

softened and new relishing odors are developed. The ripening changes are brought about by fermentation. The essential change is due to the action of organized ferments called enzymes in the living plant cell. There are likewise secondary putrefactive changes due to bacteria.

There are three conditions necessary for fermentation. One of these is moisture. Most ensilage plants have this in sufficient proportion, which is about 70 per cent., but with certain crops, or with crops in certain condition, the moisture content must be increased to make up for loss of moisture by evaporation. Proper fermentation of ensilage is dependent likewise upon the exclusion of air. The desirable organisms for silage production develop best in the absence of air. In addition to this, the presence of air is favorable to the development of undesirable or destructive micro-organisms. The activities of micro-organisms depend likewise upon temperature conditions. The most suitable temperature is found to be between 75 and 105 degrees F. The temperature resulting from initial fermentation is necessary for the inducing of activity in desirable micro-organisms, and is sufficient to this end.

The three common changes noticeable in the ripening process in ensilage are an increase in temperature, the development of acidity, and the production of odors. Usually the temperature begins to rise immediately, and continues to rise for from one to two weeks, when the maximum is reached. It then as gradually decreases. Maximum acidity and the production of odors are likewise usually reached in a couple of weeks also.

Materials for Construction

There are several different kinds of silos, but the stave and the concrete silos are the two in most common use. On account of the lack of gravel over the greater part of Alberta, and also on account of frost gathering on the inside of the wall, the concrete silo is not likely to become popular. Stave silos with concrete foundation are more common than any other kind in Canada, and are likely to be the kind most used in Alberta. The material is easier to get, and they are more easily and cheaply constructed than any other kind of silo is. If good material is used and they are well constructed they last for a number of years. Circular stave silos have proved satisfactory on the Demonstration Farms. In square or octagonal silos the ensilage does not settle at the angles, and usually some of the feed spoils.

Native hemlock and spruce staves can be used, provided the timber is sound and free from knots, but British Columbia Douglas fir is the best material for silos in Western Canada. It is easily obtained, and, being full of pitch, which acts as a preservative, lasts considerably longer than native lumber. The staves should be 2x6 inches, and if tongued and grooved and bevelled, will make a strong, tight structure. The staves may be of one length but if the silo is to be over thirty feet in height, two lengths will be less expensive. In a silo thirty-two feet high, eighteen and fourteen-foot lengths will permit the breaking of joints alternately. It should be painted.