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Review Article

Promotion of Plant Growth by NO_x Is Best Method to Reduce CO₂ and to Protect Global Warming

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Abstract

NO_x is produced about 1/25 of produced CO₂ when something is burned. This NO_x is fertilizer. And promotor of plant growth. But officials of many country dislike NO_x as pollution substance and eliminating with ammonia. Then CO₂ assimilation is retarded. Food production is retarded. And global warming is progressing. I am insisting that N_{ox} should be released to air as it is NP in drainage is good promotor of CO₂ assimilation. NP in drainage should be used for the promotion of CO₂ assimilation of plant and plankton.

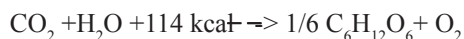
Keywords: Global Warming; NO_x Elimination; Plant Growth; Waste Water Purification; NO_x

Introduction

Promotion of CO₂ assimilation

The earth is warmed by the fossil fuel burning releasing CO₂ and heat. The plant is growing by CO₂ assimilation absorbing CO₂ absorbing sun energy and producing carbohydrate and oxygen. If we can compensate the generation of CO₂ and heat with the absorption of CO₂ and heat by CO₂ assimilation, global warming can be protected [1-21].

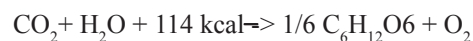
CO₂ Assimilation



Burning Most carbon oxide produced by burning is used for CO₂ assimilation. But 140 billion tone CO₂ is remaining to increase 2ppm each year The increase of CO₂ is the cause of global warming. We must increase the fixing of 140 billion tone CO₂ by increasing nutrient nitrogen and phosphorous. Plankton photosynthesis are studied by many investigators [22-29]. These studies indicate that CO₂ assimilation is playing very important role for the protection of global warming. Supply of nutrients is important for the promotion of CO₂ assimilation. When fossil burned, NO_x is produced about 1/25 of produced CO₂. This NO_x is major source

of nutrient N. If we use produced NO_x for the promotion of CO₂ assimilation. Protection of global warming can be accomplished. NO_x is natural nitrogen fertilizer and accelerate CO₂ assimilation. CO₂ is increasing 2ppm annually. The increase of CO₂ is a cause of global warming. Therefore, acceleration of CO₂ fix is important subject. Most of CO₂ turn to carbohydrate and oxygen by CO₂.

Assimilation



CO₂ is released by burning of substance and respiration of animal. Most of CO₂ is fixed by CO₂ assimilation. Recycle of CO₂ is carried out in such way. Total amount of CO₂ on earth is 28300 billion tone. Concentration is 400 ppm. CO₂ 2ppm is increasing each year. Amount of increasing CO₂ is 28300 x2/400 = 142 billion tone. Amount of CO₂ evolved in 1 year

- 1360 billion tone CO₂ is released. When 140 billion fuel is burned Fossil + O₂ → CO₂ + H₂ + 114 kcal CH₄ 16 g 44g Oil CH₂ 14g Coal CH 13g
- 50 billion tone CO₂ is released by burning of wood.
- 100 billion tone CO₂ is released by animal
- Population of the world is 76 billion.

One person releases 0.5 tone CO₂. Total release by persons is 38 billion tone. Cow, whales and Birds release 62 billion tone CO₂. Total release by animal is 100 billion tone. Total release of

the world is 360+ 50+ 100 = 510 billion tone. CO₂ fixed by CO₂ assimilation can be calculated by subtracting increased CO₂ amount 142 billion tone from produced CO₂ 510 billion tone 510 - 142 = 368 billion tone. If we can fix 510 billion tone CO₂, we can protect global warning. But actually only 383 billion tone CO₂ is fixed, we must fix 142 billion tone CO₂ by promotion of CO₂ assimilation by NO_x. Each country must fix their responsible amount of CO₂. Responsible amount can be calculated by the equation CO₂ (res) = CO₂ (emission) x 142/360(0.393).

Most emitted CO₂ is fixed by CO₂ assimilation. CO₂ increase is calculated based by CO₂ emission minus fixable CO₂. CO₂ increase of 10 countries is shown at (Table 1). 10 K tone CO₂ can be fixed at 1 km² wood and 10 k tone CO₂ is fixed at 1 km² cultivated land. Then we can calculate fixable CO₂ by area Km² multiply 10 k tone.

| Country | CO ₂ em billion t | CO ₂ res bill t | NO _x bill t | Area km ² | FixableCO ₂ kt | CO ₂ increase bill t |
|-----------|------------------------------|----------------------------|------------------------|----------------------|---------------------------|---------------------------------|
| World | 360 | 142 | 14.4 | | | 142 |
| China | 106.4 | 41,9 | 4.25 | 1.0x10 ⁷ | 1x 10 ¹⁰ | 5 |
| USA | 51 | 20 | 2 | 9.5x10 ⁶ | 9.5x10 ⁹ | 0 |
| India | 24.6 | 9.69 | 1 | 3.2x10 ⁶ | 3.2x 10 ⁹ | 0 |
| Russia | 19.6 | 7.72 | 0.63 | 3.2x10 ⁶ | 3.2x 10 ⁹ | 0 |
| Japan | 12.5 | 4.92 | 0.5 | 3.8 x10 ⁵ | 3.3 x10 ⁸ | 9.2 |
| Germany | 7.8 | 2,95 | 0.31 | 3.5x10 ⁵ | 3.5x10 ⁸ | 4.3 |
| Iran | 6.3 | 2.48 | 0.25 | 1.6x10 ⁶ | 1.6x10 ⁶ | 6.3 |
| Canada | 5.6 | 2.24 | 0.22 | 1.0x10 ⁸ | 1x 10 ¹⁰ | 0 |
| Indonesia | 5 | 1.99 | 0.2 | 1.9x10 ⁶ | 1.9x10 ⁶ | 3.7 |
| U. K | 4 | 1.58 | 0.16 | 2.4 x10 ⁴ | 2.4x 10 ⁸ | 1.6 |
| Turkey | 4 | 1.58 | 0.16 | 7.8x10 ⁵ | 7.8x10 ⁵ | 3.2 |
| Italy | 3.5 | 1.38 | 0.14 | 2.0x10 ⁵ | 3.0x10 ⁸ | 0.5 |
| France | 3.3 | 1.37 | 0.13 | 6.4x10 ⁵ | 8.4x10 ⁸ | 0 |

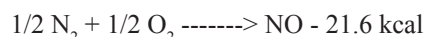
Table 1: CO₂ em (CO₂ emission), NO_x con (NO_x concentration in exhaust gas), electricity, price, fish, CO₂ plankton, GDP growth rate of 8 countries.

Six countries listed at the table look like able to fix emitted CO₂ by CO₂ assimilation because area is wide enough. Japan, Germany, Iran, United Kingdom Turkey and Italy cannot fix CO₂ at his country Because areas are narrow. Japan emitted 1.2x 10⁹ k tone CO₂ in 2015. Japan has area 3 .8 x 10⁵. Fixable CO₂ is 3.3 x 10⁸ k tones. Japan increasing 9.2 billion tone CO₂. Japan must decrease 9.2 billion tone CO₂, United Kingdom and Italy are being increasing CO₂. These 3 country are surrounded by sea. These country can decrease CO₂ by Plankton CO₂ assimilation at sea. Total CO₂ emission of the world is 3.6 x 10¹⁰ kt. We must decrease CO₂ emission by the promotion of plankton CO₂ assimilation by using NO_x.

NO_x Is Promotor of Plant Growth. NO_x Elimination Should Be Stopped

NO_x is produced as a byproduct of CO₂, when something

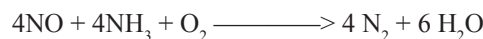
is burned. Nature set up the amount of NO_x to produce same ratio plant to be produced. NO_x/CO₂ = 1/25 as composition of plant N/C= 1/25. When 25 tone CO₂ is produced 1tone NO_x is produced. As C/N ratio of plant is around 5/1-50/1 (average 25/1). [30]. Nature has systems to change N₂ to nutrient nitrogen. By thunder [31-32], the high temperature at fire place for cooking, warming up of room by burning of wood, by forest fire, by forest burning, by bonfire, and also burning of fossil fuel, following reactions proceed



Burning of 1kg dry wood produce 1x 44/30 = 1.47 kg CO₂ and 1.47x 1/25 =59g NO_x. 1 lighting of thunder produce 7 kg NO_x. About 4 million thunder in one day and about 3 x 10⁷ t NO_x is produced in one year. NO_x is a mixture of 90% NO and 10% NO₂. NO_x is dissolved in rain and give nutrient nitric acid and promote

the growth of plant and plankton. The earth was boon and plant appeared. and plant eat CO₂, H₂O and nutrient N, P, and plant is burned then NO_x is produced to recover lost plant. When no burning material present, like sea district, thunder storms make NO_x. We should not against nature. We should use NO_x as it is. In 2015 fossil 140 billion tone was burned and CO₂ 360 billion tone and NO_x 14.4 billion tone are produced. If we use all NO_x for the fixing of CO₂, we can $14.4 \times 25 \times 10^8 = 360$ tone CO₂. NO_x elimination should be stopped (Table 2). NO_x is hated as pollution gas causing illness. Many governments of developed countries like USA, Japan, Germany, UK, France and Italy set up very strict law to eliminate NO_x in burned gas and forced to eliminate NO_x using ammonia. Amount of NO_x is huge amount 14.4 billion tone. To eliminate NO_x, huge amount of ammonia is necessary and huge amount of fossil is used. These governments put emphasis on tox-

icity of NO_x than the utility of NO_x.



To destroy one fertilizer by other fertilizer is tremendous loss of natural resources. Elimination of NO_x is promoting global warming by three ways. One is retardation of CO₂ fix. Retardation of plant, plankton growth. Two is increase of CO₂ by using much butane. Three is consumption of precious fuel for the production of ammonia. Amount of NO_x is so big. China produce 0.9 billion tone urea as fertilizer. China producing 4.25 billion tone NO_x. Japan producing 2 million tone nitrogen fertilizer and 50 million tone NO_x.

I wish to propose plan that if NO_x elimination is stopped and if waste water purification is stopped, global warming can be stopped.

| Country | CO ₂ em bill t | NO _x con g/ kWh | El price c/kWh | Fish mill t | CO ₂ fplankton bill t | GDP growth rate [33]. |
|---------|---------------------------|----------------------------|----------------|-------------|----------------------------------|-----------------------|
| China | 106.4 | 1.6 | 1.5-4.5 | 79.38 | 19.8 | 6.92 |
| India | 24.5 | 1.6 | | 10.11 | 2,0 | 7.1 |
| Canada | 5.5 | 1.3 | 8.1 | 1.05 | 0.25 | 1.4 |
| UK | 4 | 1.3 | 15.4 | 0.91 | 0.002 | 1.8 |
| Germany | 7.7 | 1 | 32 | 0.29 | 0.07 | 1.85 |
| USA | 51.7 | 0.5 | 12 | 6.05 | 0.5 | 1.48 |
| Italy | 3.5 | 0.5 | 28 | 0.34 | 0.008 | 0.86 |
| Japan | 12.5 | 0.1 | 24 | 4.6 | 0.11 | 1.01 |

Table 2: CO₂ em, NO_x concentration, electricity price, fish, CO₂fplankton, GDP of 8 countries.

The country does not do NO_x elimination. 1. Need not fossil to eliminate NO_x. 2. Can have enough NO_x and can promote CO₂ assimilation. 3 Electricity price is low. 4. Can produce much fish and grain. 5. Can get high GDP growth rate. China 6.92%, India 7.10%.6. becoming rich. The country does NO_x elimination show high electricity price, poor fish production, poor CO₂ assimilation, low GDP growth rate. USA 1.48 %, Germany 1.85%, UK 1.8%, Japan 1.0%, Italy 0.88%. Becoming poor. These facts indicate NO_x elimination give bad effect on electricity price, fish production, GDP, CO₂ assimilation, protection on global warming and economy. NO_x elimination should be stopped.

Conclusion

Promotion of CO₂ assimilation is essential for the protection of global warming. Increase of nutrient nitrogen and phosphorous is essential for the protection of global warming Stopping of NO_x elimination and stopping of waste water purification are essential for the increase of NP and for the protection of global warming.

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