Table 1. Trial at Wilhelminadorp Research Station for Fruit Growing. Trees planted 1960/61 in marine loam. Figures are means of 12 one-tree plots.

Scion Variety:	Golden Delicious			Cox's Orange Pippin		
Rootstock:	M.IX	M.26	Rotyp	M.IX	M.26	Rotyp
Pounds of fruit/ tree, 1964-67	52.7	75.7	63.8	44.1	72.3	46.7
Trunk Circumference, 1966-67, inches	5.2	7.0	8.2	5.8	7.7	8.3
Fruit/wood Ratio (lb./sq. in.)	1.94	2.42	.95	1.32	1.28	.82

Table 2. Trial at Horst Experimental Farm. Trees set in 1963 in sand.

Scion Var.;	Gold. Del.			James Grieve			Stark Earliest			Melrose		
Rootstock:	M.IX	M.26	Rotyp	M.IX	M.26	Rotyp	M.IX	M.26	Rotyp	M.IX	M.26	Rotyp
Pounds of Fruit	75.9	100.5	83.3	27.8	33.1	19.6	37.9	44.8	47.6	49.2	53.7	44.6
Trunk Circum.	5.9	7.3	7.5	5.5	6.7	7.2	6.1	7.1	7.9	5.0	7.4	8.3
Fruit/Wood	2.18	1.90	1.48	.92	.75	.38	1.01	.89	.76	1.97	.98	.65

Differences in Fruit Shape, Quality and Yield Between Standard Golden Delicious and a Spurred Mutation of Golden Delicious

M. N. WESTWOOD AND P. B. LOMBARD*

The tendency to heavier bearing per unit tree size of spur type apple strains relative to non-spurred ones, has led to extensive planting of spur strains in recent years. However, it was found with Red Delicious that spur mutants also were different in several fruit characteristics (1, 2, 3). The present test was done to discover differences between standard Golden Delicious and one of its spur mutants (Starkspur Golden).

Trees of both types were grown at Corvallis and Medford, Oregon, and fruit samples were taken at harvest in 1967 for study. The trees at Corvallis are on EM I and EM IV rootstock and those at Medford are on EM 26. Fruit shape (as length/ diameter ratio) was determined, along with flesh firmness, titratible acidity and soluble solids. Pressure tests were made with a Magness-Taylor tester with $\frac{5}{16}$" head, acids in expressed juice were titrated with standardNaOH to pH 7.2, and soluble solids of the juice was read with a Goldberg T/C hand refractometer.

Total acid content was similar in both strains but shape, firmness and soluble solids were different (Table 1). There appeared to be no difference in flesh color between the two clones. This contrasts with tests on Red Delicious (1) which showed that spur mutants had greener flesh than standard varieties. By taste test, the general quality of the spur Golden was lower than that of standard Golden, presumably because of the lower

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Table 1. Fruit shape, firmness, acids and soluble solids of two strains of Golden Delicious.

Plot location and strain	Flesh firmness	Fruit shape	pH	Juice Acid/ 100 ml	Juice Soluble solids
	lbs.	L/D ratio		mg	percent
Corvallis:					
Standard Golden	8.8	.942	3.6	282	14.8
Spur Golden	6.4	.923	3.7	284	12.4
Medford:					
Standard Golden	8.7	.915	—	—	14.9
Spur Golden	8.0	.911	—	—	12.7

sugar content. This was noticed by both authors when they made taste comparisons. Fruits of the spur strain also were flatter (less elongate), and the flesh softer than standard fruits. Even though the L/D difference was slight at Medford, fruits of the mutant were visibly more oblate than the standard variety. The softer fruit did not appear to be the result of earlier maturity. Had this been the case, soluble solids should have been higher rather than lower in the spur strain.

Yield per tree was higher at both locations on trees of the standard variety, which were considerably larger than the spur trees. At Corvallis, however, the yield per unit tree size (trunk cross-section) was higher on spur trees. This was not true of spur trees at Medford, and the reason for this inconsistency is not apparent. Much more work will need to be done to characterize the relative efficiency of these compact trees.

Fruit growers should be aware that there are several differences besides growth habit between compact mutants and the parent variety.

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Jonagold and Spijon Apples

Jonagold and Spijon are two new dual purpose apple varieties introduced by the New York Agr. Exp. Station at Geneva. They are described by R. D. Way, R. L. LaBelle and J. Einset in N. Y. Agr. Exp. Sta. Research Circ. No. 12.

Jonagold (Golden Delicious x Jonathan) forms a medium-sized tree resembling Golden Delicious, but more spreading, and bears mostly on spurs. It is at least as productive as McIntosh. However, being a triploid, it is not a good source of pollen.

Jonagold ripens with Delicious. It's skin color is 80% red striping over yellow. Flesh is firm, subacid, juicy, and similar to Jonathan in flavor. Dessert quality is excellent, as is its processing quality.

Spijon (Red Spy × Monroe) is a terminal bearing, upright-spreading tree, less vigorous than Red Spy. It ripens with Northern Spy. The large fruit has a bright "somewhat" dark red blush covering 90 to 100% of the skin surface.

The flesh is firm, light yellow, subacid to slightly acid, and of good dessert quality. Spijon keeps well, and has shown no bitter bit. It makes excellent sauce and slices.