**Industry Visit Report**

1. **InterGrain Overview**

InterGrain is one of Australia's leading cereal breeding firms, run by Western Australia State Government, and supplies growers with market-leading wheat, barley, and oat varieties, as well as high quality end-user benefits. Intergrain breeding is an important technique in the grain business that involves the development and enhancement of crop varieties by focusing on the interactions between two different genes and their impact on grain attributes, which results in high yields and higher quality final products. With the main objective being to help the Australian sector maintain its competitive edge and sustainability, the importance of breeding is to create new varieties with improved traits like disease resistance, drought tolerance, increase yield potential, nutritional content and so on.

On Tuesday, August 22, 2023, an Intergrain Field Visit was held at Bibra Lake from 1pm-2pm. The primary goal for this visit was to gain insight about the overall grain breeding and processing process as well as the quality test of the final product. Initially, we were taken in a glass house where the first stage of breeding takes place through cross-pollination between the male and female parents, which was done at a controlled temperature .Breeders stated that, usually, cross-pollination is done to merge the qualities of both parents and produce the new seed with the both characters .They usually start from F1 and through F8 generations to become homogenous. Following that, we were also taken to visit the little wheat milling room, where we saw Buhler wheat mill, where the wheat milling process was carried out. According to the employees, the wheat was normally soaked for a day to break the outer layer, which then goes through a further process involving rollers and sievers, and the shattered wheat grains go along the series of meshes named B1, B2 and B3, from which variety of wheat particles were obtained along with brans and remaining germs being sifted out. Finally, we were led into the lab room where the researchers were shown testing the quality of flour by making noodles, bread using the test such as Extensograph, Ferinograph and RVA to see texture, strength and quality of the end product. Overall the visit was educational, informative and interesting in many ways, especially the cross-pollination process part which was new and insightful.

known as Extensigram (Hadnađev et al., 2011). The graph obtained from the Extensigram examines the flow of dough expansion during baking which shows data and gives nice peak which is known to be good flour quality. This also has the direct relation on the size of loaf, the texture and quality of bread crumb. The main purpose of an extensograph is to determine the quality attributes of the flour and its uses in the baking process such as bread making (Wrigley, 2010).

Dough characteristics are characterized as weak, medium and strong depending upon the evaluation of extensograph curve. The dough, to be in a more balanced form, it has to have the right amount of elasticity for its strength. The main ingredient of wheat flour is starch, but it is regarded low in terms of its functional qualities and its effect to the quality of finished products. To provide the proper textural qualities, starch gelatinization is used in cakes, Japanese Udon noodles, batters etc. The development and stabilization of the bread crumb and bread staling are both aided by starch gelatinization during baking (Miś & Dziki, 2013).