Terms and words for DB NRRC visitors

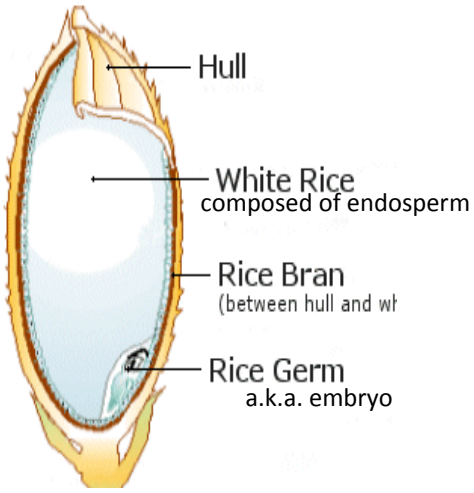
Research *noun* - diligent and systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications, etc.
verb - to carry out investigations into (a subject, problem, etc). To look or search in depth, more than once.

Agronomy *noun* - scientific agriculture, the study and application of scientific methods of soil management and field crop production.
agr, agro, agri - Latin root that means field, farm, crop
nom, nomo, -nomy - Greek root that means law, system of laws

Staple food *noun* - sometimes simply referred to as a staple; a food that is eaten routinely, and in such quantities that it constitutes a dominant portion of a standard diet in a given population, supplying a large fraction of the needs for energy-rich materials and generally a significant proportion of the intake of other nutrients as well. The staple food of a specific society may be eaten as often as every day, or every meal. Early agricultural civilizations valued the foods that they established as staples because, in addition to providing necessary nutrition, they generally are suitable for storage over long periods of time without decay.

Staple foods vary from place to place, but typically they are inexpensive or readily available foods that supply one or more of the three organic macronutrients needed for survival and health: carbohydrates, proteins, and fats. Typical examples of staples include grains, legumes, and tuber- or root-crops. While most staples are plant materials, in some communities fishing is the primary source of nutrition.

Hull *noun* - the outer papery or "leafy" coatings of seeds or grains, like rice. Also called the husk. Formed from hard materials to protect the see storage and seedling germination.
verb – to remove the husk or stem, alternative form – dehull.
machine that removes the husk and stem from rice, strawberrie



Bran *noun* - the outer layer of a grain seed, the portion lying betwee the starchy endosperm. In rice, it is usually tan to light brown i can also be red or purple. This layer is removed, along with the when rice is milled to create white rice.

Endosperm *noun* - the starchy part of a grain. Energy source for developing also for those who eat the grain.

Germ *noun*. From Latin germen = shoot, sprout, grow and disseminat

1. Biology – An embryo, spore, bud or other cell or clump of cells capable of growing into an entire organism. Root meaning of the word germinate.
2. Pathology - A microscopic organism or substance capable of growth and dissemination, especially a bacterium or a virus, that causes disease.

White rice = milled rice, with the bran & embryo removed.

Observation *noun* - an act or instance of noticing or perceiving. As in observing the presence of aroma, stickiness/separateness, texture of bite, or shape of cooked grain

Sensory *adj* - of or relating to the senses, as in sensory analysis of cooked rice.

Viscosity *noun* , 1. A measure of thickness or semifluid consistency; caused by friction between molecules.
To think about in advance: which drags easier, a long tree limb or a short one?
A single straight limb, or a branched one?

Amylose & **Amylopectin** are the two components or types of starch. Latin: amyl = starch. They act differently when cooked, and cause foods to feel and taste differently.

Amylopectin	versus	Amylose
Makes up 70-80% of rice starch		20 – 30% of rice starch
Branched chain polymer		straight chain polymer
Less soluble in water		More soluble in water (but less soluble in KOH)
Swells in hot water		does not swell in hot water
Forms paste or gel in hot water		does not form paste or gel in hot water

High amylose rice has about 28% amylose (and thus 72% amylopectin), cooks "dry and fluffy"
Low amylose rice has about 20% amylose (and 80% amylopectin) and cooks "somewhat sticky"
Waxy rice = has only amylopectin (0% amylose) and cooks very sticky

Gene *noun* - A segment of DNA that contributes to or causes a phenotype. It is the basic biological unit of heredity (how traits are inherited, or transferred from parents to their progeny).

Allele *noun* - a specific form of a gene associated with a different trait (phenotype), e.g. the form that makes a plant tall or short. All plants would have the "height gene", but those with the "tall allele" or form of that gene would be tall while those with the "short allele" would be shorter.
However, in conventional usage, the word "gene" and "allele" are often used interchangeably.
For example, you might hear one of us say "it has the waxy gene", when the full meaning is that it has the *waxy* gene allele that confers the waxy phenotype, as opposed to the allele that confers the non-waxy phenotype.

DNA, Deoxyribonucleic acid *noun* - The molecule that carries genetic information (genes) in all living systems. The DNA molecule is formed in the shape of a double helix from a great number of smaller molecules called nucleotides.

Chromosome *noun* - A strand or threadlike structure in all living cells that consists of a single molecule of DNA that carries the genes determining heredity.

Phenotype *noun* – the trait for which differences are observable or detectable in some manner (sight, smell, mechanical measurement).

Genotype *noun* – the genetic constitution (set of genes) of an individual organism.
verb – to investigate or characterize the genetic constitution of an organism or cell

PCR – from a simplified perspective, a PCR machine is like a copy machine in that it allows us to make thousands of copies of our gene of interest (or any other short portion of DNA) so we can see/detect if it is present.

How it works – when an organism grows, it starts as a single cell, then creates new cells from previous ones. The first step in cell proliferation is to copy the chromosomes in the original, making two copies that then line up in pairs, like-chromosome to like-chromosome, in the middle of the cell before spindle fibers form and pull the two sets of chromosomes apart, to opposite ends of the original cell, which then creates a membrane that divides itself into two cells, each containing a complete set of identical chromosomes. A PCR machine uses the same chemicals and procedures to cause short pieces of DNA to replicate, or make new copies of itself.

Enzymes are proteins that help drive a chemical reaction along. DNA polymerase is the enzyme that drives the assembly of a new DNA strand from DNA building-blocks (nuclietides) using a strand of assembled DNA as a template. PCR stands for Polymerase Chain Reaction.

Each cycle or reaction causes the number to double: 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256 – 512 – 1024…