensis* oil in the future.

Fluctuations: Price fluctuations for *M. arvensis* oil and its isolate, menthol, are quite a regular occurrence. With the present estimated consumption of 13,000 metric tons of oil, this commodity is of prime importance.

F-2 shows some abnormal peaks denoting fluctuation in prices. I will not discuss the phenomenon of 1996, when apparently there was some shortage of oil. However, during 1999 and 2004, there was practically no shortage of oil; crop growth was normal, production was normal, yet prices reached abnormal figures. This is because there is an inherent tendency to speculate in the Indian crop trading system; in virtually in all commodities, many Indians invest their money and try their luck.

During 1996 and 1999, many speculators lost heavily and, as a result, there was steady business in between 1999 and 2004. Again in 2004, some strong financial groups decided to corner the oil market to such an extent that artificial shortages were created. As a lot of money was at stake, these speculators were successful for a short period. However, they could not keep the price levels up for a longer period and started losing money again. Perhaps their calculations did not work out; what those calculations were will be discussed later.

How these fluctuations affect the future of the crop: These fluctuations act as a “warning system” to the industry, reminding everyone that allowing prices to fall below a certain level will cause havoc. In addition, these fluctuations in prices act as a catalyst in increasing the amount of crop under cultivation. Whenever the price is above the normal price, many of the growers/distillers dispose off their stocks and earn extra money. This extra money earned by the growers acts as a stimulant for growing more and more for the coming years.

Had there been no fluctuation in prices in 2004 and 2005, 2006 would be the year of disaster. Production for 2005 is estimated at 16,000 metric tons. The area of this crop under cultivation is up by 10-15 percent, and this

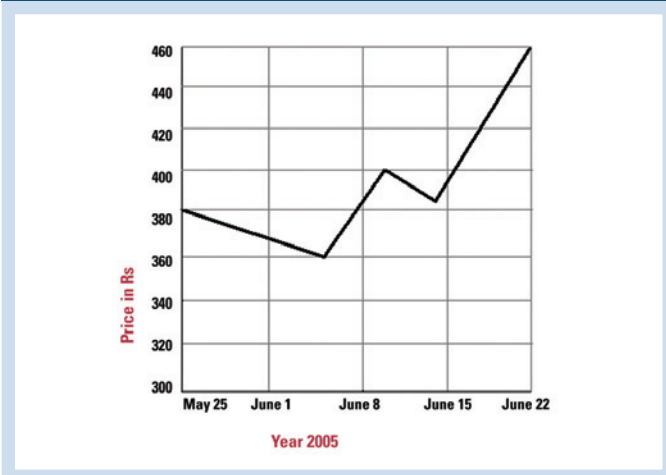
would be enough to save the industry from disaster.

Abnormal prices May-June 2005:

Another question is why the price of *M. arvensis* oil has not touched the ground level even when a huge crop is waiting? In effect, prices have moved up to such a level, which is surprising (see F-3).

Price of *M. arvensis* oil May-June 2005

F-3



Consider the price of oil on May 25, 2005. At this time of year, when new oil is about to enter into markets, the price of Rs. 380/kg is abnormal. Moreover, the jump in price to Rs. 450/kg on June 18, 2005 was part of another wave of speculation.

Why is there a jump in price at this time of the year? Arrivals of oil are thin, and when the pipeline is empty, the demand is higher. Carryover stocks are limited to 2000-2500 metric tons, which are in strong hands. If this price can be held for 15-20 days, speculators would be in a position to clear their old stocks and many growers would benefit.

Future scenario of *M. arvensis*: Looking at F-4, there is no doubt that production of oil in 2005 will increase by 10-15 percent. This will be sufficient to create a buffer stock of 4000 to 5000 metric tons, unless:

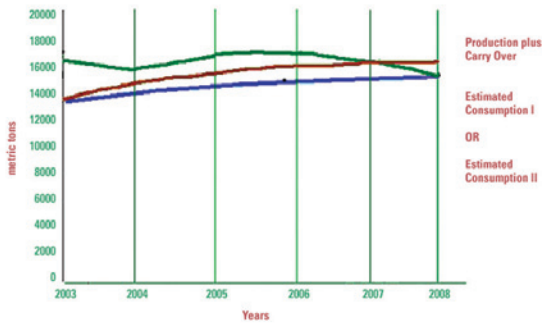
- World consumption of *M. arvensis* oil or its isolates (without addition of synthetic menthol) increases by ~15,000 metric tons
- The crop is affected by abnormal weather conditions
- Another speculative period occurs

If the above factors do not affect the buffer stocks, prices will remain steady for several years to come and are not likely to skyrocket until 2007.

Why speculation in 2004? As for the last question about *M. arvensis* oil, why did some participants in the market decided to speculate in 2004 and what

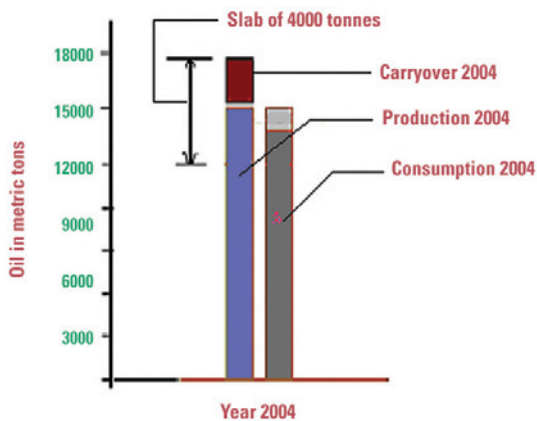
Available supply of *M. arvensis* oil and consumption

F-4



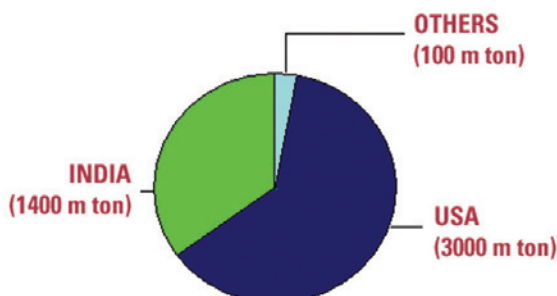
Production, consumption and 2003 carryover of *M. arvensis* oil, 2004

F-5



Breakdown of global production of American mint oil; total: 4500 metric tons

F-6



were their calculations? If anyone can disclose or answer these questions, he would be entitled to an award. I can only guess because I never met any of the speculators during the past year. One guess can be based on the following assumptions:

- China's production of *M. arvensis* oil being below 2000 metric tons
- Carryover of stocks from 2003 were only around 2000 metric tons
- Consumption of *M. arvensis* oil has crossed approximately 15,000 metric tons
- Under the above assumptions, if 4000 metric tons of oil is cornered, an artificial shortage can be created

Although speculators did not succeed in their plans, they indirectly encouraged growers to grow more for the coming years, saving the industry from a possible disaster in 2005/2006 (see F-5).

M. piperita Oil

Mentha piperita oil is another mint oil where India is showing great possibilities. India is in direct competition with the United States, which is the largest producer of *M. piperita* oil. World production of American mint oil (*M. piperita*) is about 4500 metric tons, and India's share is only 30 percent (see F-6).

Looking at production figures from the last 10 years, it is evident that production in the United States is declining, but at a slow pace, while India has gained substantially during the last three to four years (see F-7).

Factors in favor of India: As described in previous section related to *M. arvensis*, India has many factors in its favor:

- Yield/hectare is comparable to the United States
- Low cost of cultivation
- Competition with *M. arvensis* only
- Low margins of operations
- Huge investments in trading as *commodity*
- Suitability of climatic conditions of North/South India

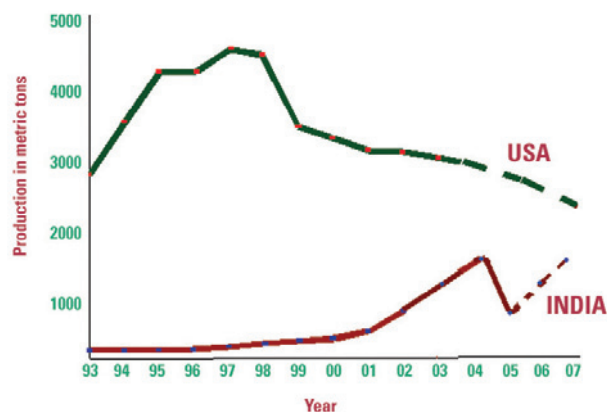
There are also many factors working against India:

- No successful introduction of new variety or improved strain by R&D labs in the last 20 to 25 years
- Quality is still inferior to American production
- Low awareness of quality management

If India is able to solve these problems and offer oil of acceptable quality to the

Mentha piperita oil production in the United States and India by year

F-7



global market, the country will soon become a force to reckon with.

Popularity of American/Indian

blends: It is quite surprising that production of *M. piperita* oil is declining while peppermint oils consumption is increasing every year. Even if we add the production of Indian *M. piperita* oil to American production, it still cannot fulfill the demand. However, there is no doubt that blends of American and Indian peppermint oils are becoming quite acceptable to end users, particularly in chewing gums, toothpastes and pharmaceuticals. In addition, a lot of rectified peppermint oil, ex. *M. arvensis*, is also going into some blends in order to compete on costs and fulfill demand. As Indian *M. piperita* oil is available at half the price, there is a good potential to increase the area under this crop.

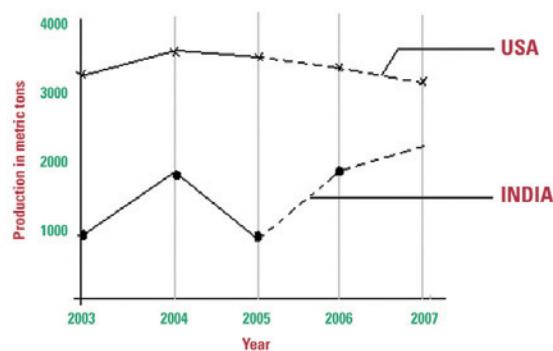
Future trends: As Indian growers are happy with export prices in the US\$14-16 range (the price of American oil is US\$30/kg), we see a great possibility of the area under cultivation doubling in near future (see F-8).

Although American growers have improved on yield/hectare during these last three to four years, their area under this crop is down by 5-7 percent. It appears that the growers may not be able to obtain better yields in the future, and the total production of American mint may decrease to some extent. However, if growers in India make good in *M. piperita* cultivation in 2005, which is likely to happen, the area under cultivation may be doubled next year.

Another alternate to *M. piperita* is either *M. arvensis* or spearmint. If the price of *M. arvensis* is also down, then

Mentha piperita oil production projections for future

F-8



the grower would not have any other alternate except going for *M. piperita* or spearmint. But if the price of *M. arvensis* is lucrative (as it is in the beginning of the year), then area under *M. piperita* may not increase at the desired pace.

Spearmint Oil

Another mint oil of great importance is spearmint, *Mentha spicata*. This oil is a rich source of l-carvone, so synthetic l-carvone is always in competition with this oil. Recently, China has become a player in synthetic l-carvone and as a result, the price of synthetic l-carvone has come down to US\$12 or so.

Although synthetic l-carvone is no match for natural spearmint oil in olfactory characteristics, perfumers and flavorists are always tempted to modify l-carvone with some minor/trace chemicals and use this in their new creations. This happens whenever the price of natural spearmint oil is higher than a certain level, ie. Rs. 600/kg.

Viability of spearmint crop: Spearmint is cultivated in the areas where *M. piperita* and *M. arvensis* are grown, so the three mint crops compete with each other for space. As the yield of spearmint is about 20 percent more than any existing variety of *M. piperita*, its price should be equal or less than that of *M. piperita*. The following equations will be maintained if the area under spearmint is to be enlarged.

$$\begin{aligned} \text{Price of } M. piperita &= \text{Price of spearmint} \times 1.2 \\ \text{Price of } M. piperita &= \text{Price of } M. arvensis \times 2.5 \end{aligned}$$

Future scenario for spearmint: With US cultivation of spearmint declining at a fast rate (in comparison to *M. piperita*) and the existence of American regulations governing the production and sale of spearmint oil, the prospects of growing more in India or China are better (see F-9). With the lack of data on spearmint oil in China, it cannot be estimated whether India will take the lead or if China is in a position to maintain its lead.

Effect of global warming: It is a well known perception that climate is changing year by year. The intensity of heat during day/night and the intensity of rains during seasons are shifting. Under such variable conditions, the effect on growth or survival of crops and yield of mint oils has to be studied systematically. For example, the temperature during April/May 2005 was not very high and farmers could plant mint crops without much damage (see F-10). At the same time, because intensity of heat was low in these months, the growth of crops was also slow; as a result, crops of *M. piperita* and spearmint were delayed by 15-20 days. On the other hand, the growth of *M. arvensis* would be better. If similar changes accumulate in the long run, the whole pattern of crops would be affected.

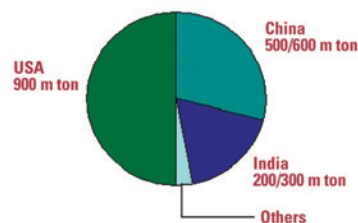
Acknowledgement

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Breakdown of total world production of spearmint oil; total is about 2000 metric tons

F-9



Maximum temperature of New Delhi

F-10

