MISSION MBBS

Date: 18/10/2022

Subject: BOTANY

Topic : Strategies for Enhancement in Food Production L4

Class: Standard XII

1. Which of the following is a semi dwarf rice variety created by the International Rice Research Institute (IRRI), Philippines?

   ✗ **A.** IR-7

   ✗ **B.** IR-9

   ✓ **C.** IR-8

   ✗ **D.** IR-5

   IR-8 is a high yielding semi-dwarf variety of rice. It was developed at the International Rice Research Institute (IRRI), Philippines by crossing Peta (high yield tall rice variety from Indonesia) with DGWG (dwarf variety from Taiwan).

2. Read the following statements (A - D) regarding the green revolution in India. Mark the statements as True (T) or False (F).

A. Wheat production increased from 10 million tonnes to 65 million tonnes

B. Rice production increased from 35 million tonnes to 89.5 million tonnes

C. Wheat and rice production increased due to the introduction of semi-dwarf varieties

D. Sonalika and Kalyan Sona were the semi dwarf wheat varieties introduced, while Jaya and Ratna were the semi-dwarf rice varieties introduced in India

✔ **A.** A - F, B - T, C - T and D - T

✘ **B.** A - T, B - F, C - F and D - T

✘ **C.** A - F, B - F, C - T and D - T

✘ **D.** A - T, B - T, C - F and D - T

The increase in production of food grains like wheat and rice by introduction of varieties such semi-dwarf, high-yielding varieties, disease resistant, etc. using various plant breeding techniques is called the Green Revolution. So, statement C is true.

The Green Revolution lead to an increase of wheat production from 11 million tonnes to 75 millions tonnes. Similarly, rice production increased from 35 million tonnes to 89.5 million tonnes. Hence statement A is false but B is true.

Sonalika and Kalyan Sona were the semi-dwarf wheat varieties and Jaya and Ratna were the semi dwarf rice varieties introduced to India. Hence option D is correct.

3. An improved variety of sugarcane was developed by crossing *Saccharum barberi* with *Saccharum officinarum*. This was done to

- ✓ **A.** increase the yield of sugarcane growing in north India
- ✗ **B.** increase the yield of sugarcane in south India
- ✗ **C.** increase the sugar content in the sugar canes of south India
- ✗ **D.** develop sugarcanes with longer and thicker stems in south India

Saccharum barberi was a sugarcane variety that was grown in the northern parts of India. They had low sugar content and poor yield.

Saccharum officinarum, on the other hand, was a sugarcane variety that was grown in south India. It had thick stems with high sugar content. However, it was unable to grow in north India due to extreme climates during summer and winter.

An improved variety of sugarcane was developed successfully by crossing *S. barberi* with *S. officinarum.* This new cultivar had high sugar content, high yield, thick stems and could also grow in the northern parts of India.

4. Read the following statements and identify the wrong one with regard to GDP.

- ✗ **A.** 33% of the GDP in India is contributed by agriculture
- ✗ **B.** GDP is a measure of the economy of a country
- ✗ **C.** A higher GDP indicates a better economy
- ✓ **D.** GDP is Gross Dynamic Production

GDP (Gross Domestic Product) is the total monetary or market value of a country in a specific time period. It is used to measure a nation’s economic growth and its people’s standard of living. The higher the GDP, the better is the economy of a country.
GDP also gives guidance to the governement or people regarding the investment decisions, economic policies, etc.

In an agricultural country like India, about 62% of the population is engaged in agriculture and this accounts for about 33% of the country's GDP.

5. Consider the following statement with blanks A and B regarding sugar cane.

_____A_____ has poor sugar content and ___B___ has thicker stems with high sugar content.

✗ **A.** A - *Saccharum officinarum*, B - *Saccharum barberi*

✗ **B.** A - *Saccharum sinense*, B - *Saccharum barberi*

✓ **C.** A - *Saccharum barberi*, B - *Saccharum officinarum*

✗ **D.** A - *Saccharum officinarum*, B - *Saccharum sinense*

Saccharum barberi is a sugar cane variety grown in north India. It has poor sugar content and yield. So, blank A is *Saccharum barber.*

Saccharum officinarum is a sugar cane variety that is grown in south India. It has thicker stems and higher sugar content but it does not grow well in north India. So, blank B is *Saccharum officinarum.*

Saccharum sinense is a species of sugar cane from China. It is a more primitive variety of sugarcane. It has lesser sugar content than the more modern varieties derived from it.

6. Which of the following is not a characteristic of the semi-dwarf Mexican wheat varieties that were introduced to India during the Green Revolution?

✗ **A.** Resistance to diseases

✓ **B.** Unresponsive to fertilisers

✗ **C.** Increased yield

✗ **D.** Resistance to bending of the stem

Kalyan Sona and Sonalika are the high-yielding, disease-resistant variety of wheat that was developed by Norman E. Borlaugh in Mexico and introduced in India during the period of Green Revolution. It drastically increased the wheat production in India.
These varieties were semi-dwarf and hence they were resistant to bending of stems due to wind or weight of grain.
They were very responsive to addition of chemical fertilisers, resulting in better yields.

7. Hybrid varieties of ____A____, _____B_____ and _____C_____ millets have been successfully developed in India.

   A. A - maize, B - ragi and C - jowar

   B. A - bajra, B - ragi and C - jowar

   C. A - maize, B - ragi and C - bajra

   D. A - maize, B - jowar and C - bajra

   Millets are also known as dry crops because they are grown in the drier parts of the country. In India, hybrid varieties of these crops were grown which includes maize (*Zea mays*), jowar (*Sorghum bicolor*) and bajra (*Pennisetum glaucum*).

8. Choose the mismatched pair from the following.

   A. Maize - *Zea mays*

   B. Sugar cane - *Saccharum officinarum*

   C. Wheat - *Pennisetum glaucum*

   D. Jowar - *Sorghum bicolor*

   Wheat (*Triticum aestivum*) belongs to the Poaceae family. It is one of the major agricultural products in India. It is rich in micronutrients.

   Jowar (*Sorghum bicolor*), commonly calles sorghum, belongs to the Poaceae family. It is a rich source of micronutrients as well as calcium and iron.

   Sugar cane (*Saccharum officinarum*) belongs to the Poaceae family. It is rich in the simple sugar sucrose. The juice extracted is used in the production of sugar, ethanol, and other industrial products.

   Maize (*Zea mays*) is a cereal grain commonly called corn. It is widely used as food and fodder. Corn starch, corn syrup and popcorn are some common products from maize. In addition to this, it is widely used in the production of ethanol and biofuels.

9. In the following question a statement of assertion (A) is followed by a statement of reason (R).

A - The qualities of *Saccharum barberi* and *Saccharum officinarum* were combined.

R- North Indian sugar cane varieties were less in sugar content.

- **A.** Assertion and reason are true, and the reason is the correct explanation of the assertion
- **B.** Assertion and reason are true, and the reason is not the correct explanation of the assertion
- **C.** Assertion is a true statement but the reason is false
- **D.** Assertion and reason are false statements

Saccharum barberi is a sugar cane variety grown in north India but it has poor sugar content and yield. On the other hand, *Saccharum officinarum* is a the sugar cane variety grown in south India which has thicker stems and higher sugar content. But this variety did not grow well in North India.

To increase the sugar cane production in north India, these two varieties of sugar canes were combined by plant breeding methods. This process resulted in the appearance of qualities of both the parents like higher yield, higher sugar content and thicker stems in the progeny. Then, these new hybrids were introduced in north India. This new variety was able to grow and produce more yield compared to *Saccharum barberi.*

10. Which of the following crops contribute maximum to food grain production in the world?

A. Wheat, maize and barley

B. Wheat, rice and maize

C. Rice, barley and maize

D. Wheat, barley and rice

Maximum food grain production in the world is contributed by :

- Wheat (*Triticum aestivum*)
- Rice (*Oryza sativa*)
- Maize (*Zea mays*)

These crops are cultivated all over the world. These are a staple foods in many countries such as India. It is also used for the manufacture of various industrial products (bioethanol, liquor, starch, etc). Most domestic animals, from cattle to dogs, are fed food rich in these grains and grain products.

Barley is the fourth most produced food grain in the world.
Compared to wheat, rice and maize, barley is less used for household purposes and industrial purposes.