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Comparison of SW44 (to right) with Caliverde 65 alfafa (left) photographed in Santa Maria Valley, October 1967, shows significant difference in height of plants.

SW 44

Nondormant alfalfa with stem nematode resistance released to plant breeders

TABLE 1. FORAGE PRODUCTION FOR FOUR VARIETIES OF ALFALFA GROWN FOR THREE YEARS AT EL CENTRO AND DAVIS, CALIFORNIA

	Yield in tons of green hay per acre					
	El Centro 1966	El Centro 1967	El Centro 1968	Davis 1966	Davis 1967	Davis 1968
SW44	17.0	22.4	18.4	23.5	34.7	36.2
Moapa	17.4	22.8	17.2	21.8	30.7	33.8
Sonora	18.5	23.7	18.1	24.5	32.0	33.0
Mesa Sirsa	21.7	27.3	19.6	25.6	33.4	36.6

TABLE 2. REACTION OF FOUR VARIETIES OF ALFALFA TO THE PEA APHID AND TWO BIOTYPES OF THE SPOTTED ALFALFA APHID

	Percent of seedling survival		
	Pea aphid	Spotted alfalfa aphid Ent. A	Spotted alfalfa aphid Ent. B
SW44	74.5	76.3	70.0
Moapa	65.3	46.0	49.8
Sonora	65.3	64.5	49.3
Mesa Sirsa	69.5	91.5	83.3

TABLE 3. RATINGS FOR FOUR CHARACTERS MADE ON THREE ALFALFA VARIETIES GROWN ON THE JACOB BJERRE RANCH, SANTA MARIA, CALIFORNIA[1]

	Height in inches Sept. 1966	Stemphylium botryosum score[2] 10–17–66	Height in inches[3] 5–7–67	Plants per sq. ft.[4] 6–12–67
SW44	20.0	2.4	20.8	8.3
Moapa	18.8	4.0	7.0	7.5
Caliverde 65	15.2	2.2	14.6	3.4

[1] Planted 2–15–66
[2] Score of 1 = good, 5 = poor.
[3] The differences shown are primarily due to the effect of the stem nematode attack.
[4] Cutting schedule was based on growth of Moapa and may have adversely affected the stands of Caliverde 65.

A NEW NONDORMANT ALFALFA strain (SW44), segregated for stem nematode resistance and tolerance to leaf and stem diseases, has been developed through the joint efforts of the University of California Agricultural Experiment Station and Agricultural Extension Service, and the U. S. Department of Agriculture Entomology Research Division.

SW44 has been released to plant breeders in the early stages of development for use as a source of germplasm (breeding material) in the development of new varieties. It may also be used as a temporary variety for coastal regions of California where stem nematode and leaf and stem diseases are serious problems. This type of early release will make characteristics found in this new strain available immediately to the large number of capable industry plant breeders—enabling more extensive utilization than would be possible if used exclusively by the small number of University and U.S.D.A. plant breeders. This will also allow the public research workers to divert their attention to such other important problems as the development of sources of resistance to alfalfa weevil,

leaf hopper, crown and root rots, etc. The final result of this early release should be better varieties for more growers in a shorter period of time.

Parentage

SW44 is a 16-clone synthetic strain selected from four experimental synthetics that had been grown in a yield trial (at the A. Tognazzini Ranch, Guadalupe) heavily damaged by stem nematode and infected with leaf and stem diseases. One-half the parent plants came from African-type varieties and the other one-half were tall-growing plants from a Caliverde-type variety. Parentage traces to African (42.6%), Caliverde (37.5%), Lahontan (18.6%), and Sirsa (1.6%).

Characteristics

Forage production of SW44 (table 1) was equal to or better than Moapa at El Centro and Davis through the first production year. Production improved during the second and third years at Davis and during the third year at El Centro. Reaction to the pea aphid and spotted alfalfa aphid (table 2) compares favorably with other varieties. Observations on plant height, Stemphylium leaf spot, and stand (table 3) made in the humid coastal environment of Santa Maria, California, where stem nematode and leaf and stem diseases were a problem, indicate that SW44 was superior to other named varieties in this environment. The nature of the material indicates that through adequate screening techniques and breeding methods such as recurrent selection, improvements can be made in nondormancy resistance to stem nematode and leaf and stem diseases.

Seed requests

Seed will be provided to plant breeders upon written request and agreement to make appropriate recognition of its use as a matter of open record when this germplasm contributes to the development of a new variety or hybrid. Send requests to the Department of Agronomy and Range Science, University of California, Davis, California 95616.

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A progress report . . .

CITRUS RESPONSE TO REI

S. B. BOSWELL

CITRUS BUD GROWTH IN MILLIMETERS—MEAN AVERAGE FOR DATES SHOWN

	9/3	9/8	9/13	10/3	10/28	1/2/69
*Nucellar Lisbon	5.74	12.33	17.70	27.00	27.00	52.75
Nucellar Lisbon Control	2.33	6.05	9.34	15.56	15.56	41.12
*Nucellar Eureka	3.59	8.88	14.60	22.87	22.87	54.50
Nucellar Eureka Control	2.74	6.90	11.40	18.37	18.37	41.62
*Nucellar Campbell	2.02	5.55	10.37	22.30	22.30	22.30
Nucellar Campbell Control	.99	2.53	5.87	20.33	20.33	20.33
*Frost Nucellar Wash.	2.58	5.74	9.88	24.60	24.60	24.60
Frost Nucellar Wash. Control	2.55	5.49	9.13	24.55	24.55	24.55

* The apex and leaves removed from budwood while on the tree.

IT HAS BEEN KNOWN for many years that the apical buds inhibit the growth and development of lateral buds. This inhibition is largely due to growth regulators produced by the apical shoot and leaves. Other researchers have reported that buds are also inhibited by the presence of growing leaves—and that in several herbaceous species, the expanded leaves partially inhibited their axillary buds. Long after the removal of the terminal buds, the leaves delayed axillary bud growth. Defoliation has been shown to significantly accelerate bud growth of *Poncirus trifoliata.* However, length of time to bud growth varied with the season. The addition of 1 per cent NAA in lanolin paste to the leaf scars of defoliated plants inhibited bud growth. This auxin produced by the leaves may be responsible for inhibition of bud growth, as is auxin produced by the apical bud.

Reduced inhibition

The reduction in inhibition by removal of apical shoot and leaves suggests that removal of the apical shoot and leaves from budwood prior to its removal from the tree might shorten the time to bud-growth after budding. This progress report details the results of one greenhouse test, during the summer, 1968. Additional work is now under way on the removal of the apex and leaves of budwood while the bud is still on the tree so that the citrus buds will be stimulated.

Four varieties

Four citrus varieties, Nucellar Eureka lemon, Nucellar Lisbon lemon, Nucellar Campbell Valencia orange, and Frost Nucellar Washington Navel orange were used in this test. Treated budwood was cut two weeks after the apical bud and leaves were removed from each prospective budstick. Budwood for control was cut at the same time from twigs from which the apical bud and leaves had not been removed. All budwood was collected and budded into 2-year-old Rough lemon seedlings on August 8, 1968. Three buds were placed in each seedling, with two plants per one gallon pot. Seedlings and budlings were grown in a greenhouse with a range of 60°F night to 90°F day temperatures.

Ninety-six buds were used on the Eureka and Lisbon lemon varieties, of which 48 buds were used as a control. One hundred and twenty buds were tested on the Navel and Valencia orange varieties, with one-half of them used as a control. To force the buds, all seedlings were bent over on August 20 and all tops