

Technical Bulletin #06:

## Waxy and Sweet Corn Fertilization Program

Corn is one of the most widely planted crops worldwide, with millions of people depending on it as part of their daily diet. In Cambodia, as in most developing countries, corn is used primarily for animal feed or in making flour, but selected hybrid and improved varieties have been introduced for fresh consumption. In this bulletin, we will focus on the nutritional requirements of sweet corn as a fresh vegetable.

**Growing Cycle:** For corn used in grain production (dried), the growing cycle is 120 days. For corn that will be used as corn on the cob, in which kernels are harvested before they are fully ripe, the growing cycle is 65 to 75 days after seeding. This shorter lifecycle means that we can use less fertilizer.

**Soil Management:** Remember that nutrients are absorbed through the root system; therefore, if the plant does not have a healthy and well developed root system, it does not matter how much fertilizer we apply to the soil, the plants will not be able to utilize it. In order to ensure that your plants develop a healthy root system, good soil preparation is required before you seed. This requires two basic steps:

1. Plough the soil several times – as deep as possible – until it is loose.
2. Prepare raised beds as follows:
  - Height: 30 cm (when possible)
  - Width: 1.0 meter, since we will plant two rows (lines) of corn per bed
  - Distance between beds: 1.5 meters (from the center of one bed to the center of the next bed)

When possible, a soil analysis is advisable. The most important elements to check are phosphorous, potassium, magnesium, and zinc levels. Soil pH and organic matter content are also advisable, with soil pH being the more important of the two. With this information, a more tailored fertilization program for your farm can be established.

**Nutrient Needs:** There are five basic elements that corn requires: Nitrogen, Phosphorous, Potassium, Magnesium, and Calcium. All five of these elements are needed in the fertilizer program for maximum plant development and optimum corn yields. Other elements that may be necessary are Boron, Sulfur, and Zinc.

Chemical Symbol	Nutrient	Use in Plants
<b>N</b>	Nitrogen	Helps plants with rapid growth, increases seed and fruit production and improves leaf quality.
<b>P</b>	Phosphorous	Helps plant maturation and plant structure, reduces plant stress. Promotes rapid growth; encourages blooming and strengthens and develops the root system.
<b>K</b>	Potassium	Helps in the building of protein, photosynthesis, flowering and fruit quality. Also aids in preventing diseases.
<b>Mg</b>	Magnesium	Very important for corn growth – if we do not supply enough Magnesium, the plants will not grow well and they will be very pale.
<b>Ca</b>	Calcium	Important in extending product shelf life. Forms an essential part of plant cell wall structure; it is found in every single cell of the plant, especially in new growth.
<b>S</b>	Sulfur	Improves root growth and seed production. Helps with vigorous plant growth.
<b>B</b>	Boron	Essential for seed and fruit development.
<b>Zn</b>	Zinc	Plays an important role regulating plant growth.



**Fertilizers:** In Cambodia, the most common fertilizers in commercial agriculture are granular formulas:

Commercial Name	N	P	K	Commercial Name	N	P	K
Urea	46	0	0	Formula (complete)	15	15	15
KCl	0	0	60	Formula (complete)	20	20	20
DAP	18	46	0				

With these above fertilizers, we can provide the most needed nutrients to the plants. Finding sources of Calcium, Magnesium and Sulfur may be difficult because they are not used very much in Cambodia. If there are no granular fertilizers to provide these nutrients, we will have to apply them in a foliar application.

The table below shows the recommended amount of fertilizers for sweet corn:

Week	Days After Transplanting (DAT)	Urea	KCl	DAP 18-46-0	Magnesium Sulfate	Calcium Nitrate	Solution
		gm / plant	gm / plant	gm / plant	gm / plant	gm / plant	cc / plant
1	3	0.43	0.19	0.09	0.12	0.15	100
2	10	0.55	0.32	0.11	0.19	0.25	100
3	17	0.72	0.35	0.21	0.21	0.28	200
4	24	0.74	0.35	0.21	0.21	0.28	200
5	31	0.56	0.49	0.18	0.30	0.39	200
6	38	0.49	0.49	0.18	0.30	0.39	200
7	45	0.49	0.44	0.03	0.27	0.35	200
8	52	0.49	0.44	0.03	0.27	0.35	200
9	59	0.49	0.44	0.03	0.27	0.35	200
10	66	0.49	0.44	0.03	0.27	0.35	200
11	73	0.49	0.44	0.03	0.27	0.35	200
		<b>5.95</b>	<b>4.39</b>	<b>1.13</b>	<b>2.66</b>	<b>3.49</b>	

**Step 1** - Estimate the amount of plants you have in your plot and multiply that number by the grams of each fertilizer recommended by week. Example: You have 1,000 plants in your plot. For week one, you would calculate:

- Urea (0.43 grams/plant): 1,000 x 0.43 = 430 grams of urea needed in week one
- KCl (0.19 grams/plant): 1,000 x 0.19 = 190 grams of KCl needed in week one

Continue with this same calculation for all fertilizer for each week

**Step 2** - Mix the fertilizers in 200 liters of water and make sure that all the fertilizer is dissolved in the water before you apply it to the plants. Apply 200cc of the mixed fertilizer solution to each plant. Calcium should be applied separately from the rest of the fertilizers. Apply the calcium separately on another day of the week. When you finish fertilizing all plants, irrigate at least 30 minutes so the fertilizer will reach the root zone.

If you cannot get Calcium Nitrate and Magnesium Sulfate, you will have to find another source of Calcium and Magnesium. Usually, there are foliar fertilizers that can provide these nutrients. See your HARVEST technician for the exact doses, as all products differ in concentration.

We recommend fertilizing until the last week prior to harvest. At that stage the corn kernels are in the filling process and it is very important to get a well-filled cob to sell at a higher price.

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