PENANG SANGAM HIGH SCHOOL
P.O.BOX 44, RAKIRAKI
LESSON NOTES

Week 8: 12/07/21 TO 16/07021 **Year/Level: 10**
Subject: AGRICULTURAL SCIENCE

STRAND	STRAND AS10.3 AGRONOMY
SUB STRAND	SUBSTRAND AS 10.3.1 SOIL SCIENCE
CONTENT LEARNING OUTCOME	AS 10.3.1.2 Recognise and discuss soil erosion and methods of conserving soil for sustainability.

Lesson 3, 4, 5, 6, 7, 8: SOIL CONSERVATION

Lesson outcome:
1. Identify contour farming practices used in Fiji
2. Practice terracing farming in the school garden
3. Explain the importance of minimum tillage

Method	Definition	Effects	Where to use	Crops to grow
1. Contour farming	Farming across the slope	♦ Keep valuable topsoil in place on sloping fields. ♦ Slow water down and let it soak into the soil. ♦ Improve irrigation systems and conserve water	♦ On sloping fields where crops are grown ♦ On sloping fields with vegetable beds	♦ Sugar cane ♦ Pinea pple ♦ Veget ables
2. Terrace farming	Cutting slopes in steps	Instead of flowing freely down the hillside, water stops on the level plain	▪ On very steep slopes to plant crops. ▪ When flood irrigation is to be used on slopes	▪ Dalo (Fiji) ▪ (Rice (Asian countries) ▪ Vegetabl es ▪ Sugarcan e
3. Minimum tillage	tillage or direct drilling is a way of growing crops or pasture from year to with minimum disturbance to the soil	■ Reduced susceptibility to land degradation through stubble retention, ■ Higher levels of organic matter and biological activity which improves soil structure ■ Increases the amount of water that infiltrates into the soil ■ Increases cycling of nutrients in the soil	■ All vegetables (problem of pest and ■ disease infestation might occur) ■ Most crops (maize, rice, pulses)	■ Pulses like cowpea or Urd can be planted in the stubble of rice. ■ Maize seeds can be spot planted after a legume.

4. Cover crop	Cover Cropping are effective at reducing soil erosion by leaving a cover over the soil which reduces soil displacement associated with the impact of raindrops hitting soil particles	▪ Suppressing weeds. ▪ Protecting soil from rain or runoff. ▪ Improving soil structure. ▪ Adding active organic matter to soil. ▪ Fixing nitrogen. ▪ Suppressing soil diseases and pests	▪ 1. Cocoa is commonly intercropped with tannia (Xanthosoma sagitti folium)under Erythrina variegate as a shade tree. The Ministry of Primary Industries has recommended the planting of cocoa under coconuts, taro, bananas, cassava, and kava (Piper methysticum) ▪ Smallholder vanilla production, with appropriate support plants; glyricedia and often under coconuts. ▪ Kava farmers are beginning to intercrop kava with Calliandra calothyrsus, a nitrogen-fixing species being promoted for agroforestry. ▪ The Calliandra hedgerows, which are recurrently pruned, are intended to slow erosion, which has been serious at times on the steep lands, to provide nutrients and firewood, and to serve as windbreaks.	
5. Mulching	Mulch is simply a protective layer of a material that is spread on top of the soil. Mulches can either be organic such as grass clippings, straw, bark chips, and	▪ Protects the soil from erosion ▪ Reduces compaction from the impact of heavy ▪ rains ▪ Conserves moisture, reducing the need for ▪ frequent watering ▪ Maintains a more even soil temperature ▪ Prevents weed growth	▪ Slope and flat lands for vegetable gardens ▪ Slope and flat lands for crops/tree crops	▪ Veget ables – bean, Chinese cabbage etc. ▪ Crops – sugarcane, maize ▪ Tree crops - citrus ▪ Flowe rs - rose

	similar materials or inorganic such as stones, brick chips, and plastic	▪ Keeps fruits and vegetables clean		
6. Strip cropping	Small strips of land can be left uncultivated between the cropped areas, to retard the water run- off.	▪ Strip cropping helps to stop soil erosion by creating natural dams for water, helping to preserve the strength of the soil. ▪ Certain layers of plants will absorb minerals and water from the soil more effectively than others. When water reaches the weaker soil that lacks the minerals needed to make it stronger, it normally washes it away. ▪ When strips of soil are strong enough to slow down water from moving through them, the weaker soil can't wash away like it normally would. Because of this, farmland stays fertile much longer		

Self-evaluation activity

1. How are pineapples planted on slope, why?

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2. How is it possible to plant rice on a slope land? Can it be irrigated?

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