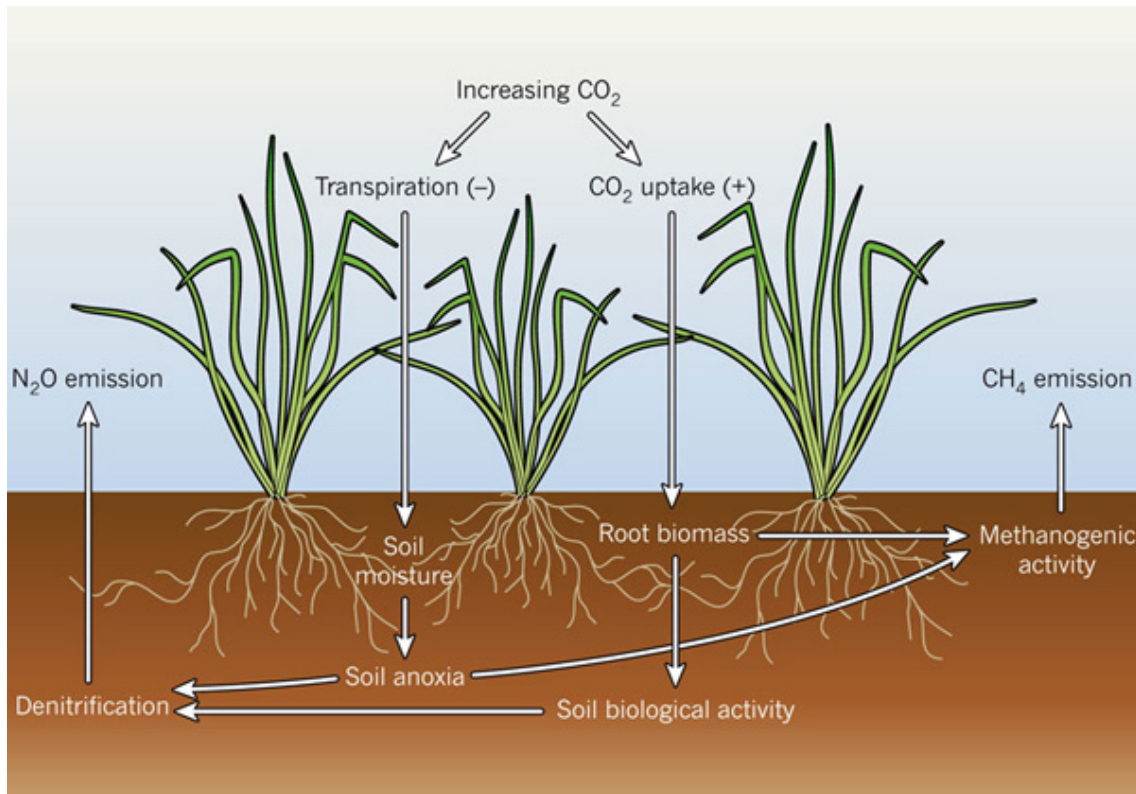


ĐŽĐ°ĐμĐ°Đ½Đ¾Đ»Đ¾Đ³.ÑĚŃf - Đ°Đ°ŃfŃ†Đ½Đ¾-Đ¿Đ¾Đ¿ŃfĐ»Ń°ŃĚĐ½ŃĚĐ¹ Đ¿Đ¾ŃĚŃ,Đ°Đ» Đ¾ Ń°Ń,Đ,Ń...Đ,Ń°Ń...

Đ°Đ¾ĐŃĚ, Đ—ĐμĐ¾Đ»Đ, Đ, Đ°ĐμĐ±Đ°

ĐŸĐ¾Đ²ŃĚŃ°ĐμĐ½Đ, Đμ Đ°Đ¾Đ½Ń†ĐμĐ½Ń,ŃĚĐ°Ń†Đ, Đ, CO2 Đ²
Đ°Ń,Đ¾Đ¾Ń°Ń,ĐμŃĚĐμ Ń°Ń,Đ,Đ¾ŃfĐ»Đ,ŃĚŃfĐμŃ, Đ²ŃĚĐĐμĐ»ĐμĐ½Đ,Đμ
Đ,Đ. Đ¿Đ¾Ń†Đ²ŃĚĐ ŃĚŃfĐ³Đ,Ń... Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚŃ... Đ³Đ°Đ·Đ¾Đ²
Đ°Đ·Đ·ĐμĐ» : ĐœĐμŃ,ĐμĐ¾ŃĚĐ¾Đ»Đ¾Đ³Đ,Ń°
ĐŽĐ¿ŃfĐ±Đ»Đ,Đ°Đ¾Đ²Đ°Đ½Đ¾ [Flanker](#) [10.08.2011]

ĐŸĐ¾ Đ¾ĐμŃĚĐμ Ń,Đ¾Đ³Đ¾ Đ°Đ°Đ° Đ² Đ°Ń,Đ¾Đ¾Ń°Ń,ĐμŃĚĐμ ŃĚĐ°Ń°Ń,ĐμŃ,
Ń°Đ¾Đ·ĐμŃĚĐŸĐ°Đ½Đ,Đμ ŃfĐ³Đ»ĐμĐ°Đ,Ń°Đ»Đ¾Đ³Đ¾ Đ³Đ°Đ·Đ° (CO2),
ŃfĐ²ĐμĐ»Đ,Ń†Đ,Đ²Đ°ĐμŃ,Ń°Ń° Đ, Ń°Đ²Ń°Đ·ŃĚĐ²Đ°Đ½Đ,Đμ ĐμĐ³Đ¾
ŃĚĐ°Ń°Ń,ĐμĐ½Đ,Ń°Đ¾Đ, Đ¿Đ¾Đ¾Ń,Đ²ĐμŃ,Ń°Ń,Đ²ĐμĐ½Đ½Đ¾, Ń°Đ°Đ¾ŃĚĐ¾Ń°Ń,ŃĚ
Đ°Đ°Đ»ŃĚĐ½ĐμĐ¹Ń°ĐμĐ³Đ¾ Đ¿ŃĚĐ,ŃĚĐ¾Ń°Ń,Đ° CO Ń°Đ½Đ,ĐŸĐ°ĐμŃ,Ń°Ń°, Đ°
Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚĐ¹ Ń°Ń,Ń,ĐμĐ°Ń, Đ¾Ń°Đ»Đ°Đ±Đ»Ń°ĐμŃ,Ń°Ń°. ĐŽĐ·Đ½Đ°Đ°Đ¾
ŃĚĐ¾Ń°Ń, Ń°Đ¾Đ·ĐμŃĚĐŸĐ°Đ½Đ,Ń° CO Đ² Đ°Ń,Đ¾Đ¾Ń°Ń,ĐμŃĚĐμ Đ¿ŃĚĐ,Đ²Đ¾Đ·Đ,Ń,
Ń,Đ°Đ°ĐŸĐμ Đ° ŃfŃ°Đ,Đ»ĐμĐ½Đ½Đ¾Đ¾Ńf Đ²ŃĚĐ·ĐμĐ»ĐμĐ½Đ,ŃŽ Đ,Đ. Đ¿Đ¾Ń†Đ²ŃĚĚ
Đ°ŃĚŃfĐ³Đ,Ń... Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚŃ... Đ³Đ°Đ·Đ¾Đ²: Đ·Đ°Đ°Ń°Đ,Đ°Đ¾Ń,Đ° (N2O) Đ,
Đ¾ĐμŃ,Đ°Đ½Đ° (CH4). Đ¾Đ¾Ń,Ń° Đ¿Đ¾Ń°Ń,ŃfĐ¿Đ°ŃŽŃ, Ń°Ń,Đ, Đ³Đ°Đ·ŃĚ Đ² Đ¾Ń†ĐμĐ½ŃĚ
Đ½ĐμĐ±Đ¾Đ»ŃĚŃ°Đ,Ń... (Đ¾Ń,Đ½Đ¾Ń°Đ,Ń,ĐμĐ»ŃĚĐ½Đ¾ CO2)
Đ°Đ¾Đ»Đ,Ń†ĐμŃ°Ń,Đ²Đ°Ń..., Đ,Ń... Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚĐ¹ Ń°Ń,Ń,ĐμĐ°Ń, Đ²
ŃĚĐ°Ń°Ń†ĐμŃ,Đμ Đ½Đ° Đ¾Đ¾Đ»ĐμĐ°ŃfĐ»Ńf Đ³Đ°Đ·Đ° Đ³Đ¾ŃĚĐ°Đ·Đ¾Đ¾ Đ±Đ¾Đ»ĐμĐμ
Ń°Đ,Đ»ŃĚĐ½ŃĚĐ¹, Ń†ĐμĐ¾ CO2. Đ°Đ½Đ°Đ»Đ,Đ. Đ¾Đ¿ŃfĐ±Đ»Đ,Đ°Đ¾Đ²Đ°Đ½Đ½ŃĚŃ...
Đ°Đ°Đ½Đ½ŃĚŃ... Đ¿Đ¾Đ°Đ°Đ·ŃĚĐ²Đ°ĐμŃ, Ń†Ń,Đ¾ Đ²ŃĚĐ·ĐμĐ»ĐμĐ½Đ,Đμ N2O Đ, CH4 Đ²
Đ¾Ń,Đ²ĐμŃ, Đ½Đ° ŃfĐ²ĐμĐ»Đ,Ń†ĐμĐ½Đ,Đμ Ń°Đ¾Đ·ĐμŃĚĐŸĐ°Đ½Đ,Ń° Đ²
Đ²Đ¾Đ·Đ·ŃfŃ...Đμ CO2 Ń°Đ¾Đ·Đ·Đ°ĐμŃ, Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚĐ¹ Ń°Ń,Ń,ĐμĐ°Ń,
ŃĚĐ°Đ²Đ½Đ¾Ń°Đ,Đ»ŃĚĐ½ŃĚĐ¹ ĐμĐŸĐμĐ³Đ¾Đ·Đ½Đ¾Đ¾Ńf Đ·Đ¾Đ±Đ°Đ²Đ»ĐμĐ½Đ,ŃŽ
Đ¿ŃĚĐ,Đ¾ĐμŃĚĐ½Đ¾ Đ¾Đ,Đ»Đ»Đ,ŃĚĐ°ŃĚĐ·Đ,Đ¾Đ½Đ½ CO.
Đ ĐμĐ³ŃfĐ»Đ,ŃĚŃfŃŽŃ°ĐμĐμ Đ²Đ¾Đ·Đ·Đ·ĐμĐ¹Ń°Ń,Đ²Đ,Đμ
ŃĚĐ°Ń°Ń,Đ,Ń,ĐμĐ»ŃĚĐ½Đ¾Ń°Ń,Đ, Đ½Đ° Đ¿Đ°ŃĚĐ½Đ,Đ°Đ¾Đ²ŃĚĐ¹ Ń°Ń,Ń,ĐμĐ°Ń, Đ¿ŃĚĐ,
Ń°Ń,Đ¾Đ¾Ń°Ń°Đ½Đ,ĐŸĐ°ĐμŃ,Ń°Ń° Đ¿ŃĚĐ,Đ¾ĐμŃĚĐ½Đ¾ Đ½Đ° 17%.



Д Д, №. 1.

Д' Д³¼Ñ, Д²ДµÑ, Д½Д° Ñ€Д³¼Ñ•Ñ, Ñ•Д³¼Д' ДµÑ€Д°Д½Д, Ñ• Д² Д²Д³¼Д-Д'ÑfÑ... Дµ ДiДž

2

Ñ•Д, Д²Д½Д³¼Ñ•Ñ, Ñ€Ñ Ñ, Ñ€Д°Д½Ñ•Дž, Ñ€Д°Ñ†Д, Д, (Д, Ñ•Дž Д°Ñ€ДµД½Д, Ñ• Д²Д³¼Д'Ñ< Д»Д, Ñ•Ñ, Ñ€Ñ•Д¼Д,), Д½Д³¼ Ñ•Д²Ñ•Д.

2

ÑfÑ, Ñ•Ñ, Д²Д, Дµ Д°Д, Ñ•Д»Д³¼Ñ€Д³¼Д'Д° Д² Дž Д³¼Ñ†Д²Дµ Ñ€Д°Д-Д²Д, Д²Д°ÑžÑ, Ñ•Ñ• Д±Д°Д°Ñ, ДµÑ€Д, Д, Д°Д³¼Ñ, Д³¼Ñ€Ñ<Дµ Д

2

О). Дi Д'Ñ€ÑfД³¼Д¹ Ñ•Ñ, Д³¼Ñ€Д³¼Д½Ñ<, Д² ÑfÑ•Д»Д³¼Д²Д, Ñ•Ñ... Д³¼Д±Д, Д»Д, Ñ• ДiДž

2

, Д°Ñ..., Д³Д'Дµ Д½ДµÑ, Д°Д, Ñ•Д»Д³¼Ñ€Д³¼Д'Д°, ДžÑ€ДµД, Д¼ÑfÑ%ДµÑ•Ñ, Д²Д³¼ Дž Д³¼Д»ÑfÑ†Д°ÑžÑ, Д±Д°Д°Ñ, ДµÑ€Д, Д, Д

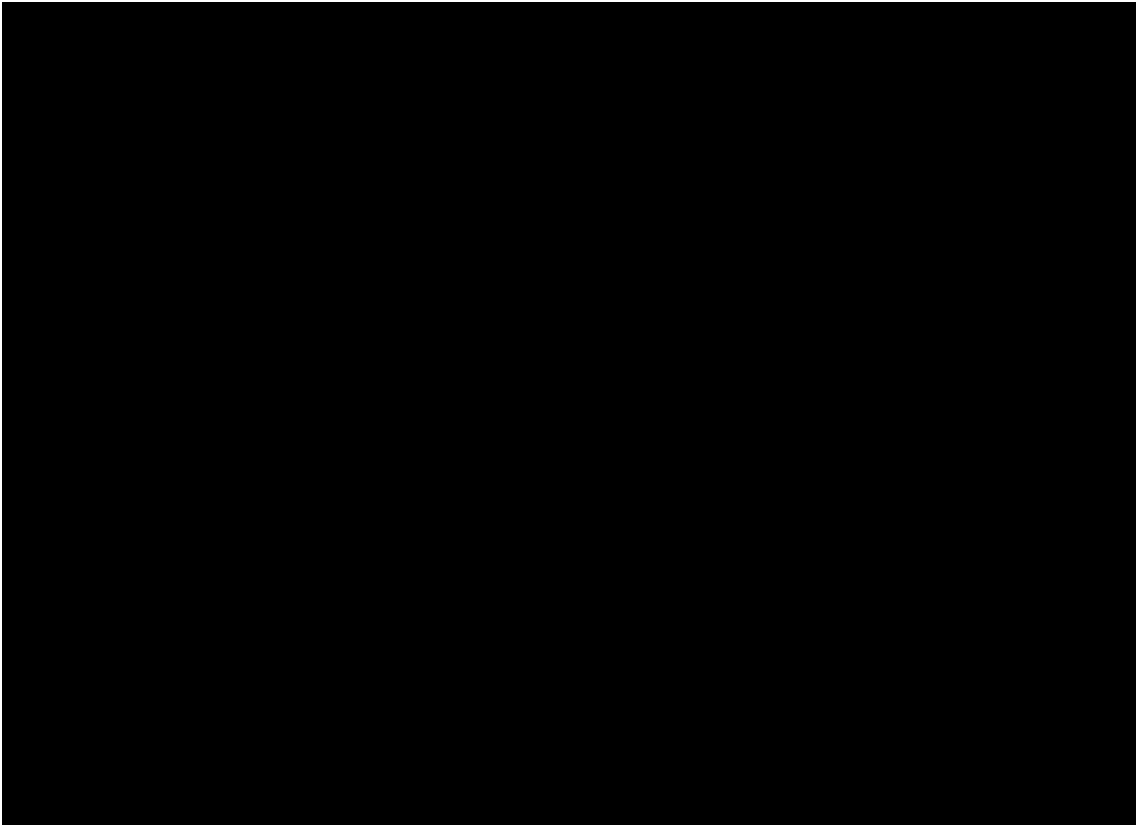
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ДiД³¼Д' ДµÑ€Д°Д½Д, Дµ Д'Д, Д³¼Д°Ñ•Д, Д'Д° ÑfД³Д»ДµÑ€Д³¼Д'Д°



Ճ Ժ, Ն• 2.

Ճ₁Ն, Ճ_μՃ₂ Ճ_{3/4}Ճ⁰Ճ₂ Ն•Ճ»Ճ_μՃ^{1/2}Ճ₂ Ն• Ճ°Ճ·Ճ^{3/4}Ն, Ճ° (Ճ^{3/4}Ն, NH
4

+

Ճ°Ճ^{3/4} NO
3

–

) Ճ₂Ճ»Ճ₂ Ճ_μՃ^{3/4} Ճ²Ճ^{3/4}Ն•Ն•Ն•Ճ°Ճ^{1/2}Ճ^{3/4}Ճ²Ճ»Ճ_μՃ^{1/2}Ճ₂ Ն• (Ճ^{3/4}Ն, NO
3

–

Ճ°Ճ^{3/4} N
2

ՆՃՆ, Ճ°Ն, Ն• Ն•Ճ_μՃ°Ճ°Ն†Ճ₂Ճ¹, Ճ₂Ն•Ճ^{3/4}Ճ²Ճ^{3/4}Ճ°Ճ₂Ճ^{1/4}Ն•Ն•... Ճ^{1/2}Ճ₂Ն, Ն•Ճ₂Ն, Ճ₂Ն†Ճ₂Ն•Ն•Ն•Ն•Ն•%Ճ₂Ճ^{1/4}Ճ₂ (Nitrifying bacteria, Ճ^{3/4}Ն
Ն, Ճ^{3/4}Ն†Ճ°Ճ°Ճ^{1/4}Ճ₂

) D_3 D' $D_{\mu}D^{1/2}D_3$, $\tilde{N}, \tilde{N} \in D_3, \tilde{N}, D_3, \tilde{N} \dagger D_3, \tilde{N} \in \tilde{N}f\tilde{N}\tilde{Z}\tilde{N}\%_0D_3, D^{1/4}D_3$ (Denitrifying bacteria, $D^{3/4}D_{\pm}D^{3/4}D \cdot D^{1/2}D^{\circ}\tilde{N}\dagger D_{\mu}D^{1/2}\tilde{N}$
 $D_{\zeta}\tilde{N}fD^{1/2}D^{\circ}\tilde{N}, D_3, \tilde{N} \in D^{3/4}D^{1/4}$
) $D_{\pm}D^{\circ}D^{\circ}\tilde{N}, D_{\mu}\tilde{N} \in D_3, \tilde{N} \cdot D^{1/4}D_3$.

$D_j D_{\zeta} D \gg D^{3/4}\tilde{N}^{\circ} D^{1/2}\tilde{N} \cdot D_{\mu} D \gg D_3 D^{1/2}D_3 D_3$

$\tilde{N} \dots D^{3/4}D^{\circ}\tilde{N} \cdot \tilde{N}\%_0D_3, D_{\mu} D_{\pm}D_{\mu}D \cdot \tilde{N}f\tilde{N}\dagger D^{\circ}\tilde{N} \cdot \tilde{N}, D_3, \tilde{N} \cdot D^{3/4}\tilde{N} \in D^{\circ}D^{1/2}D_3, D \cdot D^{1/4}D^{3/4}D^2$. $D^{\circ}D \cdot \tilde{N} \cdot \tilde{N}, D^{\circ}\tilde{N}, \tilde{N} \in D_3$, Davidson et al. Testing a conceptu

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D — $D^{\circ}D^{\circ}D_3, \tilde{N} \cdot \tilde{N} \in D^{\circ}D \cdot D^{3/4}\tilde{N}, D^{\circ} D^2\tilde{N} \cdot D' D_{\mu}D \gg \tilde{N} \cdot D_{\mu}\tilde{N}, \tilde{N} \cdot \tilde{N} \cdot D^2 D^{3/4}\tilde{N} \cdot D^{1/2}D^{3/4}D^2D^{1/2}D^{3/4}D^{1/4} D^2$
 $D_{\pm}D^{3/4}D \gg D_{\mu}D_{\mu} \tilde{N} \cdot \tilde{N}f\tilde{N} \dots D_3, \tilde{N} \dots D^{1/4}D_{\mu}\tilde{N} \cdot \tilde{N}, D^{\circ}\tilde{N} \dots, D_3, D^{\circ}D^{3/4}D^{1/2}D_{\mu}\tilde{N}\dagger D^{1/2}D^{3/4}, \tilde{N}, D^{\circ}D^{1/4}, D^{\circ}D' D_{\mu}$
 $D^{1/4}D^{1/2}D^{3/4}D^{\circ}D^{3/4} D^{\circ}D \cdot D^{3/4}\tilde{N}, D^{\circ} D \cdot D^2D^{3/4}\tilde{N}, D^2 D_3, \tilde{N} \cdot \tilde{N} \dots D^{3/4}D' D^{1/2}D^{3/4}$
 $D \cdot D^{\circ}D_{\pm}D^{3/4}D \gg D^{3/4}\tilde{N}\dagger D_{\mu}D^{1/2}D^{1/2}\tilde{N} \cdot \tilde{N} \dots D_{\zeta}D^{3/4}\tilde{N}\dagger D^2D^{\circ}\tilde{N} \dots D_3, D^{1/2}D^{\circ} D \cdot D^{\circ}D \gg D_3 D^2D^{\circ}D_{\mu}D^{1/4}\tilde{N} \cdot \tilde{N} \dots$
 $D^2D^{3/4}D' D^{3/4}D^1 \tilde{N} \in D_3, \tilde{N} \cdot D^{3/4}D^2\tilde{N} \cdot \tilde{N} \dots D_{\zeta}D^{3/4}D \gg \tilde{N} \cdot \tilde{N} \dots \tilde{N}\dagger D^{\circ}\tilde{N}\%_0D_{\mu} D^{3/4}D_{\pm}\tilde{N} \in D^{\circ}D \cdot \tilde{N}fD_{\mu}\tilde{N}, \tilde{N} \cdot \tilde{N} \cdot$
 $D' \tilde{N} \in \tilde{N}fD^{3/4}D^1 D_{\zeta}D^{\circ}\tilde{N} \in D^{1/2}D_3, D^{\circ}D^{3/4}D^2\tilde{N} \cdot D^1 D^{\circ}D^{\circ}D \cdot \text{—} D^{1/4}D_{\mu}\tilde{N}, D^{\circ}D^{1/2} D$ — $D' D_{\mu}\tilde{N} \cdot \tilde{N} \in D_3$
 $D^{3/4}\tilde{N} \cdot D^{3/4}D_{\pm}D_{\mu}D^{1/2}D^{1/2}D^{3/4} D^2D^{\circ}D \uparrow D^{1/2}D^{3/4} \tilde{N}, D^{3/4}\tilde{N} \in D^{1/4}D_3, \tilde{N} \in D^{3/4}D^2D^{\circ}D^{1/2}D_3, D_{\mu}$
 $D_{\pm}D_{\mu}\tilde{N} \cdot D^{\circ}D_3, \tilde{N} \cdot D \gg D^{3/4}\tilde{N} \in D^{3/4}D' D^{1/2}\tilde{N} \cdot \tilde{N} \dots D \cdot D^{3/4}D^{1/2}, D_{\zeta}D^{3/4}\tilde{N} \cdot D^{\circ}D^{3/4}D \gg \tilde{N} \in D^{\circ}\tilde{N}f$
 $D^{3/4}D_{\pm}\tilde{N} \in D^{\circ}D \cdot \tilde{N}f\tilde{N}\tilde{Z}\tilde{N}\%_0D_3, D_{\mu} D^{1/4}D_{\mu}\tilde{N}, D^{\circ}D^{1/2} D_{\pm}D^{\circ}D^{\circ}\tilde{N}, D_{\mu}\tilde{N} \in D_3, \tilde{N}, D^{\circ}D^{\circ}$
 $D^{1/2}D^{\circ}D \cdot \tilde{N} \cdot D^2D^{\circ}D_{\mu}D^{1/4}\tilde{N} \cdot D_{\mu} D^{1/4}D_{\mu}\tilde{N}, D^{\circ}D^{1/2}D^{3/4}D^3D_{\mu}D^{1/2}\tilde{N} \cdot \text{—} \tilde{N} \cdot \tilde{N}, \tilde{N} \in D^{3/4}D^3D_3, D_{\mu}$
 $D^{\circ}D^{1/2}D^{\circ}\tilde{N} \cdot \tilde{N} \in D^{3/4}D_{\pm}\tilde{N} \cdot (\tilde{N} \cdot D^{1/4}, \tilde{N}, D^{\circ}D^{\circ}D \uparrow D_{\mu}: D_{\mu}D_{\mu}\tilde{N}, D^{\circ}D^{1/2}D^{3/4}D^3D_{\mu}D^{1/2}D_{\mu}D \cdot).$

