ethylene, even when appropiately buffered, has been previously reported (7).

Treatment of tomato fruits with Ethrel results in a rapid rise in internal ethylene to a point far above the threshold for stimulating fruit ripening. Although the level of ethylene subsequently drops, it remains above the threshold for autostimulation of ethylene biosynthesis and fruit ripening. The data obtained from experiments with homogenates support the conjecture (3) that non-enzymatic release of ethylene from 2-chloroethylphosphonic acid is the basis of the biological activity of this chemical.

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Storage Response of Green and Bleached Lima Beans *(Phaseolus lunatus L.)*[1]

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Abstract. **Green and bleached beans designated as high and low vigor lots were stored at 21C and 50, 70, and 90% relative humidity. At the end of 36 months, no significant loss in viability occurred in either lot at 50% relative humidity. No significant loss of viability was found in the high vigor lot stored at 70% relative humidity but the low vigor lot lost all viability. Both lots were worthless for planting purposes when stored at 90% relative humidity for 3 months.**

Differences in seed longevity among species and between cultivars in the same species in storage have been shown (1, 2). Initial vigor of seeds in these studies was not determined but may have affected their responses to storage conditions.

Lima bean seedling establishment has been shown to be associated with vigor. Horticulturists designate bleached lima bean seeds as lacking in vigor, as compared to green or unbleached seeds (6). Lack of vigor in bleached seeds is most apparent when imbibition temperatures are below 15C (3, 4). Differences among varieties in their response to imbibition temperatures have been demonstrated (5). The possibility that the vigor classification of lima beans would also affect their storability led to this investigation.

Two lots of 'Thorogreen' lima bean seeds were provided by Ben Fish and Son Seed Company, Santa Barbara, California. Seeds of Lot No. L366 were harvested in the fall of 1964. These were green and were designated as a high vigor lot. Seeds of Lot No. L199, harvested in the fall of 1962, were white-seeded and had a germination of 93%. Until sent to the National Seed Storage Laboratory, they were stored in a warehouse at Crows Landing near Modesto, California whose climate is characterized by high summer temperatures and very low relative humidities and cool winters with occasional periods of high humidity. Lot L199 was designated by the company as having low vigor. Both lots were received by the National Seed Storage Laboratory in June 1965 and were immediately placed in storage. Samples of both lots were stored at approximately 21C at three different relative humidities, 50, 70, and 90%. High and low vigor will be used herein to identify the green and bleached seeds, respectively.

Germination tests consisted of planting four 50-seed replicates on rolled germination toweling moistened with tap water. The planted seeds were held at a 20 (15 hours) to 30C (9 hours) daily temperature alternation. The seedlings were evaluated on the 9th day. Only normal seedlings, those capable of producing normal plants under favorable conditions, are included in the germination data.

Seeds from the 90% relative humidity (RH) storage were removed from storage and tested for viability at 2 and 6 months. All other tests were at 3-month intervals, except that the first test at 21C and 50% RH was after the first 6 months of storage.

The germination percentages as affected by the different storage conditions are presented graphically in Fig. 1. No loss in viability occurred in the high vigor lot at 50% RH. A regression coefficient of .0079 for the low vigor lot indicates that the 11% difference between the first and final test of the low vigor lot is not significant. In fact, two lots of the initial test and two of the final had germinations of 72%.

Differences in storability are apparent in the other two regimes. A loss of only 5% viability occurred in the high vigor lot at the end of 18 months when stored at 21C and 70% RH. The low vigor lot was worthless for planting purposes during this same period. The loss in viability was equally rapid for both lots at 21C and 90% RH. Green-seeded limas may retain near

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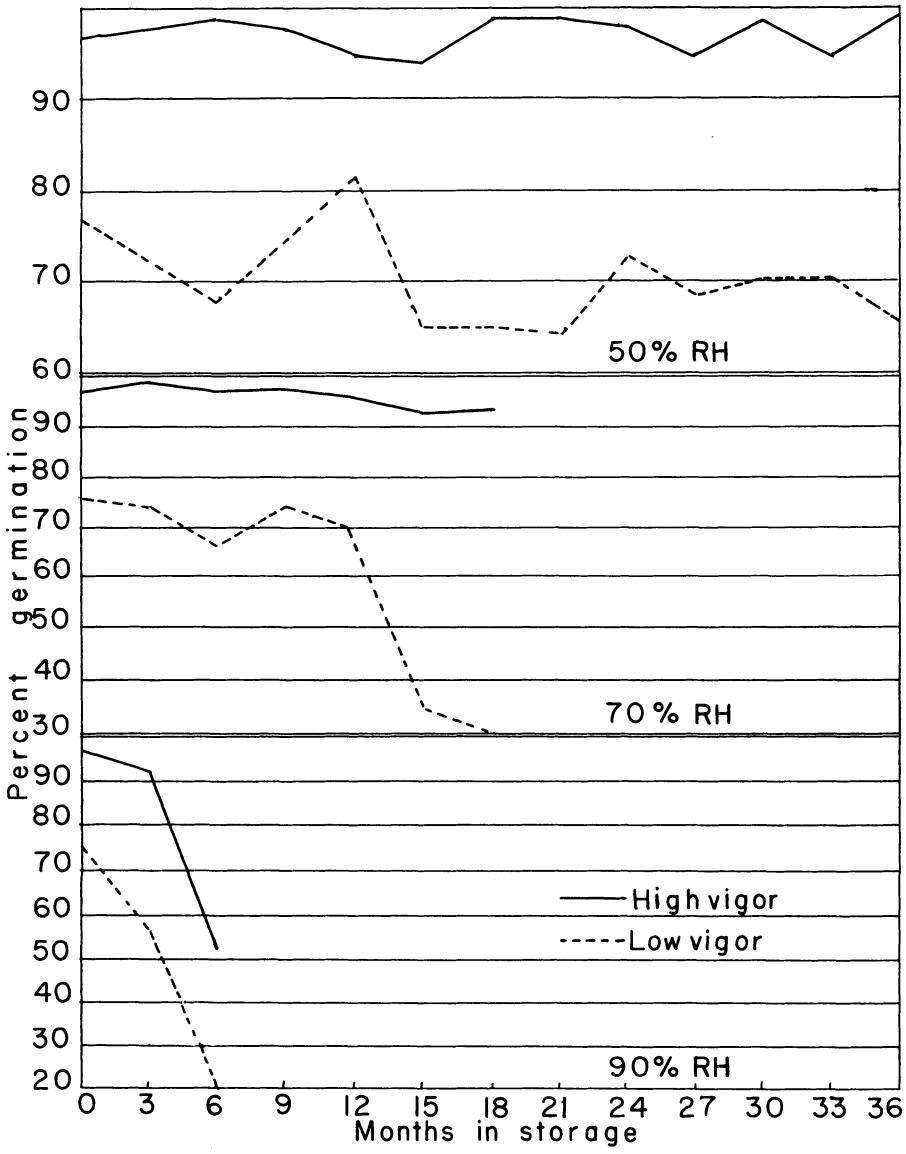

Fig. 1. Germination of high and low vigor lima beans stored in three relative humidities at 21C.

their original viability under the latter conditions for 3 months, but beyond this period the quality of the seeds would be questionable.

These results show that low vigor lima beans can be safely stored for at least 3 years at 21C and 50% RH even though deterioration has progressed to a point where germination had dropped 17% following harvest 2 years earlier. The results also show that seedling performance of low vigor lima beans is reflected in their poor responses to poor storage conditions.

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Physiological Differences Between a Green and a Tan Dry Podded Line of Snap Bean[1]

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Abstract. **A green and tan dry podded line of snap bean was compared with respect to respiration rate, chlorophyll degradation, % dry matter of the leaves, effects of light and Ethrel treatment on abscission of petiole explants, and fresh weight increase of leaf discs floated on a nutrient solution. The green dry podded line respired at a higher rate, degraded chlorphyll at a slower rate and contained a higher percentage of dry matter than the tan dry podded line. Petiole explants from the green dry podded line abscised faster in the dark and slower in the light than petiole explants from the tan dry podded line. Ethrel treatment of petiole explants resulted in promotion of abscission in both phenotypes but did not change the relative rates of abscission. Fresh weight increase in leaf discs floated in nutrient solution was greater than for the green dry podded line than the tan. These observations suggest that the green dry podded line has a higher endogenous level of kinetin or kinetin-like substance.**

In a recent investigation of the inheritance of dry pod color in snap beans, *Phaseolus vulgaris* L. (3), it was noted that the action of the genes resulted in the green color persisting in the leaves as well as in the pods. Leaves of plants bearing green dry pod remained attached to the plant when they senesce, while the leaves of plants bearing tan dry pod turn yellow and fall abscise. Plants bearing green or tan dry pods will be referred as green and tan plants respectively. The objective of this study was to determine if the physiological action of the genes could be inferred from comparison of the phenotypes with respect to the following physiological parameters: rate of respiration, rate of chlorophyll degradation and % of dry matter in the

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