

Organic Fertilization

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pH

CETAQ Organic Producers and
soil types and soil pH

pH from 4 to 4,5	pH from 4,6 to 5,0	pH from 5,1 to 5,5
1 with Organic Soil	2 with Organic Soil	1 with Organic Soil 6 on sand

pH adjustment

- Rule of Thumb : 100 lbs/a of S per 0,1 pH unit
- Titration of soils with HCl 0,1 N based on the method developed by André Brunelle, specialty request at a private Lab in «Laboratoire Agri-Direct de Longueuil»

Brief History

- Since in 2000, the Nutrient Management Legislation was adopted and became mandatory. The cranberry industry decided to work on the P fertilization, because the berries were grown mainly in acidic and sandy soils which has a high availability of Aluminum which also has a significantly high potential to fix P.

« Grille de fertilisation » adopted specifically for cranberry production

- Author : **Sébastien Marchand**, via a Masters project with Dr Léon-Étienne Parent from l'Université Laval

pH and Nitrogen (N)¹

pH optimum	4,0-5,0
Timing and type of application of N	Kg N/ha
Split in 4 applications : Early bloom, 50% bloom; 50% nouaison; fruit sizing	20-65 ²
¹ The foliar N concentrations targeted between August 15 and September 15 of 0,9 et 1,1%	
² Total Annual Application	

Phosphorus

Soil Class	P/(Al+0,5Fe) _{M-III} ³ (%)	Recommendation based on foliar tests (kg P ₂ O ₅ / ha)	
		0,10 ⁴	0,11 ⁴
Poor	< 3,5	40	80
Medium	3,5 - 7	20	65
Rich ⁵	7 - 14	0	0
Very Rich	> 14	0	0

³[P/(Al+0,5Fe)]x100 où P, Al et Fe are expressed in ppm
⁴Results from trails conducted in le Centre-du-Québec on the "Stevens" variety.
⁵In some cases, plants in the soil category may respond to an application of 30 kg de P₂O₅/ha ????

Potassium (K)⁶

Soil Class	Analysis (kg K / ha)	Recommendation (kg K ₂ O / ha)
Pauvre	0 - 115	65 - 110
Moyen	116 - 230	0 - 65
Riche	> 230	0

⁶The K foliar concentrations targeted between August 15 and September 15 of 0,4 à 0,75%

Note:
 1) These recommendations are for fields that are in production (>3 years)
 2) Select lower rates for fields with organic soils

Magnesium

- Soils with 85 kg/ha of Mg receive between 11 and 22 kg/ha of Mg (10-20 lbs/a)
- Generally, SulPoMag or le KMag (0-0-22-11) are used in early spring (improved efficacy)

Cu and B

- Copper and Boron are micro-elements that play an important role in the flower formation, particularly when the pollen tube is developing (B)
- All the CETAQ organic producers are within the ranges
 - Cu : between 4 and 10 ppm
 - B : between 15 and 60 ppm

Sources of fertilizers

- Actisol : composted chicken manure
 - 6 - 4 - 2 : N/P average
- Oeufs d'or : Composted chicken manure
 - 5 - 6 - 3 : N/P low

Establishment Fertilisation

- N fertilization on sandy soils (1st year must have 120 kg N/ha)
 - This means \pm 2400 kg of compost/ha or \pm 2150 lbs of compost/split as follow:
 - 500 lbs/a incorporated in the 3 to 4 top inches of soil before planting
 - 5 X 200 at 300 lbs/a at one week interval for 5 weeks, from the end of June to the end of July
 - The pH adjustment can also be accomplished by incorporating the sulfur to the soil : 300 lbs of Tiger-Sulfur followed by 200 lbs/a later in season

Establishment Fertilization (cont)



- In organic soils, the requirements are reduced by half: at 60 kg of N/ha, we are already at more than 3 X the rate of the (cruising speed).
- The fertilization is still balanced because the P requirements are the same for organic and sandy soils.

Establishment Fertilization (cont)



- Sometimes, the establishment of new beds in organic soil may not require any fertilization, the initial organic matter mineralization due to improved drainage may supply everything the crop needs.

Maintenance Fertilization



- As recommended by the Quebec Fertilization Table. The timing of application of compost is similar to the conventional application
- It is difficult to determine the exact availability of nutrients from the compost. Currently, it is estimated at 50% and no considerations made with the lasting effect for year 2 and 3

K and Mg Fertilization



- Same as conventional
- It is managed with 0-0-22-11 (K-Mag) when Mg is needed and with Potassium Sulfate when the soil Mg level is adequate

Minor Elements

- Compost fertilization will generally supply all of the required micros

Results from project « Compost Fertilization Protocol in Organic Cranberry Production »

- Compost on sandy soils
 - Tested rates : 45-56-67-79-90 kg N/ha)
Best yields: 79 and 90 kg N/ha
- Compost on organic soils
 - Tested rates : 0-20-40-60 kg N/ha)
Best yields: 20 kg N/ha

Trials with Different Composts

- 4 différents composts
 - Actisol
 - Œufs d'Or
 - Fertilec 8-4-5 (bone meal + blood meal)
 - Terratonic 8-2-3 (Feather meal)
- Fertilec was the most interesting
 - Results : Actisol prepares a compost which is fortified with blood meal, 9-2-1 (???)

