**Project Title:**
Identify and test improved packaging systems as well as humidity control in cold stores to reduce moisture loss and shrivel in plums.

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**Objectives & Rationale**

Moisture loss and shrivel is an ongoing problem in plums packed and stored for export by sea. The objective was to identify liner packaging to reduce moisture loss and shrivel, and evaluate the effect of humidity control systems in cold stores on the same quality parameters.

**Methods**

Plums were packed in different polyethylene based perforated and non-perforated wrapper and perforated bag treatments and then force-air cooled and accumulated for 7 days in cold rooms with and without humidity control equipment fitted. The impact of these treatments on fruit quality after application of simulated export shipping regimes and subsequent shelf life was determined.

**Key Results**

The results relating to mass loss from plums and shrivel levels were quite variable over the three years of study, so the condensed version is presented below. This variability is to be expected, since shrivel development is highly complex and seems to be influenced by multiple factors.

**Conclusion and Discussion / Recommendation**

**Overall conclusion relating to humidity control for Laetitia and African Delight:** For Laetitia and African Delight, the results of this study showed that good humidity control during forced-air cooling (FAC) and accumulation was important for optimizing plum quality, as far as mass loss and shrivel control are concerned. It appeared that if humidity is well controlled at a high level (> 90 %), the impact of liner type packaging on post-storage plum quality may be minimized.

**Overall conclusion relating to liner type to be used to control shrivel for Laetitia:** The variable results recorded for Laetitia over the three years of study, in terms of optimal liner packaging to control shrivel specifically, makes it difficult to identify the single best option. Perhaps a middle of the road option is safest, namely to expand commercial testing of 36 x 4 mm perforated bags, used in combination with good humidity control during FAC and accumulation. Special attention must be paid to risk of skin cracking.

**Overall conclusion relating to liner type to be used to control shrivel for African Delight:** The 18 x 4 mm and 36 x 4 mm perforated bags warrant expanded commercial testing, in combination with good humidity control during FAC and accumulation.